

Towards a conceptual framework for understanding the implementation of Internet-based self-service technology

by

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ABSTRACT

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In the past decade, there has been rampant growth in healthcare service delivery options, based on the Internet and related information and communication technology. As a result, there is a great deal of expectation among national governments, regulators, healthcare organisations, and other stakeholders about the role of the Internet in healthcare service provision. Given the global crisis in healthcare services generally and the funding of healthcare services specifically, a number of policymakers view the advances in Internet-based self-service technology as a potential enabler of more efficient and effective healthcare service delivery. Proponents of consumer-driven healthcare in particular who seek to use the Internet to make consumers more informed about healthcare funding decisions and to reduce the cost of servicing consumers have been actively experimenting in this area. Despite the accelerating growth in the deployment of Internet-based self-service technologies, their protracted uptake by users is giving rise to concerns about the effectiveness of the implementation and acceptance of these contemporary forms of service delivery. Furthermore, little is known about how the social healthcare context shapes Internet-based self-service technology implementations.

This thesis presents an in-depth qualitative case study that documents a healthcare insurer's efforts to implement an online self-service technology for the period 1999 to 2005. A research

framework was adopted that draws on key theoretical concepts from structuration and actor-network theory (ANT) to link the social context to implementation processes. These two conceptual lenses, which are compatible with the thesis's interpretive stance, reveal several new insights, confirming that the challenges associated with the implementation of information system innovations such as Internet-based self-service technologies cannot be understood in isolation. From a structuration perspective analysing the various enactments of self-service provision of healthcare afforded a deeper understanding of how social practices influence the design and use of the technology. From an ANT perspective, the study showed how the major translations in the design and use of the self-service technology emerged from a process where technological and social elements co-evolved. This study also reveals that the implementation problems and opportunities facing this particular healthcare insurance organisation were historical and systemic. This approach demonstrates that the complex interdependencies and interactions among contrasting social, political, economic and technological issues shaped the contemporary channel as it exists today and therefore advances theory in yet another important way.

Using the insights obtained from these two theories, a conceptual framework was derived. The conceptual framework demonstrates that in order to develop a comprehensive understanding of Internet-based self-service technology implementation, such an analysis must incorporate the interconnectedness of four perspectives – meaning, process, context and the technology artefact – and their respective conceptual elements from both structuration and actor-network theory. Future studies attempting to deepen our understanding of information systems implementation can also provide constructive insights by focusing on the interdependent, interconnected and historical nature of the implementation phenomenon. Some important practical applications for future self-service technology implementations are also discussed.

I declare that

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is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references

Thavandren Ramsamy Naidoo



DEDICATION

To my partner *Losh* and our children *Shiven* and *Veshni*

In memory of my father *Ramsamy (Siva) Naidoo*

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List of Common Acronyms and Initialisms

ANT	Actor-network theory
API	Application programming interface
ATG	Applied Technology Group
ATB	Above-threshold benefit
B2B	Business to business
B2C	Business to consumer
BA	Business analyst
BBEE	Broad-based black economic empowerment
BEE	Black economic empowerment
BHC*	British Healthcare Company
BPR	Business process re-engineering
CASE	Computer-aided software engineering
CDH	Consumer-driven healthcare
CIO	Chief information officer
CMS	Council for the Medical Schemes
COO	Chief operating officer
CPI	Consumer Price Index
CRM	Customer relationship management
D2C	Direct to consumer
EDI	Electronic data interchange
eHIC *	The e-commerce subsidiary of United Assurance Group
ERP	Enterprise resource planning
FAQs	Frequently asked questions
FSG*	Financial Services Group
HAS	Health savings account



HIC*	Health Insurance Company
HISO	Health International Services Organisation
HMO	Health Maintenance Organisation
HR	Human resources
H-World*	Health World (which was the initial brand name of the website)
ICT	Information and communication technology
IJVP*	International joint venture partner
IS	Information systems
IT	Information technology
JSE	Johannesburg Stock Exchange
JV	Joint venture
LAC*	Life Assurance Company
LIMS	Low income medical scheme
MSA	Medical saving account
NHS	National Health Service (UK)
NCSS	Network-based customer service system
OCR	Optical character recognition
OO	Object oriented
OPP	Obligatory passage point
PDA	Personal digital assistant
PPO	Preferred provider option
R	South African rand (currency)
SBU	Strategic business unit
SDLC	Systems development lifecycle
SMS	Short message service
SOA	Service-oriented architecture



SPG	Self-payment gap
SST	Self-service technology
ST	Structuration theory
TAM	Technology acceptance model
TR	Technology readiness
TRA	Theory of reasoned action
UAG*	United Assurance Group
USHC*	United States Healthcare Company
VPN	Virtual private network
WAP	Wireless application protocol
WHO	World Health Organisation
WSC*	Wellness Science Company

* Refers to anonyms chosen to preserve the confidentiality of the identities of the organisations involved.



Chapter 1

Introduction

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1.1 Introduction

The year 2000 ended with the collapse of the NASDAQ and the demise of many dotcoms (Anderson, 2000). It was hard to imagine how, even if momentarily, it seemed that we were on the brink of a revolution. There was a great sense of certainty that the Internet would transform the way of doing business. Suddenly the promise of dotcom was disintegrating. Then the utterly impossible happened. The dotcom bubble had burst and many organisations were frantically reviewing their online strategies (Useem, 2000).

Academics were as confounded as practitioners and found it difficult to explain why these events were now only to be expected. If conventional theories had never been tested, their truths were now impugned. And anyone open to astonishment will be more inclined to suspect that, when the previous dotcom certainties exploded, some of the eminent diffusion theories went with them (Rogers, 1995). And the failure of the dotcom was not simply owing to ‘irrational exuberance’, as our rational proponents would lead us to believe (Christensen, 2000). After all, the pundits of the dotcom revolution were the rationalists themselves! What is certain and still relevant in 2007 is that a fresh direction of enquiry is needed to more fully understand IS innovations, like dotcoms. Albeit somewhat measured nowadays, firms continue to seek enabling technologies that can provide quality self-service and at the same time reduce their transaction costs. The Internet is serving as one of the technological options to perform services for customers. As a result, integrating products and services using Internet-based technologies appears to be among the complex problems facing firms today.

In this dissertation, I present an in-depth qualitative case study documenting the efforts of a healthcare insurer to implement an online self-service technology (SST) as an alternative and extended service offering to their clients. The study takes a historical and holistic view of the social, political, economic and technical challenges involved in the implementation of this technology innovation. As I will show, the SST attracted the attention of various interests including external users, intermediaries, regulators, market commentators, wellness practitioners, system developers, other departments, and software and hardware vendors. The combinations of these interests influenced the trajectory of the SST solution in ways that departed from the initial goals of the initiative. As an area of social and organisational concern, SST in a healthcare insurance environment represents a special case of technological improvisation. The aims of

healthcare insurance firms to implement such innovation have been driven by cost pressures and consumerism, two goals on which SST proponents claim an SST can deliver (Cannon and Tanner, 2005). The example of an online SST implementation in a healthcare insurance firm therefore provides an important illustration of the intricacies involved in fusing technological innovations with social, organisational and commercial concerns.

In the words of Webster (1991a:253):

Attention needs to be turned to the ‘social shaping’ or ‘social construction’ of technologies, to opening the ‘black box’ of technologies and examining the social, economic and political components contained within.

In addressing these issues, this dissertation makes an important contribution to research into online self-service technologies, their potential opportunities and limitations.

1.2 Internet-based self-service technology in the healthcare context

We are again on the threshold of a dramatic expansion in communications technology that may have profound effects on the patient-physician relationship and the practice of medicine. We are approaching a critical mass of Internet users that will lead to a wide diffusion of electronic communications within the medical practice. (Mandl, Kohane, and Brandt, 2001:495)

The rational and conventional view of e-commerce suggests that Internet-based self-service technologies are poised to provide potential added value to a healthcare firm’s business goals as well as service delivery to customers (Dabholkar, 1996; Dabholkar and Bagozzi, 2002). After all, such technologies enable healthcare firms to reach beyond traditional boundaries, thus providing a myriad administrative and commercial opportunities.

One such opportunity on which many healthcare insurance firms are now modelling their business is the so-called consumer-driven healthcare concept. Healthcare insurance firms frame this emerging concept as one in which their members are empowered to play a greater role in

decisions about their healthcare; have better access to information to make informed decisions; and share more in the costs. An important actor in consumer-driven healthcare is Web-based tools. Members are encouraged to conduct transactions online such as personalise their health plans and formulate their network of physicians and hospitals, while at the same time they determine their premiums and co-payment levels, and so on. Some healthcare insurance providers are offering more advanced preventative tools and content, related to health and lifestyle combined with reward schemes, to improve and enhance the health of their members and reduce the cost of healthcare.

A dominant view among proponents of consumer-driven healthcare is that online self-service technologies provide an inexpensive platform for conducting commerce and sharing information (Laing, Hogg and Winkleman, 2004). This view also proposes that without further computerisation, it would be impossible to reduce medical errors, provide real-time clinical decisions and support patient care via the Internet.

The diversity of options that the Internet offers is indeed exactly one of the components of its 'nature' that has helped to create much enthusiasm, if not pure hype, about both its existence in general and its potential uses specifically within health care. (Adams and Berg, 2004: 165)

Many healthcare firms in South Africa and globally are now adapting their strategies and business practices to take advantage of these apparent opportunities. Yet, despite the overall increasing hype on the use of the Internet, healthcare users have lagged in the adoption and use of online self-help health resources (Gummerus, Liljander, Pura, and Van Riel, 2004).

Healthcare firms moving to Internet-enabled customer service should also be aware of several myths. The first myth proposes that the Internet can minimise the cost of providing customer service (D'Andrea, 2002). In contrast, recent evidence suggests that it is generally more costly to design and maintain an effective electronic customer service (Reichfeld and Schefter, 2000; Kraut, Steinfeld, Chan and Butler, 1999). The argument is that Internet customers have higher expectations and are more informed, and as a result they expect to be serviced by more knowledgeable and expensive call-centre representatives. Therefore, instead of replacing

traditional channels, Internet-based services tend to be encouraging more advanced human support. Furthermore, the data infrastructure needed to support a comprehensive online self-service strategy is often more complex than initially envisaged and requires high investment and cooperation at industry and intra-organisational level (Kraemer and Dedrick, 2002).

Another myth is the suggestion that Internet-based services will facilitate the process of customer relationship management (Romano and Fjermestad, 2002; Bitner, Brown and Meuter, 2000). Recent research suggests that potentially valuable customers may perceive barriers to interaction with technology-enabled service systems (Uzzi, 1999). Advocates of this view argue that the electronic service delivery process often does not address the various needs, capabilities and concerns of the user, as they are designed mainly with the aim of achieving operating efficiencies for the organisation. Furthermore, organisations appear to be paying little attention to existing relationships which the technology wishes to replace (Barrett, 1999; Uzzi, 1999). In addition, a number of investigations reveal that customers are unwilling to replace face-to-face contact with electronic alternatives. It is not surprising that another stream of research indicates that face-to-face relationships may be more cost effective than virtual relationships (Granovetter, 1985).

1.3 Motivation for this study

This proposed research contributes to a future research challenge proposed by Walsham (2001: 251):

A crucial area for future studies is e-commerce, or more generally e-business. Despite the enormous hype and interest in the use of the Net for business-to-business and business-to-consumer applications, it is currently hard to find in-depth case study material that takes a balanced academic view of e-business, analyzing both opportunities and limitations of this medium for consumer sales or inter-business transactions and relationships. Major research work is needed in this area. (Emphasis added.)

Clearly, recent studies show that rational and economic models of e-commerce are an oversimplification of what actually happens in the social environment (Khalifa and Liu, 2003). It appears that organisations tend to ignore important contextual dynamics which may provide a

deeper understanding of self-service technology implementation.¹ Therefore this thesis proposes that an alternative way of conceptualising the problem is to view Internet-enabled services as a social, economic, political and technological phenomenon. This thesis proposes a study that draws on social theories in order to understand the details concerning the opportunities and limitations of self-service technology implementation.

1.4 Problem definition and research questions

Since the advent of the Internet, Internet-based SSTs have been adopted widely in the private sector. Despite their growth, a number of studies in the private sector environment have already demonstrated that the acceptance of these SSTs by end users has been mediocre (Bitner, Ostrom, Meuter, 2002; Bhattacharjee, 2001; Reichheld and Scheffer, 2000). These findings are congruent with findings in some of the healthcare initiatives, who have acted on the potential opportunities presented by these service innovations (Baker, Wagner, Singer and Bundorf, 2003). So far most research that has examined the slow acceptance rate has followed a reductionist approach – concentrating either on the individual user, the technology or the organisational context. The literature is also replete with factor-based approaches, which aim to identify a group of variables relevant to self-service technology implementation outcomes (Lang and Collen, 2005; Pandya and Dholakia, 2005a; Zeithaml, Parasuraman, and Malhotra 2002). Consequently, an incomplete picture has been created for explaining the protracted uptake of these technologies (Schultze, 2002; Dabholkar, 1996). Despite strong interest in the subject, there is clearly a need for empirically testable theories, conceptual models, and frameworks to move research forward. More specifically, little is known about how self-service technology implementations are shaped by social, political, economic and technological issues. It is agreed in this thesis that unless healthcare insurance firms improve their understanding of these service innovations, they too will risk inappropriate investment in capital spending.

The main purpose of this thesis is to develop a conceptual framework that will assist practitioners and academics to better understand the intricacies involved in implementing SSTs. A related objective is to understand the opportunities and challenges of implementing SSTs in the healthcare insurance services context. Towards these goals, this thesis aims to examine the

¹Walsham (1992) distinguishes between two types of implementation: technical aspects of implementation; and human and social aspects of implementation. In this thesis, it is assumed that no clear distinction can be made between these areas of implementation. The focus of this thesis encroaches on both aspects to answer the research questions adequately.

dynamic interplay between self-service initiatives within the individual, group, organisational, inter-organisational and broader healthcare social context. More specifically, it aims to address the following three questions, namely:

- 1 How has the social, political, economic and technological environment shaped the healthcare insurance services context?**
- 2 What contributions can SSTs make to healthcare insurance services in the context of traditional service channels?**
- 3 What contributions can social theories² make to understanding the implementation of SSTs in healthcare insurance services?**

These research questions are shaped by issues that are managerial as well as academic, behavioural as opposed to merely technical. There are also issues concerning the relationship between the SST and the manner in which individuals, groups, departments, divisions, organisations and even broader steering mechanisms interpret, implement, resist, and utilise the SST. The idea of SST use becoming commonplace in the healthcare insurance services context requires that the country's ICT resources, health members, brokers, employers, the SST, the personal computer and other infrastructure, the organisation and SST developers come together so that 'black boxes' are produced. This also depends on the ability of the Internet-based SSTs to inscribe information in ways that make it a convincing or an even better representation than that offered by traditional service channels like the call-centre agent.

While there are increasing developments of SSTs, there is a shortage of knowledge and understanding of their implementation process. There is a need to develop and strengthen our theoretical understanding of the process by which SSTs are implemented and, in particular, to open the black box of SSTs with respect to both their malleability and the context and process of their use within a social context (Lamb and Kling, 2004; Orlikowski and Iacono 2001; Webster, 1991b). In addition, there is a dire need to research the role of SSTs, together with social and technical actors to understand the impact of social dynamics on contemporary healthcare

² This thesis will make use of two dominant social theories in actor-network theory and structuration theory to improve our understanding of SST implementations. Chapter 4 is dedicated to how these two distinct theoretical approaches can bring different insights to this study.

insurance services organisations. The manner in which the rest of the research proceeds is summarised in the next section.

1.5 Structure of the thesis

The remainder of this thesis is organised as follows:

Chapter 1: Introduction

Chapter 1 introduced the thesis by briefly describing the implementation of Internet-based self-service technology as being problematic and formulated the research objectives and questions.

Chapter 2: Research Methodology and Case Selection

Chapter 2 motivates the philosophical assumptions underpinning this research, as well as the research strategy and research approach followed. The reasons for selecting the healthcare insurance firm, data sources, units of analysis, data collection and analysis are discussed.

Chapter 3: Literature Review

Chapter 3 presents an overview of the literature on IS implementation, specifically self-service technology implementation. It examines rational implementation theories such as innovation diffusion, theory of reasoned action, media choice theory, transaction cost theories, and other alternative social theories. This theoretical exploration then asserts the beliefs with which we should enter the research.

Chapter 4: Structuration Theory and Actor-Network Theory as Conceptual Frameworks for Analysis

Building on the previous chapters, chapter 4 is devoted to describing the theoretical framework that guides the analysis of this research. Two distinct theoretical approaches that help to understand Internet-based self-service technology implementation are discussed: structuration theory and actor-network theory. Their potential contributions and limitations are presented.

Chapter 5: Background to the Healthcare Insurance Context

Chapter 5 contains the first set of empirical data central to this research. It starts by describing the broader social and organisational context of the case.

Chapter 6: Empirical Investigation into the Implementation of an Internet-based Self-service Technology at a Healthcare Insurance firm

Chapter 6 provides a detail description of the case organisation. The thrust of this chapter is devoted to describing the events related to the implementation of the Internet-based self-service technology.

Chapter 7: Case Study Interpretation: A Structuration Perspective

The findings from the case study are analysed and discussed in chapter 7. First, the case is analysed by using structuration theory.

Chapter 8: Case Study Interpretation: An ANT Perspective

Following this, an actor-network theory analysis and discussion is presented, giving a different understanding of the events at the case study.

Chapter 9: A Four-Perspective Framework for Understanding SST Implementation

Chapter 9 builds on these interpretations to present a parsimonious model for understanding the social context of SST and IS implementation.

Chapter 10: Conclusions and Evaluation of Contribution

Chapter 10 evaluates the contribution of this thesis in addressing the research questions and their implications. The limitations of the research as well as opportunities for future research are discussed.

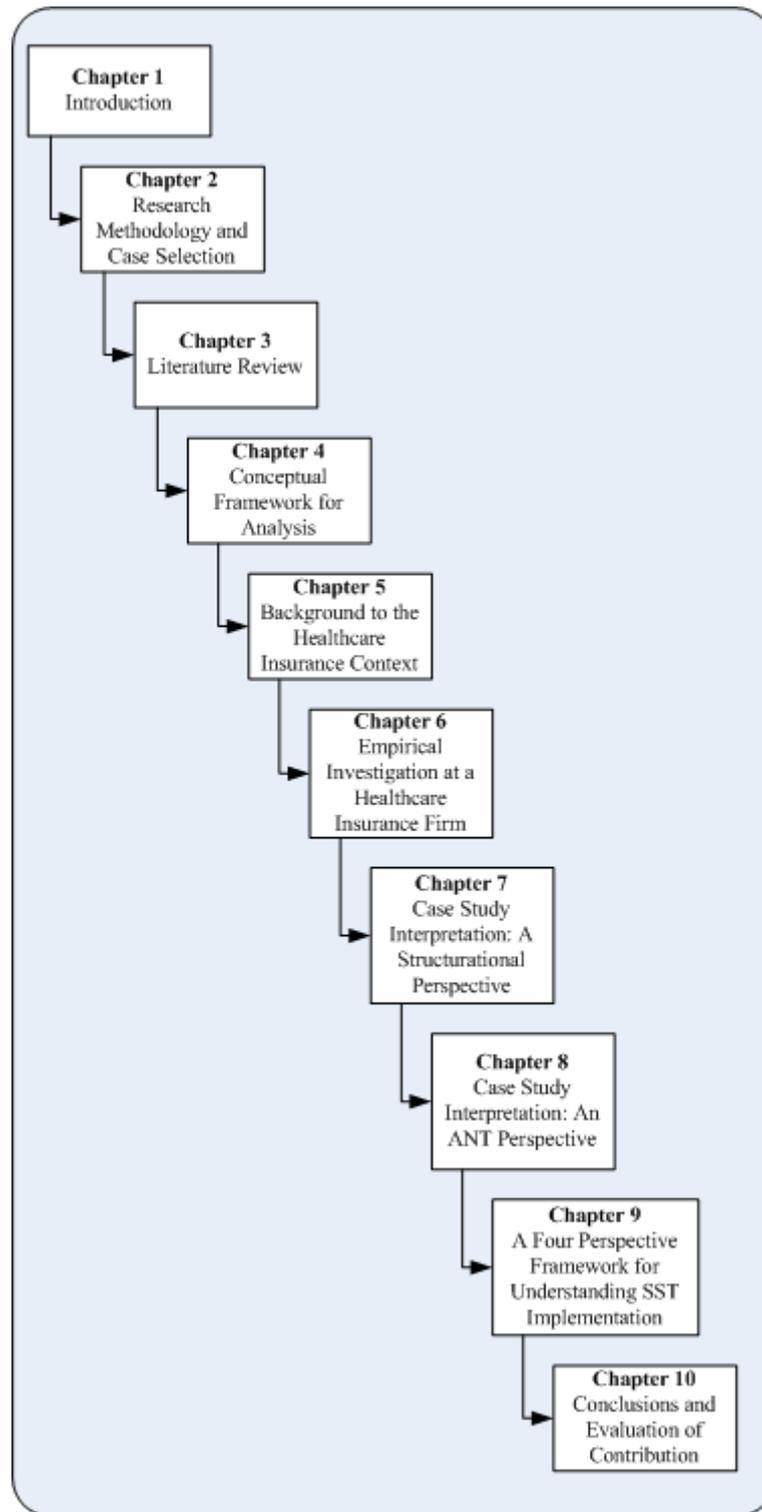


Figure 1.1 Structure of the thesis

Chapter 2

Research Methodology and Case Selection

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2.1 Introduction

In this chapter I make my philosophical orientation explicit. I begin with a presentation of the different philosophical orientations in information systems and the orientation that I preferred to inform this research project. This philosophical discussion provides a necessary rationale for the research approach and the theoretical frameworks that were used to guide this study. Apart from presenting the philosophical assumptions supporting this research, I elucidate the research strategy and empirical techniques applied, as well as the theoretical frameworks used to guide this inquiry. Furthermore, I describe the field setting, followed by a discussion of how entry to the field site was obtained. The remainder of this chapter provides an overview of how the actual fieldwork was staged, including sampling and data analysis procedures.

In the next section I examine the three main orientations in the field of information systems research. The purpose of this examination is to situate my research among the various IS research traditions as well as to demonstrate the best fit for this particular study's research questions.

2.2 Philosophical orientation

Assumptions underlying a research philosophy can be understood in terms of a researcher's beliefs about physical and social reality, the notion of knowledge, and the relationship between theory and practice (Orlikowski and Baroudi, 1991). There are a number of legitimate research approaches within the field of IS. These approaches¹ are guided by various ontological and epistemological, and methodological assumptions – ways to observe, measure, and understand social reality. Orlikowski and Baroudi (1991) make a useful distinction among three basic approaches towards observing, measuring and understanding IS – positivist, interpretive and critical. In the next section I explore these three orientations in more detail.

¹ Guba and Lincoln (1989:83) assert that philosophers should ask themselves three types of questions when trying to understand how they come to know what they know. The ontological question focuses on what is there to be known, what is the nature of reality and what is truth. The epistemological question tackles what is the relationship between the knower and the known (or the knowable) and what kind of knowledge can be obtained and what are the limits of knowledge. The methodological question deals with what are the ways of finding out knowledge, that is, how can we go about finding out things?

2.2.1 Positivist information systems research

A recent study by Chen and Hirschheim (2004) confirms that positivism is the dominant paradigm in IS research. Positivists maintain that social and physical reality is real and exists 'out there'. They therefore view the purpose of research as scientific explanation. Furthermore, positivists believe that basic patterns of social reality are stable, making the world logical and predictable. In positivist forms of research, scientific explanation is nomothetic (*nomos* means law in Greek), meaning that it is based on a system of general laws (Burrell and Morgan, 1979). Positivists believe laws and theories in information systems should be expressed in formal symbolic systems, with axioms, corollaries, postulates and theorems. Consequently, the conduct of research also has an instrumental orientation that assumes that knowledge can be used to predict and control the IS environment. Thus, knowledge about IS gained through scientific and experimental research is assumed to be stable, observable and measurable.

While IS researchers subscribing to a positivist approach do not believe in absolute determinism, and acknowledge that causal laws are at best probabilistic, critics have nevertheless challenged positivism for its blasé treatment of social and organisational reality (Orlikowski and Baroudi, 1991; Chen and Hirschheim, 2004), which is complex and not easily amenable to statistical deduction. It is also regarded as being too deeply rooted in functionalism and too concerned with causal analysis at the expense of getting close to the phenomenon being studied (Galliers, 1991).

2.2.2 Interpretive information systems research

In contrast to positivism's instrumental orientation, the interpretive approach adopts a practical orientation. It is concerned with how people create and maintain their social worlds. The goal of the IS interpretive researcher is to develop an understanding of social life and discover how people construct meaning in their natural settings. This approach holds that social life is based on social interactions and socially constructed meaning systems, and therefore people possess an internally experienced sense of reality (Walsham, 1995b).

This subjective as well as intersubjective sense of reality is crucial to grasping social life. To an interpretive IS researcher, the patterned and regular nature of human life is created out of evolving meaning systems and conventions that people generate as they interact socially and not

as the positivist would argue, owing to pre-existing laws waiting to be discovered. The interpretive IS researcher then is interested in the stockpile of everyday theories people use to organise and explain events in their world. They claim that a person's sense of reality emerges from a pragmatic orientation and set of assumptions about the world. In other words, people do not know whether common sense is true with absolute certainty, but they must assume it is true to accomplish anything (Berger and Luckmann, 1967). People also develop ways to maintain or reproduce a sense of reality based on systems of meaning that they create in the course of social interactions with others. This intersubjectivity is the negotiated reality obtained by individuals reaching mutual understanding by discussing and ultimately agreeing what the 'truth' is.

The view is consistent with Giddens' (1984) 'duality of structure', where an individual's actions and beliefs are influenced by the structural properties of society, but at the same time the social structure is itself always subject to change as the result of the influence of individuals. So interpretive research describes and interprets how people conduct their daily lives. It is ideographic and inductive, and as such, it is rich in detailed description and limited in abstraction. It has internal coherence and is rooted in the text, which in this research refers to the meaningful everyday experiences of the people being studied. Therefore, evidence about social action cannot be isolated from the context in which it occurs or the meanings assigned to it by the social actors involved. It follows that in an interpretive research project there are no predefined variables, but a focus on the complexity of human sense-making as the situation emerges (Kaplan and Maxwell, 1994). In IS research in particular, interpretive approaches are aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context (Walsham 1993). However, Nandhakumar and Jones (1997) surveyed the IS literature between 1993 and 1996 and reported a lack of interpretive research. More recently, Chen and Hirschheim (2004) concluded that there have been negligible changes in these trends, despite years of advocacy for adopting alternative research approaches.

On the other hand, McGrath (2005) argues that IS researchers continue to reinforce the positivist and interpretive approaches, and are keeping critical research on the sidelines.

2.2.3 Critical information systems research

Critical researchers conduct research to critique and transform social relations. They do this by revealing the underlying sources of social relations and empowering less powerful people (Richardson and Robinson, 2007; McGrath, 2005). Critical researchers assume that social reality always changes, and the change is rooted in the tensions, conflicts or contradictions of social relations or institutions. They focus on change and conflict, especially paradoxes or conflicts that are inherent in the way social relations are organised. They argue that such paradoxes or inner conflicts reveal the true nature of social reality. The idea of a paradoxical inner conflict or contradiction that brings about change is called the *dialectic*. The critical researcher probes below the surface reality to discover these deep structures of this dialectic.

The critical approach mixes nomothetic and ideographic perspectives (discussed in the preceding sections). Nevertheless, while it agrees with many of the criticisms that the interpretive approach directs at positivism, it introduces some of its own critiques and it also disagrees with interpretivism on a few aspects. Critical IS researchers criticise the positivists for being myopic, managerialist, antidemocratic and non-humanist in their use of reason (Richardson and Robinson, 2007; McGrath, 2005). They criticise positivism for failing to deal with the meanings of real people and their capacity to feel and think. The critical approach also asserts that positivism ignores the social context, and argues that positivists defend the status quo because they assume an unchanging social order, instead of viewing current society as a particular stage in an ongoing process.

Critical researchers also criticise the interpretive approach for being too subjective and relativist, amoral and passive. For instance, the critical researcher disagrees with the interpretive approach position that all points of view are equal. They also admonish the interpretive approach for treating people's ideas as more important, as opposed to actual conditions, and for focusing on localised, micro-level, short-term settings, while ignoring the broader long-term context. Another problem they have is that interpretive researchers are overly concerned with subjective reality. In contrast to interpretive researchers, critical researchers take a strong value position in order to help people see false illusions around them so that they can improve their lives (Klein and Myers, 1999).

Critical research and interpretive research both see social reality as changing and subject to socially created meanings, but critical research disagrees with interpretivists' acceptance of any meaning system (McGrath, 2005). The critical researcher questions social situations and places them in a larger, macro-level historical context. In this way, critical research is partially deterministic and partly voluntaristic. According to critical researchers, although certain cases of people are constrained by the material conditions, cultural context, and historical conditions in which they find themselves, they can develop new understandings that enable them to change these structures, relationships and laws (Lyytinen, 1992, Walsham, 2005).

Despite the lack of a particular research methodology², a number of IS researchers have recently suggested the use of critical research to address what is considered rational and desirable use of information systems (Avgerou, 2005) and to account for the gross divide of IS innovation in the global context and its consequences (Walsham, 2001; Avgerou, 2005). McGrath (2005) argues that although interpretivism has done much to challenge the dominant normative view in IS literature and practice, deep understanding and rich description can take us only so far. McGrath (2005) proposes critical research for addressing some of the complex and seemingly intractable issues we face with IS today. Therefore to a critical researcher, knowledge grows by an ongoing process of eroding ignorance and enlarging insights through action. In contrast to the other two forms of research, a critical researcher believes that all research should necessarily begin with a moral point of view.

2.2.4 Justifying my philosophical orientation

What is required is that researchers understand the implications of their research perspective, and act in ways that reflect that knowledge ... researchers should ensure that they adopt a perspective that is compatible with their own research interests and predispositions. (Orlikowski and Baroudi, 1991:24)

When examining the literature of online self-service technologies presented in the next chapter, it became increasingly clear to me that the variance and functional-based view of online self-service technologies implementation was inadequate, and that they had serious shortcomings. Most of these theories tended to rely on simplistic characterisations and neglected real-world

² Most applications of critical research in IS refer to philosophies of the Frankfurt School or more specifically Habermas's critical social theory (CST) from which they derive a particular methodology (see Myers, 1994; Ngwenyama and Lee, 1997). CST is not a particular focus of this study.

complexities (Romano and Fjermestad, 2002). A number of researchers on online self-service technologies confirmed this, but offered no clear solution to this dilemma (Dabholkar, 2001; Dabholkar and Bagozzi, 2002). I believe that to understand innovations such as online self-service technology implementation, one must get to grips with people's meaning systems and how these are generated and sustained. Furthermore, it occurred to me that the myopic view of online self-service technology implementation may be a symptom of the restrictive positivistic research approach being used to study this contemporary phenomenon (Bitner, Brown and Meuter, 2002; Dabholkar, 2001). My study is therefore based on the interpretive research paradigm.

My ontological assumptions underpinning this research are congruent with a mild social constructionist approach (Brey, 1997). In a mild social constructionist approach, conventional distinctions between the social, natural and technical are retained, and explanations are provided by examining the ways in which social factors shape technology. Stronger forms of social constructivism explain technology as a social construction, and technological change by reference to social practices such as interpretation and negotiation of the actors involved. In the mild social constructionist approach adopted in this study, social shaping sanctions the role of non-social factors in technological change, and is therefore also willing to attribute properties and effects of technology (Brey, 1997). It follows that my epistemological position is that understandings of reality and all knowledge are social constructions and thus subjective, and this subjectivity applies to me, the researcher, as well. I wish to reveal the meanings, values, interpretive schemes, and rules of living used by participants in their daily lives. It is hoped that it will allow you and others to understand deeply or enter the reality of those being studied. In obtaining this understanding, I am not value free or apolitical as a positivist might be. In contrast, I will empathise with and share in the social and political commitments and values of those that I study. In doing this, however, I do not seek to improve the conditions constrained by various forms of social, cultural and political domination as well as natural laws and resource limitations (Avgerou, 2005). Instead, I will make these values explicit and not assume that any one set of values is better or worse. In the words of Walsham (1993:7), I will be satisfied

... at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context.

In summary, my aim is to get to know this particular online self-service technology social setting, and see it from the point of view of those in it. Using the interpretive perspective will enable me to increase my understanding of critical social and organisational issues related to the implementation of online services. This approach will also give me greater scope to address issues of influence and impact, and to ask questions such as ‘why’ and ‘how’ particular trajectories are created.

Within the broad style of interpretive research, many specific methodologies can be used to guide the information systems researcher, but in this research emphasis will be placed on approaches that are compatible with context and process descriptions. As explained by Walsham (1993), context is concerned with the multi-level identification of the various systems and structures within which the online self-service system is embedded. In this study, this includes elements such as the organisational department within which the system is being implemented, the organisation as a whole, and the various industry, national and global contexts within which the organisation is located. Subtle sets of contexts for an online self-service technology system include the various social structures which are present in the minds of the human participants involved with the system, including developers, traditional channel agents, users and elements of technology, standards, and so on. To accommodate the constant state of flux and change that online self-service technology initiatives are exposed to, a process strand of analysis³ is needed to address transformation that take place over time. The next section focuses on the research strategy that lends itself to this kind of analysis.

2.3 Qualitative research

Qualitative research is more suitable for studies that are rich in detailed descriptions around context and processes (Kaplan and Maxwell, 1994; Kaplan and Duchon, 1988). However, we need to understand some of the distinctions among the alternative qualitative methods to understand what is most appropriate for this study. ‘Qualitative’ implies that the data are in the form of words, as opposed to numbers. Whereas quantitative data are generally evaluated using descriptive and inferential statistics, qualitative data are usually reduced to themes or categories

³ According to Walsham (1993), a process strand of analysis should provide a detailed description of the events and actions that occur over time.

and evaluated subjectively. There is more emphasis on description and discovery and less emphasis on hypothetical testing and verification.

According to Polkinghorne (1991:112), qualitative methods are especially useful in the:

... generation of categories for understanding human phenomena and the investigation of the interpretation and meaning that people give to events they experience.

Whereas the quantitative researcher is apt to record a small set of previously identified variables, the qualitative researcher seeks a socially rich, in-depth understanding of the individual, and would argue that experimental and quasi-experimental methods cannot do justice to describing phenomena such as the end-user–organisation relationship or the experience of the developer.

Qualitative researchers do not possess a distinct set of methods that are all of their own (Denzin and Lincoln, 1998). They can make use of interviews, hermeneutic inquiry, survey research, participant observation and even statistics. Over time, various research traditions have evolved that bring to bear particular value-laden perspectives by which to investigate particular topics, such as ethnographic studies of cultures. Within these domains, the researcher may draw upon many specific methods, such as the ethnographer who employs both interviews and observational descriptions. In general, however, qualitative research implies an emphasis on processes and meanings over measures of quantity, intensity and frequency (Denzin and Lincoln, 1998).

The newer-generation qualitative researcher emphasises the socially constructed nature of reality, a close relationship between the researcher and the object of the study, and the context that influences the inquiry. Although there is great heterogeneity within the literature on qualitative methodologies, it is probably fair to say that such methods generally share three fundamental assumptions (Patton, 1990): a holistic view; an inductive approach; and naturalistic inquiry. First, the holistic approach stresses that the whole is different from the sum of its parts. Consequently, qualitative methods seek to understand a phenomenon in its entirety in order to develop a more complete understanding of a person, program, or situation. This is in contrast for

example with experimental design, which aims to isolate and measure narrowly defined variables, and where understanding is tantamount to prediction and control.

Second, qualitative research begins with specific observation and moves toward the development of general patterns that emerge from the case or cases under study. The researcher does not impose much of an organising structure or make assumptions about the interrelationships among data prior to making observations. This is, of course, quite different from the hypothetico-deductive approach to experimental designs that prescribes the specification of variables and hypotheses prior to data collection (Kaplan and Maxwell, 1994). Lastly, qualitative research is intended to understand phenomena in their naturally occurring states (Kaplan and Maxwell, 1994). It is a discovery-oriented approach in the natural environment. Experimental research, by comparison, uses conditions and a limited set of outcome variables.

There is no one-to-one correspondence between research techniques and the approaches to information systems research. I concur with the views of Braa and Vidgen (1999), who argue that different research methods represent differences in tradition, rather than fundamentally incompatible views of what constitutes knowledge. The legitimisation of multiple research approaches makes it all the more important to purposefully design a study commensurate with overall research goals and objectives. In order to answer the research questions, a qualitative approach was chosen because it is a more effective strategy for capturing individual viewpoints and developing a rich description of the social world we are interested in. However, Devers (1999) has called for an improvement in the use of qualitative and mixed-methods research in health services. The next section elaborates on how this improvement was sought and justifies why a case study strategy was most suited to the assumptions of an interpretive approach.

2.4. Case study strategy

IS research can encompass any number of alternative approaches, including laboratory experiments, field experiments, surveys, case studies, phenomenological studies, in-depth interpretive, narrative study and action research. The main research strategy selected for this research is an in-depth case study of a single organisation. Given the interpretive stance adopted in this research and the nature of the research question, the case study approach is an appropriate

research strategy for this topic. The same research questions could have been approached using surveys designed to examine changing patterns in the organisation and the various stakeholder communities and showing for instance the technique of implementing some other type of technology. However, this might not reveal in detail the unique experiences of the individual organisation and the layers of factors influencing the change. The case study strategy was chosen because of its advantages in creating novel and profound insights and its focus on examining the rich social, cultural and political influences on the implementation of SST initiatives in the context of a health insurance services organisation.

Yin (1999) defines a case study as an empirical enquiry that investigates a contemporary issue or event within its real-life context, especially where the boundary between such issues or events and its context is not clearly defined. This is equally relevant in novel areas where few theories have been applied (Cornford and Smithson, 1996). The chosen approach also has to maintain a balance between the wider context of healthcare and the issues of IS implementation and change at the local organisational level. Therefore the case study approach is especially useful in novel situations like SST implementations, where contextual conditions of the events being studied are critical and where the researcher has no control over the events as they unfold.

While case studies are normally associated with qualitative research, they might be classified as positivist, critical or interpretive according to the epistemological and ontological assumptions adopted. According to Walsham (1993), however, a case study strategy is the most appropriate method for conducting empirical research in the interpretive tradition. Yin (1999b) also makes a particular case for the use of case study methods in health services research. Although a positivist, Yin (1999b) acknowledges that other empirical methods are at a distinct disadvantage in developing our understanding of contemporary developments, specifically in healthcare systems that are linking multiple components in new ways and producing 'mega-systems' of great complexity. Yin (1999b) also adds that the system rules in healthcare are in a high state of flux, continually and rapidly changing. Yin (1999b) further adds that corporate affiliation and motivations are extremely difficult to track in the healthcare context and are even more difficult to understand using conventional approaches. Yin (1999b) also endorses the study of single facilities such as health centres, hospitals, and community mental health centres, explaining that a single case can often produce a more penetrating study.

Most researchers justify the selection of a case study design based on the nature of their research problem and the questions being asked. Their central argument is that the case study offers a means of investigating complex social aspects in which multiple variables are intertwined. They also tend to argue that the case study approach is a particularly appealing design for applied fields of study such as information systems. In fact, a number of researchers have demonstrated the effectiveness of case studies in bringing about a broader understanding of the IS implementation processes, a particular focus of this study, and the potential to perhaps improve practice (Schultze and Orlikowski, 2004; Kwon and Zmud, 1987; Markus, 1983). Case studies have proven to be particularly useful for studying IS innovations, evaluating IS initiatives, and informing IS policy. Similarly, this study intends to understand a practice-based problem. In addition, the research questions posed in this research address questions where practice-based concerns such as the experience of the various actors and the context of action are important (Lee, 1989; Galliers, 1991). In addition, the case study approach allows for ‘thick descriptions’ of phenomena under study (Yin, 1994). Such thick descriptions give the researcher access to the subtleties of changing and multiple interpretations (Walsham, 1995b), which would be lost in quantitative or experimental strategies (Flyvbjerg, 2004).

Despite its popular appeal among IS researchers, the case study strategy has been subjected to many criticisms. The strongest criticisms are directed at issues relating to the non-representativeness and lack of statistical generalisability of case study research. Positivist researchers using case studies attempt to overcome this criticism on the grounds that their case study is merely an exploratory method for a more detailed large sample work. This is not the argument in favour of a case study design in this research. In this research I concur with the reasoning of Walsham (1993:15), who argues that from an interpretive position:

The validity of an extrapolation from an individual case or cases depends not on the representativeness of such cases in a statistical sense, but on the plausibility and cogency of the logical reasoning used in describing the results from the cases and in drawing conclusions from them.

Similarly Flyvbjerg (2004) argues that one can often generalise on the basis of a single case, and criticises the scientific community for overvaluing formal generalisations and underestimating the ‘the force of example’. Equally, Orlikowski and Baroudi (1989) refer to a second mode of

generalisation related to the micro-context and to the totality that shaped it. They view social relations as a production of ‘generative forces’ operating at a more global level. For this reason, interpretive analysis is an inductive process, guided within a theoretical framework from the concrete situation to the social totality beyond the individual case. Following this argument, epistemology, the basis of one’s claim to knowledge, and research methods are interrelated. If one adopts a positivist epistemological stance, then statistical generalisability is relevant. On the other hand, an interpretivist is more likely to justify the broader relevance of a single in-depth case study with a rich and thick description, as compared to multiple case studies with a cursory analysis of the phenomenon (Ruddin, 2006; Lee and Baskerville, 2003). Indeed Barley (1986a) suggests that when studying social contexts of varied actions and interpretations, it is an unsound practice to group together organisations with radically different social histories and organisational setting. Moreover, undertaking multiple case studies is often a barrier from a time and money perspective. More crucially, assuming time and money are available to produce a worthy multiple case study, the product may be too lengthy, too detailed or too involved for practitioners and academics to read and use.

Another major criticism directed at the case study strategy relates to its lack of rigour in the collection, construction, and analysis of the empirical materials that give rise to the study (Dube and Pare, 2003). This lack of rigour is also linked to the problem of bias, introduced by the subjectivity of the researcher. A number of authors provide a positivist definition to what they consider rigorous and scientific adequacy. These include criteria such as *construct validity*, *internal validity*, *external validity* and *reliability* (Lee 1989; Yin, 1994). Construct validity concerns the issue of whether empirical data in multiple situations leads to the same conclusions, and is improved by using multiple sources of evidence, having key informants review the case study report to improve the accuracy of case study data, and establishing a chain of evidence so that a reader can trace this chain (Yin, 1994). Internal validity concerns the issue of whether empirical data provides information about the theoretical concept, and is achieved by using pattern matching to ensure that case study data cannot be explained by rival theories with different independent variables in the hypotheses (Yin, 1994). Reliability concerns the stability and consistency of the study over time, and is ensured by creating and maintaining a case study database and developing a clear case study protocol (Yin, 1994). External validity concerns the generalisability of the findings of the study and is ensured by selecting a ‘typical’ case (a single case that is representative of a large number of other cases) and selecting a case that is likely to

confirm the hypotheses, so that disconfirming evidence can be considered decisive (Markus and Robey, 1988).

Despite the criticisms, single case studies are an important component of pluralist research programs within information systems (Mingers, 2003). The single in-depth case study is particularly useful for this study, since it pertains to an innovation which is unique and presents an extreme case (Yin, 1994). Cases such as these are hardly ever readily available for replication, and this research was therefore by its very nature limited to a single in-depth case study. It is unlikely that the same configuration of individuals, groups, social structure, hardware, and software will unfold again in the same way in another SST implementation (Lee, 1989). Furthermore, a single case study became the ideal design because access to a revelatory case such as SST implementation in the healthcare insurance sector is usually inaccessible to academic researchers. According to Walsham (1995), single case studies allow the researcher to investigate phenomena in depth to provide rich description and understanding. Furthermore, there have been a number of seminal single case studies within information systems over the years such as Markus and Pfeffer (1983) and Myers (1994).

While a single in-depth case study strategy from an interpretive point of view can benefit from incorporating the rigours in designing and collecting data (Darke, Shanks, and Broadbent, 1998), Guba and Lincoln (1989) assert that positivist criteria are not particularly meaningful in the constructivist (interpretive) tradition. More recently, Klein and Myers (1999: 68) also point out that 'positivist criteria ... are inappropriate for interpretive research'. A number of researchers have now suggested a set of clearly defined methodological guidelines for interpretive case study research. Guba and Lincoln (1989) offer alternative criteria for interpretive research. These include *confirmability*, *credibility*, *transferability* and *dependability*. Guba and Lincoln (1989) define these as follows: confirmability, as opposed to construct validity, refers to the evidence that corroborates the study's findings. Such evidence should come directly from subjects and research context, rather than the researcher's biases, motivations, or perspectives. Credibility, as opposed to internal validity, verifies the match between the constructed realities of respondents and those realities represented by the researcher and attributed to the various respondents; transferability, as opposed to external validity, establishes the extent to which findings can be transferred to other settings. For findings to be transferable, the contexts must be similar. Therefore, it is the role of the researcher to identify key aspects of the context from which the

findings emerge and the extent to which they may be applicable to other contexts (Guba and Lincoln, 1989). Dependability, instead of reliability, establishes the extent to which the research would produce similar or consistent findings if carried out as described, including taking into account any factors that may have affected the research results.

As a way of further improving the quality of research conducted from the interpretive perspective, Klein and Myers (1999) propose a set of principles based on the hermeneutic orientation (see table 2.1). The set of principles is as follows: (i) the hermeneutic circle, (ii) contextualisation, (iii) interaction between the researcher and the subject, (iv) abstraction and generalisation, (v) dialogical reasoning, (vi) multiple interpretations and (vii) suspicion.

Klein and Myers (1999) show us how these principles are interrelated. They consider that a researcher decides what relevant context(s) should be explored: principle 2 is in use in this case. When it comes to how the data are going to be created in relation to the subjects, principle 3 plays its role. In deciding what theories or concepts and which research will be abstracted and generalised, it is principle 4 that is being used. When the researcher's own intellectual history is at issue, principle 5 is in use. Different versions of interpretations may come into play. If they require the researcher to examine the influences of the social context and document the multiple views of 'stories', the use of principle 6 is advisable. Finally, when the aspects of reality are presented in order to formulate research questions critically, principle 7 is in use. It is clear that it is not possible to describe all aspects of the context. The researcher has to decide what to say, depending on the audience and the story she or he wants to tell.

Klein and Myers (1999) recommend that researchers must work out for themselves 'how' and 'which' principle may be applied in any particular situation. They also believe that this set of principles may not be used mechanically, since the importance and relevance of each principle is partly derived from the manner in which the others are applied to the collection and interpretation of the field material. If this set of seven principles is used, the research work can become more plausible and convincing to its target audience. Hence the main aim of this set of principles is to improve the plausibility and cogency of the research.

Table 2.1

Summary of interpretive field research principles

The hermeneutic circle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole they form. This principle is central to all the other principles stated below.

Contextualisation requires that the study critically reflects on the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged.

Interaction between researchers and subjects calls for critical reflection on how the research materials (or ‘data’) were socially constructed through the interaction between researchers and participants.

Abstraction and generalisation entail relating the idiographic details revealed by the data interpretation to theoretical, general concepts that describe the nature of human understanding and social action.

Dialogical reasoning expects sensitivity to possible contradictions between theoretical preconceptions guiding the research design and actual findings (‘the story which the data tell’) with subsequent cycles of revision.

Multiple interpretations involve sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study.

Suspicion necessitates sensitivity to possible biases and systematic distortions in narratives collected from the participants.

Source: Klein and Myers (1999)

More recently, Atkins and Sampson (2002) provided a comprehensive guideline for the conduct of a single case study. Their guidelines emerged through a synthesis of leading research work of case studies, particularly in the IS field (Klein and Myers, 1999; Walsham, 1995a; Yin, 1984). The guidelines are organised in a framework which suggests five classification elements: way of thinking; way of working; way of controlling; way of supporting; and way of communicating.

This research study was undertaken using the important guidelines outlined in Table 2.2 because they demonstrate at least to some degree the quality components expected of competent interpretive case study research.

Table 2.2

Guidelines for undertaking case study research

Element	Guidelines
Way of thinking	Provide an appropriate argument for a case study being suitable.
	State philosophical stance and perspective. Take account of bias when performing data analysis.
Way of controlling	Define and use some form of quality control measures.
	Ensure that the results are credible.
	Determine how to draw conclusions and justify the results through appropriate use of theory.
Way of working	Construct a clearly formulated question that describes an important IS issue or problem of interest.
	Create a first cut conceptual framework.
	Devise first cut case study questions.
	Perform a pilot case study.
	Determine criteria for selecting the appropriate case and participants.
	Refine the case study questions based on lessons learnt from the pilot study.
Way of supporting	Revisit the research purpose/question and modify the conceptual framework as necessary.
	Choose appropriate methods for collecting data. Ensure that these are described in enough detail.
Way of communicating	Employ a systematic way to analyse the data. Ensure that these are described in enough detail.
	Create a plan for the final report
Way of communicating	Determine how the case study findings might be transferable to other settings
	Determine how to present the findings to the academic and practitioner communities.

Source: Atkins and Sampson (2002:103)

2.5 Research design

2.5.1 The selection of the case study site

Having identified the research strategy, I will now focus on the selection of the unit of analysis. The purpose of this research is to advance the understanding of an online self-service technology implementation in a healthcare insurance organisation context. This entails a study of broader and local contexts, such as user accessibility to the Internet in an emerging economy, and organisational issues, such as senior management's perception of the online self-service initiative's performance. A case study approach is used to describe the implementation of an

online self-service technology initiative at Africa's largest healthcare insurance company, which will be referred to by the anonym⁴ 'Healthcare Insurance Company' (HIC). The implementation effort began in the latter part of 1999 when dotcom was at its high point and continued during 2004, when I began the fieldwork. The fieldwork was conducted over a two-year period, beginning in February 2004 and ending in November 2006.

There were several reasons for the selection of this case. The first is that although the South African economy is perceived to be an emerging market, the South African healthcare insurance industry is widely recognised as being highly developed (Benatar and Fleischer, 2003). In fact, HIC is viewed globally as the pioneers in consumer-driven healthcare, and was in a fairly advanced phase of implementing its online self-service technology to complement this strategy. Therefore, this case has global relevance. Second, organisations such as HIC perform an information-intensive activity, including processing a member's personal details, claim details, service provider details, procedures and conditions information, tariffs and coverage benefits information, and the like. Their systems also interface with banks, hospitals, clinics, other financial services organisations, employers and so on. Third, organisations such as HIC are made up of traditional and alternative service options such as intermediaries, walk-in centres, branches and call centres which are well institutionalised, providing a richer and more complex environment of study.

Fourth, the organisation consists of people from a variety of professional backgrounds with their peculiar subcultures and interests, from healthcare practitioners, actuaries, call centre staff, information technologists, and accountants to broker consultants and underwriters, making for a dynamic organisational context. Fifth, the healthcare insurance industry touches on the daily lives of a broad section of South Africa's citizens and institutions. The ongoing inequity between those with access to private medical care and those dependent on the public sector remains one of the biggest challenges for the South African health system. Sixth, the South African healthcare insurance market is more mature than some of its counterparts in first world countries, who have only recently turned their attention to more innovative private healthcare funding mechanisms as a means of managing healthcare (Costello and Tuchen, 1998). In an attempt to curb the cost of

⁴ The senior management of the organisation provided access to the organisation on the basis of adopting an anonym to preserve the identity of the organisation and the individual respondents. The primary reason for this was the sensitive nature of the research undertaking. Since the anonym was not envisaged to be a major constraint to the goals of the research, this request was considered acceptable from the outset.

inflation, many healthcare insurance companies are now modelling their business on so-called consumer-driven healthcare. Much can be learnt from organisations such as HIC that have a relatively long experience with consumer-driven healthcare and online self-service technology and its implementation, making this case interesting for informing similar cases of SST implementation. Seventh, elements such as the user community, self-service technologies, organisational change and inter-organisational change that are the focal point of the research problem are difficult to assess because they represent complex interactions that can only be understood over time. Eighth, an Internet-based self-service technology was selected because an integrative theory in this area is lacking, despite its phenomenal growth. Furthermore, the use of the Internet as an example of a technology-based self-service can provide a richer understanding for a general technology-based self-service model.

Lastly, I adopted what may be regarded as a convenient, pragmatic or opportunistic approach to conducting fieldwork. My growing knowledge and experience enabled such a study to take place as I was employed in this organisation as a senior business analyst from 2001 to 2004 and completed my master's research at the same organisation. This approach is becoming more and more acceptable among academic researchers (Buchanan, Boddy and McCalman, 1988:55):

This pragmatic approach is supported by wider trends. Research access has become more difficult to obtain, for at least two reasons. First, further education has widely recognised the value of project work across a range of courses and many organisations have been deluged with requests for research access. We have been denied in some cases only because someone else got there first. Second as the economic climate becomes harsher in the private and public sectors, managers increasingly feel that they and their staff have little time to devote to non-productive academic research activities. These trends encourage the organisational researcher to become more innovative, devious and opportunistic in the research for sites and data.

As such, I had field access in ways that is not always open to full-time academics. In addition, executing the study and being present while the events unfolded proved to be very beneficial for developing a rich contextual understanding. Respondents could tell their stories vividly without being too severely hampered by the frailties of their memories. Moreover, I had fairly easy access to documents and other sources of information (eg intranet sources). A potential drawback

was my close relationship with some of the respondents who, one can argue, were ready to reveal information about personal and political agendas that could be construed as partial or tainted perspectives. However, this is viewed as part of the nature of interpretive research and thus does not pose any more problems than any other interpretive research study may face. Using two different theoretical lenses also assisted in overcoming this concern.

2.5.2 The unit of analysis

According to Yin (1999a), case studies can also be embedded or holistic. An embedded case study normally consists of more than one sub-unit, whereas a holistic case study observes a global programme or initiative. This study is more attuned to a holistic case study approach. The unit of analysis therefore consisted of the HIC organisation, a pioneer in consumer-driven healthcare, and its self-service technology initiative. The case study focuses on understanding the implementation of HIC's self-service technology initiative, an initiative that was aimed at facilitating the online electronic interactions between its clients and the organisation. Although HIC had service portals dedicated to providers, employers and brokers, clients in this case study refer to HIC's largest and top online priority at the time, the member-related portion of the self-service website.

2.5.3 Data sources

Data was collected using both primary and secondary sources (see table 2.3). Primary data sources included face-to-face semi-structured interviews with key informants of the study such as key personnel from HIC, representing business, online self-service technology and IT staff as well as other specialist areas. This was supplemented by secondary data in the form of internal documents, management reports, prior research via internal and external parties, presentations, the organisation's publications, technical documents and internal reports, the online inquiry database, and a sample of recorded calls handled by the main call centre as well as the online call centre support team. A number of researchers have demonstrated the benefits of examining written secondary sources as research material. Secondary data was also used to prepare for the interviews, as well as provide learning about historical decisions and the various key players and their roles. The secondary data also provided in-depth understanding of the organisation's

activity. The data collection and analysis process was conducted in an iterative manner. This is discussed in detail in the next section.

Table 2.3

Sources of empirical evidence

250 hours of participant observation including call centre queries and weekly meetings

Over 100 pages of field notes

55 formal interviews (planned)

9 informal interviews (planned and opportunistic)

Record of customer online feedback log (over 5 000 responses since inception of SST)

Approximately 100 documents (see table C2)

Listening to member calls
(management reports, annual reports, emails, strategic plans, magazines, news articles, forms, fliers, surveys, previous research)

1 research diary

Data sources⁵

2.5.4 Data collection and analysis

Semi-structured interviews and secondary source analysis were the main data collection mechanisms. Individual interviews carried out on site were the primary technique used to elicit information from the HIC respondents. The duration of these interviews varied from 1 to 2 hours. The fieldwork for the case study took place during the period from July 2004 to November 2006. From June 2004 to July 2005, my main focus was directed at creating a historical reconstruction of the SST implementation from 2000 to 2005. During this period I immersed myself in a large number of public and confidential reports that had been given to me by several of the managers and members of the implementation team. The reports included management reports, weekly operation reports, call-centre and online customer feedback, strategic plans, news articles, forms, fliers, prior research reports, presentations and so on. I also

⁵ Appendix C provides a more detailed description of the data sources used from the case study location.

spent my time familiarising myself more intimately with the two theories that informed my conceptual framework for this study.

The field research for the case study was carried out in two main periods, consisting of three months in mid 2005, three months in late 2005, and another month in late 2006. (It should be noted that I also spent three years prior to this actively involved in the SST implementation.) I conducted a total of 55 formal interviews during this period (see table 2.4). All 55 interviews were tape-recorded, and extensive research notes were taken. This practice ensured that everything said was preserved for analysis. By listening to earlier tape recordings, I was also able to improve my questioning technique. Despite reassurance to respondents that their feedback was confidential, a few respondents did show marked signs of uneasiness during the interview. It is my view that the respondents were nevertheless sincere during the interview process. In addition to taping the session, I took down written notes. The written notes helped me to pace the interview and probe on points that needed more clarity. I also recruited a transcriber who was familiar with IS concepts to transcribe many of the interviews for me. I was able to fill in the few places where the tapes were of poor quality or the transcriber made a noticeable error. This allowed me to spend more time analysing the data instead of transcribing. To minimise costs and maximise analysis time, I used an interview log as an alternative to fully transcribing the notes. Only the important statements or ideas expressed by the informants were noted (see sample interview transcript in appendix C). This strategy was used sparingly and only for those interviews that were recorded later in the study, the aim of these interviews being to confirm tentative findings.

To respect the fact that individual respondents define the world in unique ways, questions were more open-ended and less structured. However, the interview was guided by a list of questions and issues to be explored (see appendix C), but neither the exact wording nor the order of the questions was determined ahead of time, as evident in the transcripts. This format allowed me to respond to the situation at hand, to the emerging worldview of the respondent, and to new ideas on the topic. The questions were also piloted using five respondents to gain practice in interviewing as well as to learn which questions were confusing and needed rewording. Major categories of questioning included hypothetical, devil's advocate, ideal position, and interpretive questions. Questions also concerned the sequence of historical events, the present situation, and possible future trajectories (Walsham and Han, 1993).

Table 2.4

Summary of interviews conducted with design team

Nature of Group	Number of Interviews				Totals	
	Field trip 1	Field trip 2	Field trip 3	Other	Number of interviews	Number of respondents
Management team	1	6	7	2	15	11
Business/systems analysts	11		4		15	13
Usability analysts	1			2	1	1
Java developer	4	2	1		7	6
System architects	5		2	1	7	7
Graphic designers		6			6	6
Subject matter experts*		1	1	1	2	2
Marketing	1	1			2	2
Other		1		3	1	1
Total	23	17	15		55	49

Note: The category ‘other’ refers to progress and clarification meetings and email correspondence. The team responsible for ‘customer intelligence’ assisted in the coordination of the interview process. Appendix 2, table C2 contains the detail records of the interviews.* The stress and nutrition experts were subject matter experts on the implementation team

A number of documents (see table C2) were prepared for the research by participants after the study had begun. The specific purpose for generating these documents was to learn more about the situation, person, or event being investigated. In addition, several informal (non-taped) discussions took place between the respondents and me. Data collection and analysis by and large consisted of an iterative process, and this approach assisted with subsequent collection of data ensuring richer and deeper interpretation. There was no rigid separation between data collection and analysis, with the intention that the results of the analysis would help guide the subsequent collection of data. The cycle was repeated and theory was elaborated and checked as the process continued.

The interviewees were chosen for their relevance to the conceptual questions rather than their representativeness. Initial participants (at the first group interview) were asked to suggest names of other actors involved in the topic of the case study, and general networking through personal contacts expanded the sample. The total number of respondents to interview was reached heuristically, that is, the decision to stop adding respondents was taken when nothing new was

being learned from the interviews and a state of theoretical saturation was achieved. Although there were no set boundaries for selecting the interviewees, I favoured pursuing respondents who had a longer history with the SST implementation initiative. A few newcomers were invited to get a sense of their perspective. All the interviews were conducted in English and transcribed in 'Word' format. The information gathered from these interviews was subjective, although an attempt was made to present an account from various perspectives and levels within the organisation. Interview transcripts and written notes were analysed systematically through iterative and repeated re-reading. This made it possible to gain an increasingly profound understanding of each interviewee's viewpoint and perspective, of links and contradictions within and across interviews, of complex contextual factors emerging from these interviews and of the many relationships between the relevant concepts. During the transcription of the interviews and based on my interpretations, key themes were identified and new perspectives and questions generated. These themes subsequently acted as inputs to discussions with interviewees and guided further analysis and interpretation of the transcripts. For example, as an important event occurred and the individuals who were involved in the process became clearer, I discussed the importance of these people and their roles with other interviewees. These interviews, together with the large collection of rich, thick qualitative information from a number of sources, played an important role in addressing the complexity of organisational processes and of the context studied. This triangulation of data was important in counteracting any biases in the collection and analysis of data (Darke, Shanks, and Broadbent, 1998).

It is anticipated that this case study will provide a deeper understanding of the healthcare context and evidence in the form of patterns for the implementation of the self-service technology will emerge. Key participants were given a chance to check the results of the analysis by reviewing transcripts of their interviews (Nandhakumar and Jones, 1997). Discussions were also held in order to give them a chance to reflect on the output of the case. A formal documentation of the field material for the case study was created, which consists of the data or pieces of evidence, data collection instruments, interview transcriptions and field notes. This will enable other investigators to review the evidence directly and not to be limited to the written reports (see appendix C, table C2).

The analysis of data was prepared by following the trends in the patterns that emerged in the course of the research that explain past data. When interviewing respondents, one was listening

for narratives about why things happened in the way they did or did not, in the case of the implementation. Hence one is collecting multiple interpretations with all their contradictions, rather than finding the ‘correct’ interpretations (Yin, 1994). The analysis of data first dealt with the description of the case, based on the data collected via the various instruments. Second, an analysis was done of similar and different patterns in the case study. It is my contention that the descriptions of the case study allow one to gain insights into the specific context. Finally, considering that the research study is composed of one case study with multiple categories of respondents, it was necessary to search for these patterns. This enabled me to develop a strong body of evidence from the case.

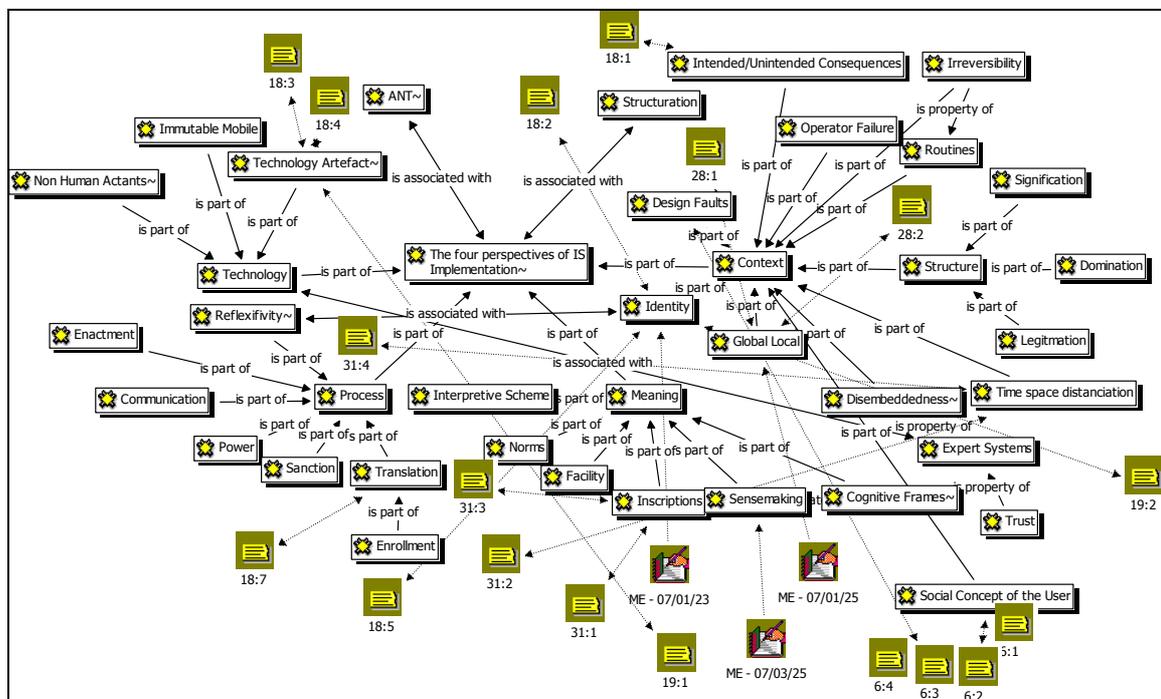


Figure 2.1 A snapshot of a conceptual network with nodes of memos and quotes

Note: Coding using ATLAS.ti Version 5.0

One method used for analysing the data is the constant comparative method. Data was systematically coded into as many themes and categories as possible. As the categories emerged and were refined, I began to evaluate how they related to one another and what the theoretical implications were. This pattern is sometimes called ‘grounded theory’ (Strauss and Corbin,

1998). However, this analysis was only loosely based on grounded theory since, unlike grounded theory, I used the theoretical frameworks to guide this process (see section 2.5.5). I used version 5 of ATLAS.ti to code and store these themes and categories at the textual and conceptual level. The textual level included activities such as coding text and writing memos. The conceptual level focused on model-building activities. ATLAS.ti was also used for the overall management of the research project and its associated data. This archive consisted of the case study field notes, case study documents, quantitative data and other electronic files generated during the case study. These ‘files’ were catalogued, indexed chronologically as the research process unfolded, and filed for easy access and retrieval (Basse, 1999). Using ATLAS.ti for easy cross-referencing assisted in maintaining a chain of evidence to support the case study conclusions (Muhr and Friese, 2004; Darke, Shanks, and Broadbent, 1998).

ST and ANT theories were used to provide guidelines and frameworks for conducting such research as well as expressing the findings from the study.

2.5.5 Theoretical framework

A conceptual framework was utilised for this case study research. It contains the key factors, the variables and presumed relationships among them (Miles and Huberman, 1994). A conceptual framework may be presented graphically or in a narrative. One of the main motivations for developing a conceptual framework is to help focus the research and to avoid ‘information overload’. The initial conceptual frameworks were revised many times until the point of closure, but did not change significantly. The initial conceptual frameworks are presented graphically and in a table format in chapter 4 (figure 4.3 and figure 4.4 and table 4.1 and table 4.2).

Walsham (1993) maintains that in the interpretive tradition there are no ‘correct’ or ‘incorrect’ theories. Instead, they should be judged according to how ‘interesting’ they are. Thus interpretive researchers can only claim that the theories presented are interesting to them and expect them to be interesting to those involved in the same areas. Interpretive theories will be made public and people will judge, evaluate and alter theories. The result is not the generation of a new theory, but the generation of an intersubjective one, that is, theory built by people working in the field. Walsham (1995b) suggests that theory may be used in three ways in interpretive case studies:

- To guide the design and collection of data
- As part of an iterative process of data collection and analysis
- As a final product of a case study.

In this research, theory was used as an iterative process between data collection and analysis. Whereas most of the research conducted on online self-service technologies focused on user characteristics, strategic importance and efficiency (Dabholkar, 2001; Dabholkar and Bagozzi, 2002), this study is attempting to understand the appropriateness and applicability of these technologies.

These questions dealing with online self-service technologies are enormously complex and involve multi-levels of analysis. For this reason it was felt that no single theory could do reasonable justice to this complexity. In chapter 4, I will draw from two theories, structuration and actor-network theory (ANT), to address the analysis of the case study. The research questions also assume and acknowledge the social construction of facts, and the philosophical approach taken is therefore interpretive. The approach is consistent with the theoretical underpinnings of ANT, which deals with growing and stabilising the network in the course of the online self-service technology implementation, and structuration theory, which provides a process theory for the broader and local social and organisational contexts.

2.6 Conclusion

In this chapter, I argued that a single in-depth case study approach is a more appropriate strategy in light of the philosophical stance and perspective of this study. A discussion of the research design for the study was done, elaborating on the appropriate methods used for collecting data and the systematic manner in which the data was analysed. A summary of this chapter is presented in table 2.5, highlighting the major decisions made in order to conduct the research work. The intention in chapter 3 is to embark on a theoretical exploration of literature topics relevant to understanding the implementation of IS innovations such as online self service technologies.

Table 2.5

Summary of the research design decisions

Level of decision	Choice
Epistemological and ontological assumptions	Interpretive
Research strategy	Single in-depth case study
Research techniques	Participant observation, semi-structured interviews, group discussion, documentation analysis
Organisation(s)	HIC, including holding company UAG and the WSC subsidiary.
Unit of analysis	Online self-service technology implementation initiative of H-World
Fieldwork timeline	H-World: October 2004 – November 2006
Subject	Implementation of self-service technology in a healthcare insurance organisation
Theoretical framework	Key concepts from actor-network theory and structuration theory

To conclude, the words of Merriam and Associates (2002:423) best sum up my experience:

The nature of qualitative research is as much a social and psychological process as it is a systematic inquiry. Because the process is a journey, if not a struggle, it is crucial to study a phenomenon that you are really curious about, and that you care about, that you are passionate about. This interest will motivate and sustain you through the process. Second, the process will affect you; we learn a lot about ourselves as we design and carry out the study, write it up, and disseminate the results. Third, it is only in the doing of a qualitative study that we really learn what it means to be the primary instrument of data collection and analysis, how the design is really ‘emergent’ and not pre-determined, how questions of authenticity, validity, and reliability become dealt with, and how ethics underlie all of these concerns. Finally it helps to have some companions on the journey; other people not only strengthen a study, but also provide the support that brings it to completion.



Chapter 3

Literature Review

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3.1 Introduction

Whereas chapter 2 focuses on my underlying beliefs, in this chapter I focus directly on the themes relevant to this research. In this chapter, I review the literature from various disciplines in order to understand what the contemporary debates are in the literature on Internet-based SSTs. Because IS is multi-disciplinary, I will draw upon literature in the fields of relationship marketing, services marketing and operations, organisational studies, information systems and health information systems research to make the current theories and their assumptions more explicit so that we widen our perspective and understanding of Internet-based self-service technology implementation and expand the set of events to look for in this research (Weick, 1995).

The research purpose is broadly concerned with ‘how can we broaden our understanding of SST implementations’ (see section 1.4). This phrasing shows three relevant subjects: self-service technology, implementation and social context. Each part will be examined in more detail in the following sections. I will start by examining the various conceptualisations of SSTs. I will then review the literature on IS implementation in general and Internet-based self-service technology implementation in particular. From the literature on implementation, it will become apparent that a multidimensional view of SST implementation, incorporating content, context and process perspectives can further shape our understanding. I will continue with a discussion about the literature on the social context, which includes the individual user, organisational, inter-organisational and other broader social contexts. I will then discuss the contribution of the literature review in addressing the research questions and their limitations.

3.2 Conceptualisation of self-service technology

3.2.1 Introduction

In this section we discuss self-service technologies (SSTs).¹ What do we mean by self-service technologies? In particular the conceptualisation of Internet-based self-service technologies is addressed and why it seems especially difficult to implement.

¹ As in the popular literature, the terms ‘self-service technology’, ‘electronic services’, and ‘e-commerce’ may be used interchangeably in this thesis.

3.2.2 Understanding SSTs

To understand SSTs, it is necessary to define as well as understand the characteristics of SSTs. SSTs are defined as technological interfaces that enable customers to produce a service independent of direct service employee involvement (Meuter, Ostrom, Roundtree, and Bitner 2000). Robertson and Shaw (2005) synthesise the current literature and characterise the self-service technology (SST) context as threefold:

- Consumer participation in service production and delivery, independent of service personnel
- A lack of interpersonal interaction between consumers and service personnel
- Consumers being required to interface and interact with technology

Recent advances in technology have created a surge in ‘technology-based self-service’ delivery options, ranging from on-site options such as in-room hotel checkout, and off-site options such as automated airline ticketing by telephone, to Internet shopping. These services can be offered over multiple channels such as ATMs, cellular phones, e-mail and the Internet. The Internet has become one of the major forces behind these service innovations. According to Piccoli, Spalding and Ives (2001), a website represents the most visible instance of what they term a network-based customer service system (NCSS), which they define as a networked-based computerised system that delivers service to a customer. In this research, I focus on off-site options and information-based services delivered over the Internet. These types of services are popular among financial services, healthcare, software, news and portal firms.

Internet-based services are also synonymous in the literature with the terms ‘e-service’ (electronic service) or ‘online customer service’ (Zeithaml *et al*, 2002). Broadly defined, an e-service can be viewed as an automated customer service using information and communication technology. Zeithaml (2002:135) defines an e-service as:

all cues and encounters that occur before, during and after the transactions.

An e-service can take many forms, ranging from pure sales – involving tangible products such as CDs and books with little or no service content – to pure services offering information-based

products such as healthcare information, status tracking or account information. According to Piccoli *et al* (2001), the rising importance of supplementary services as a source of customer value and competitive advantage is widely recognised. Most supplementary services are information based and need not be co-located with the product, but can be delivered electronically. Internet-based self-service technologies are becoming the core infrastructure for supplementary service provision among traditional firms. In the next section, we examine the current conceptualisation of Internet-based self-service technologies.

3.2.3 Internet-based SSTs as core, supplementary and complementary services

Most traditional services are essentially a bundle of activities consisting of a core product and a cluster of supplementary services (see figure 3.1). Similarly, the activities that users perform online can be grouped into core, supplementary and even complementary service components (van Riel, Lijlander and Jurriens, 2001). Although core services are often blurred online, they focus on processing a physical possession, while supplementary services involve information processing.

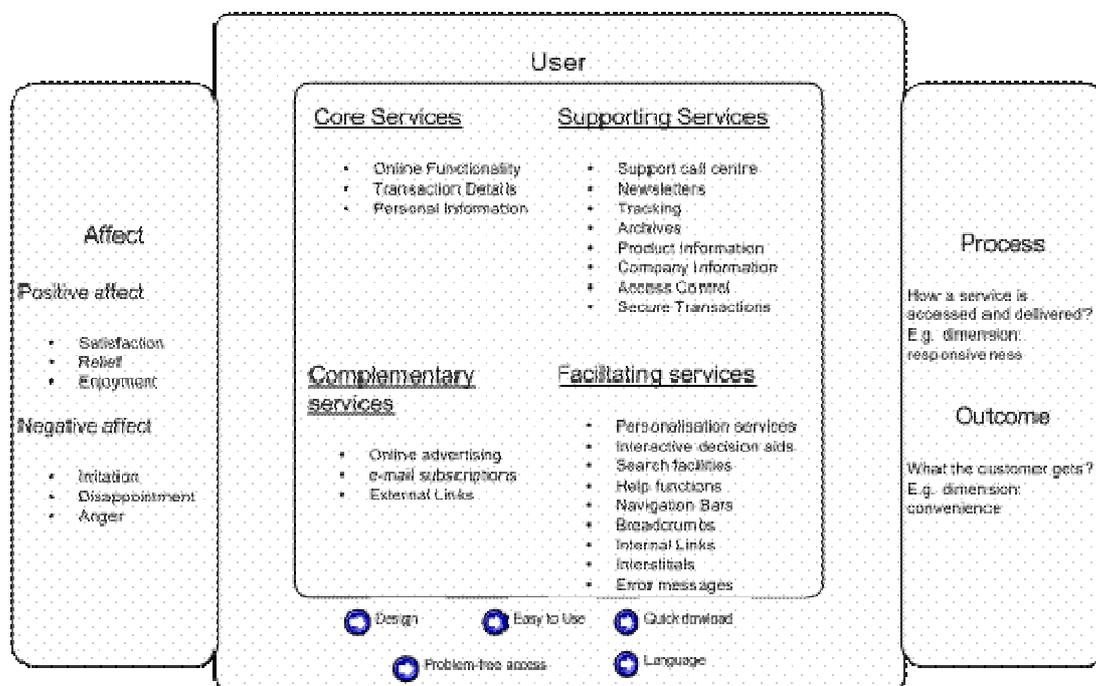


Figure 3.1 Conceptualisation of an online self-service technology

Source: van Riel, Lijlander and Jurriens (2001:366)

Supplementary services consist of facilitating and supporting services. Examples of facilitating services include activities such as search, order taking, billing and secure payment facilities. Amazon's one-click facility is an example of a facilitating service that provides competitive advantage in an otherwise product-driven industry. Other aspects of supplementary services are supporting services such as the forgot password facility, online product reviews, personal recommendations and a support call centre. Even a simple supplementary service, involving a hospitality feature such as a simple personal greeting on log-in, could enhance the user's experience with the e-service. These types of facilitating and supporting services, although distinguishable from the core service, have the potential to add value and increase the user's utility of the overall service. Supplementary services also provide the firm with the ability to differentiate itself from competitors in mature markets or easily replicable business models.

The user interface provides a key contrast when comparing traditional services with e-services (van Riel *et al*, 2001). The user interface is concerned with the functionality and content organisation, the look and feel, and usability of the e-service. It plays the role of a service representative who delivers the core, facilitating and supporting services for a traditional service business. Therefore the user interface performance can influence the overall evaluation of the e-service. Lastly, e-services can be independent of the core service and distinguishable from supplementary services. These are regarded as complementary services. Complementary services do not add value to the core offering, but add value to the e-service firm as a whole. For example, consider a banking site that offers ISP contracts or a health site that provides travel or other unrelated services. These become services in their own right and can enhance the value of the total service offering.

To conclude, the core, supporting and complementary services describe what the customer receives, the benefits of the e-service. The user interface and the facilitating services describe how the service is delivered to the customer. The process and outcomes of service delivery also extend to different communication channels, back-office, people, systems and processes (Chaffy and Edgar, 2000).

3.2.4 Supporting channels, processes and systems

Customers also evaluate the e-service by combining their evaluations of the different channels (Chaffey and Edgar, 2000). Customers may use e-mail to query a specific concern about the website. Therefore, the support staffs' inability to cope with backlogs in servicing inbound e-mails can influence the overall evaluation of the online channel. In addition, the excessive use of outbound e-mails for promotion and education campaigns can create dissatisfaction among users. As a result, many users may unsubscribe from these e-mail subscription services, thus diluting the effectiveness of future outbound e-mails and ultimately the core service.

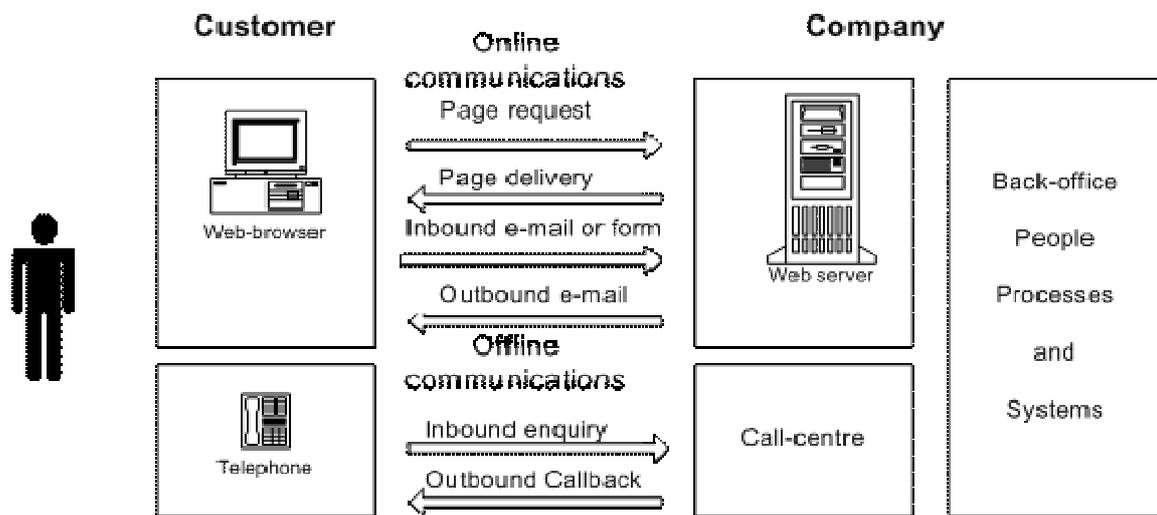


Figure 3.2 Communication techniques that shape service levels

Source: Chaffey and Edgar (2002:263)

Therefore service performance is influenced by the various communication channels and back-office, people, system and processes. In addition, service characteristics, including intangibility, heterogeneity, inseparability, and perishability, are amplified for e-services, making it extremely difficult for firms to understand, evaluate and address customer needs (Zeithaml, Parasuraman and Berry, 1990).

3.2.5 Conclusion on SST conceptualisation

The current conceptualisation of self-service technology in the literature is rather limited, emphasising the relationship between the technology, end user and the organisation. A broader conceptualisation of SST and its implementation is explored in the next sections.

3.3 IS implementation

3.3.1 Introduction

Despite the proliferation of Internet-based self-service technology in organisations, the implementation of these IS remains a significant issue (Pandya and Dholakia, 2005). Successful implementation of modern technology, innovations and management is crucial for enhancing the productivity benefits of an organisation and society at large. However, the successful implementation of IS remains a challenge. The problems involved are accentuated in the context of IS that are deployed to a broader user audience outside the organisational context. This necessitates a broader conceptualisation of IS implementation for Internet-based self-service technologies, which is captured in the next section. The second section discusses implementation from a social context and social process perspective. The final section summarises the human and social aspects of Internet-based self-service technology implementation.

3.3.2 Extending the IS implementation concept

The Chambers Dictionary of Etymology (2005:512–513) presents the origins of the word ‘implement’ as follows:

implement *n.* 1445, *supplementary payment; borrowed, probably by influence of Old French implement act of filling, from Late Latin implementum, a filling up, as with provisions of stock for a house, from Latin implere to fill. The meaning of tool, instrument, utensil, is first recorded in 1538 in some plural sense of equipment needed to do some kind of work, and in the singular sense of such a tool, in 1628. Both senses derive from the meaning of things which serve to supplement or complete a household, needed articles to do some kind of work or*

perform some duty or function etc. (first recorded in 1505).- v. 1806, to fulfil, complete, carry out; originally chiefly of Scottish use; from the noun of Scottish law with sense of fulfilment or full performance (1754)
– **implementation** *n. an implementing or fulfilment. 1926, formed from English implement, v. + -ation.*

While characteristics of fulfilment and performance are still useful connotations in IS implementation, the definition of implementation has undergone further changes in the IS literature. Given the inherent confusion about what implementation is in the context of IS research and practice, it is not surprising that it is described in the literature in a variety of ways (Cooper and Zmud, 1990; Myers, 1994). Generally some IS researchers focusing on the delivery of technical components refer to the conversion and installation process in a systems development lifecycle (Dutta and Roy, 2004). Others focus on the point at which the new system is put to use (Rogers, 1995). A popular definition of IS implementation has been conveyed by Swanson (1988:2), who views the phenomenon as ‘a decision making activity that converts a design concept into an operating reality so as to provide value to the client’. However, in the IS context, new meanings of IS implementation have been developed over time that transcend Swanson’s managerial emphasis.

The word ‘implementation’ is often a problem because of the differing perspectives of the actors within an IS context. For example, from a technical perspective, while a software developer views implementation as a process of converting design specifications into software code, the business analyst sees it as setting the gathered functional requirements to work in the real world to achieve the business case. In this thesis, implementation is not viewed simplistically as a set of deliverables or a stage in an information systems development lifecycle (SDLC). To avoid any misinterpretation, I will use the words ‘construction’ and ‘conversion’ to describe SDLC stages that denote implementation. Similar to Walsham (1993), I view implementation more broadly as a complex set of interactions among stakeholder groups throughout IS processes, such as idea formation, planning, development, operations, evaluation and use. The term ‘implementation’ is also used in strategic and operational contexts; it is used to define both a technical and an organisational process. Some conceptualisations capture the technological inevitability of the process, while other conceptualisations view implementation as a purely emergent set of social phenomena. For instance, Walsham (1993) suggests that IS implementation encompasses all the human and social aspects of IS implementation in an organisation.

Despite SST being a unique type of IS implementation, the current view of self-service technology is rather limited, emphasising the relationship between the technology and the end user (see section 3.2). Such a focus presents a very limited view of the whole process of service technology implementation. I would like to suggest that for Internet-based self-service technologies, IS implementation should be extended to include broader aspects of social and organisational reality, such as the development context of a country, user behaviour external to the organisation, and strategic, managerial, traditional service channels, as well as technical aspects of the organisation, among others. Hence, I propose a more holistic definition of implementation, relevant to the introduction of Internet-based self-service technologies into organisations and larger society, which reads:

Internet-based self-service technology implementation

A collection of social, organisational and technical resources that designers employ in the service transformation processes within a social context, in which the end user who is present interacts with information technology in the service production and delivery process, independent of direct service personnel.

Having emphasised the relevance of change and context in the broader conceptualisation of Internet-based self-service technology implementation defined above, the next section explores alternative research approaches to IS implementation.

3.3.3 Alternative perspectives of IS implementation

There are a number of perspectives on IS implementation research. Unlike the broader conceptualisation of implementation introduced above, the research stream in IS implementation has been generally grouped into three dominant streams: factor, process and political research (Swanson, 1988; Kwon and Zmud, 1987, Markus and Pfeffer, 1983; Lucas, 1981). The factor research paradigm has been a dominant paradigm in IS implementation research. Factor studies of implementation have tried to identify variables associated with some measure of implementation success. Lyytinen and Hirscheim (1987) conducted an exhaustive review of the IS literature pertaining to the topic of IS failure. They provide a classification of reasons for IS failures that can be useful in identifying the causes of failure in a particular case. These causes

are organised under four headings: features of the IS; features of the IS environment; features of the IS development process; and features of the IS development environment.

Similarly, Swanson (1988) identified nine critical factors, namely, user involvement, management commitment, value basis, mutual understanding, design quality, performance level, project management, resource adequacy and situation stability, that contribute to the success or failure of an IS implementation effort. De Lone and McLean's (1992) model also attempts to establish 'success' measures for IS implementation. While the model posits a process construct that is sensitive to temporal dimensions, its assumptions around the causal dimension are viewed as a particular weakness of this research. For example, the model assumes that positive impacts on the user will cause positive organisation impacts. This does not capture the realities of self-service technologies, where in certain situations it is likely that the impact for the firm may be positive, while the user impact may be negative, and vice versa. Nevertheless, only a few factors have shown to be important across multiple studies. Overall, the lack of consistency in the research has led some researchers to conclude that the factor approach is too narrow (Kwon and Zmud, 1987).

While the factor studies of implementation have attempted to identify the variables associated with some measure of implementation success, process research has focused on the relationship between designer and users and the impact of the system on the organisation (Sabherwal and Robey, 1993). There are four main models which could be categorised as process research. The first process model represents a technology-biased view of implementation. In this type of research the emphasis has been on the 'impact of information technology', on how information technology changes organisations. Using this model, the researcher focuses on technological innovation; technology is seen as an exogenous force that determines or strongly constrains the behaviour of individuals and organisations. One of the limitations of this model is that it takes a very static view of implementation and virtually ignores organisational issues. The model also assumes a cause-effect relationship where technology is the key driver of change, and focuses only on user acceptance of the technology. But the different ways in which individuals and organisations actively use technology are ignored.

The second model is a process-oriented organisational change model that was originally suggested by Lewin and Schein (Schein, 1969). The Lewin-Schein model of unfreezing-

changing-refreezing represents an organisation-biased view of implementation, in which implementation is seen as a sequence of generic stages. Using these types of models, the researcher focuses on social and organisational change activities, on the responsibilities of activities and interactions between the participants (Aladwani, 2001). One of the limitations of this model is that it focuses almost exclusively on the organisation as the driver of change, and virtually ignores technological issues. A related model is the innovation-based IS implementation model (Cooper and Zmud, 1990), which views implementation as a process of technical innovation in an attempt to integrate Rogers' diffusion theory and Lewin-Schein's change model (Schein, 1969). For the purpose of this thesis, the model was deemed inappropriate, particularly in its treatment of IS implementation as a linear process, and its overemphasis on factors and variables that facilitate or impede the implementation process. Also, it oversimplifies organisational change by assuming that the normal state of organisation is for it to be 'frozen'; the model overlooks the mutual adaptation and continual gradual changes that may occur in information systems and organisations.

The third model by Eveland (1987) proposes an action-oriented view on IS implementation. While the model views implementation as an interactive process between individuals, organisations and the structural factors of the technology, it has a strong bias towards managerial issues and effective management practices. Similarly, Marble (2000) asserts that researchers should seek to understand how implementors 'factor' intuition and judgement into their decision making. Another perspective of implementation focuses on organisational maturity. An example of this approach is Nolan's six stages development model (described in Mutsaers, van der Zee and Giertz, 2002). In this model, using information technology to automate business processes is viewed as a learning process, partly determined by the history of the organisation. One of the weaknesses of this model for this particular study is its mechanistic conceptualisation of organisations and its predictive treatment of technology outcomes.

On the other hand, user-centric models, the next model in our discussion, actively seek to involve users in the implementation process by improving the interaction between users and designers (Lucas, 1981). Lucas categorises system behaviour as an organisational problem and emphasises that user involvement is essential for avoiding a failed system. However, similar to the other views mentioned above, the user-centric view captures a very limited view of the IS

implementation process. For example, the fact that implementation is conducted within a complex, intertwined set of social and political interactions is generally ignored.

Markus (1983) proposes a political view to implementation that is more attuned to the organisational or social reality. In this approach, attention is given to the diverse interests of IT stakeholders and to how the success of implementation efforts depends on recognising and managing this diversity. She argues that systems implementation does not follow from the separate and independent effects of ‘people factors’ and ‘system factors’, but instead is the result of the interactive effects of the two set of factors. Her case illustrates an example of a system implementation that led to a change in an organisation’s balance of power, and those who perceived loss of power – because of the system implementation – resisted use.

Her views have given rise to another perspective of implementation which is based on a synthesis of concepts from the management of innovation literature and the organisational problem-solving literature. This model represents a technology/organisation interaction view of implementation, in which mutual adaptation is seen as an iterative process. However, a limitation of this model is that it generalises too much: it does not provide a framework for striking an appropriate balance between technological and organisational adaptation (Keil, 1991). The idea of an iterative process also ignores the fact that key decisions and key events may occur which can have a dramatic impact on the whole course of an implementation effort.

In summary then, while many studies have been completed, and a variety of theories of implementation have been suggested, no single theory of implementation has been widely accepted (Myers, 1995; Kwon and Zmud, 1987). While some progress has been made, each of the models is rather narrow and highlights only a particular aspect of information systems implementation. None provides an overarching framework within which IS implementation research can proceed. Furthermore, perhaps one of the main reasons for the lack of progress is that in most existing theories there is an underlying mechanistic view of the relationship between information technology and organisational change. An overarching framework within which implementation research can proceed can be achieved by applying the concepts of a contextualist approach (Marble, 2000). This is more important for information systems such as Internet-based self-service technologies, technologies that are implicated in a broader social context. This perspective is discussed in more detail in the next section.

3.3.4 A contextualist view of IS implementation

Pettigrew’s contextualist approach to implementation can be explained as a process of longitudinal change in terms of the context of change (the ‘internal and external’ why of change), content (the what) of change and the process (how) of change (see figure 3.3). The interrelationships, dependencies and mutual configurations of these variables over time provide the observation for an ‘implementation journey’.

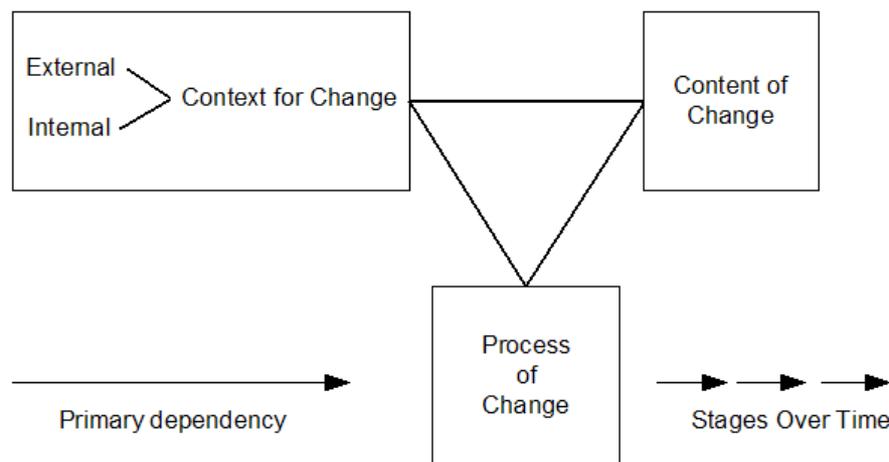


Figure 3.3 A framework for understanding organisational change
Source: Adapted from Willcocks and Sauer (2000)

The model supports vertical and horizontal levels of analysis and the interconnections between these levels through time. The vertical level refers to the broader environment, that is, the global, national or industry environment within which the change is taking place. On the other hand, the horizontal level refers to successive interconnections of events in historical, present and future time. Context is concerned with multi-level identification of the various systems and structures within which the information system is embedded (Walsham, 1993). While this can include the organisational department within which the system is embedded, it considers the organisation as a whole, and the various sectoral, national and international contexts within which the organisation is located. The model also considers subtle sets of contexts such as the social structures in the minds of the human participants who are involved in the implementation process. According to Walsham (1993), the interpretation of designers, users and others affected

by the system and their shared and contested sense of the world creates complex interacting contexts within which the information system as a human artefact is drawn on and used to create or reinforce meaning. However, the concept of context has a static flavour and must be combined with a second strand of analysis which addresses the area of dynamics. The area of dynamics emphasises the processes of transformation and the change which take place over time. As Walsham (1993:5) states:

... human action draws on context or structure and, in so doing, reinforces existing structures or contexts, or create new contexts. An investigation of the dynamic processes of action/context interweaving is fundamental to an understanding of the process of organisational change within which the information system is one element.

The appeal of the contextualist framework is its ability to provide theory for research such as implementation research, which involves change, and its ability to guide practice. In advocating the use of a contextualist approach to information systems research in matters of change, Walsham (1993) cautions that the management of organisational change should not be viewed as a straightforward, rational process, but as a jointly analytical, educational and political process. He also highlights that power, chance and opportunism are as influential in shaping outcomes as are design, negotiated agreements and master-plans.

A contextualist approach to Internet-based self-service technology implementation can therefore provide detailed observation over a long period of the events which occur in the organisation, deepening our understanding of these events in terms of the historical, cultural and political processes of the organisation. This approach promotes an insightful way of viewing the implementation of technology-based service innovations. However, change processes can be both deliberate and emergent (Orlikowski, 1996). In other words, whereas deliberate changes brought about by the implementation of an Internet-based self-service technology are realised as intended, emergent changes account for unanticipated or unplanned outcomes.

Deliberate changes which are perspectives of planned change models assume that the organisational context is one of stability. Because they are abstracted from the ongoing and grounded activities of organisational actors, they are unable to easily account for unintended consequences (Orlikowski, 1996). Emergent change seems more plausible in the context of

organisations experimenting with ICT-based serviced innovations. Therefore the contextualist approach needs to be augmented to account for emergent change. Two perspectives are relevant in this regard: the emergent perspective and the situated change perspective. According to Mintzberg and Waters (1985), change cannot always be planned in advance, but occurs in an emergent fashion and the result is not always what was intended. The emergent change perspective allows us to focus on planned initiatives related to change and to assess and account for the gaps between planned and realised changes.

The situated change perspective adds that change should be viewed through the situated practice of organisational actors as they improvise, innovate and adjust their work routines over time (Orlikowski, 1996). For example, Orlikowski (1996) showed how this perspective could account for essential micro-level changes revealing how actors responded to unanticipated changes and improvised in their evolving use of technology. Whereas the planned change perspective is grounded in assumptions of stability, the situated change perspective is grounded in assumptions of action. The notions of situated and emergent change are particularly relevant to the contemporary organisations that are seeking to implement Internet-based self-service technologies.

3.3.5 Summary on IS implementation approaches

The literature review suggests that no single theory of implementation has been widely accepted (Myers, 1995; Kwon and Zmud, 1987). While some progress has been made, each of the models discussed above is rather narrow and highlights only a particular aspect of information systems implementation. Practice-based theoretical perspectives that emphasise transformation, and multi-level contexts on process and on the links between process and context can potentially deepen our understanding of IS implementation. In the next section, we review the literature to assess the extent to which the content, context and process dimensions of IS implementation have been explored in the current literature to advance our understanding. Particular attention is paid to the self-service technology and related literature.

3.4 The social context of SST implementation

3.4.1 Introduction

Up to this point, our current knowledge of implementation systems in general and of SSTs in particular has not been synthesised into a coherent theoretical account. In attempting to synthesise the SST literature relevant to this research, the next section reviews the marketing and IS literature from individual, organisational, inter-organisational, and social perspectives. Figure 3.4 depicts the contextual environment which plays an important role in shaping the organisation's ability to effectively apply service innovations. The model assumes that to be effective, one must understand the impact of these divergent influences on self-service technologies in all five areas. Because self-service technologies are concerned with both IS and marketing activities, literature from both areas are appropriate for this research. The consequences of self-service technologies at the individual level from a marketing and IS perspective are discussed in the next section.

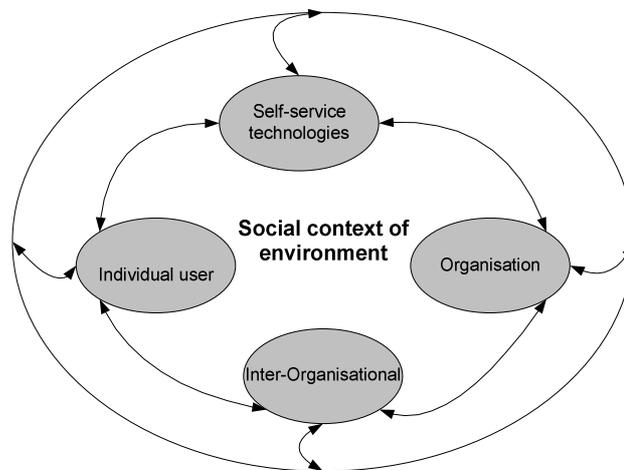


Figure 3.4 Aspects of the research problem²

3.4.2 From the perspective of the individual user³

Most research on IS use has focused on determinants of individual use of IS in the workplace (Davis, Bagozzi, and Warshaw, 1989). However, users in the e-services context possess

² The outer circle represents the broader social context and its interconnection with local contexts.

³ For the purpose of this thesis, the generic term 'user' is used to refer to consumers, business customers and intermediary customers. The scope of this study is limited to external users, external users being more relevant in the context of Internet-based self-service technologies.

substantial discretion in their use of electronic services. This may account for the protracted uptake of these services in some markets (Levenburg and Klein, 2006; Schaper and Pervan, 2006; Pandya and Dholakia, 2005). The economic benefits of high customer loyalty and achieving a critical mass are just as appealing to e-services as they are to traditional firms (Gefen, 2002; Reichheld and Scheffer, 2000). Two well-known theories, namely innovation diffusion theory and relationship marketing theory, reinforce the importance of customer retention to the firm's success. First, Rogers' (1995) theory of innovation diffusion argues that the long-term viability of most innovations will depend on its continued use. The second theoretical support for emphasising customer retention comes from relationship marketing theory, which emphasises the need to retain existing customers (Romano and Fjermestad, 2002; Gronroos, 1997; Palmer, 1996). Gronroos (1996:7) defines relationship marketing in the following way:

To identify and establish maintain and enhance relationships with customers and other stakeholders at a profit so that the objectives of all parties involved are met. This is done by the mutual exchange and fulfilment of promises.

For this reason, there is a significant emphasis in the literature on understanding the factors that motivate users to continue, discontinue using, or switching e-services (Pandya and Dholakia, 2005; Agarwal, Arjona, and Lemmens, 2001; Bhattacharjee, 2001). A major strand in the conventional IS implementation and marketing literature on understanding how to attract and retain users is the factor approach, which aims to identify a group of variables of relevance to implementation outcomes, normally by sampling a series of successful or unsuccessful cases.

While some researchers have examined individual user characteristics that favour acceptance of new forms of technology-based self-service, proponents of attitude theories⁴ have studied user attitudes toward various types of technology-based self-service and the effect of these attitudes on their behavioural intentions. Dabholkar and Bagozzi (2002) examined a variety of user traits and situational influences including demographic factors, psychographic profiles, and personality

⁴ Bobbitt and Dabholkar (2001) combine several well-known attitudinal theories, including the theory of reasoned action (TRA), the theory of planned behaviour and the theory of trying to understand user motivation and behaviour related to Internet-based self-service technologies. TRA is the base theory which has been extended by several researchers. For example, it has been applied to information systems in the form of the technology acceptance model (TAM) (Davis, 1989). Recently some IS researchers have applied TAM to the e-commerce context (Gefen, Karahanna and Straub, 2003; Koufaris, Kambil and LaBarbera, 2002). Fishbein and Azjen (1975) developed the TRA to predict and understand human social behaviour. TRA has its intellectual roots in social psychology. In particular it explains the area of attitudes and how attitudes relate to human behaviour.

traits. For instance Fram and Grady (1997) investigated demographic factors and found that young, educated males are more likely to use technology-based service options. A few studies have examined users who are security conscious, instant gratifiers, and hassle avoiders to understand their preferences (McMellon, Schiffman, and Sherman, 1997). Agarwal (2000) suggests four other user traits: self-efficacy, inherent novelty seeking, need for interaction with a service employee, and self-consciousness.

Some researchers focus on situational factors such as perceived waiting time and social anxiety (through perceived crowding). Ryan and Valverde (2006) caution that waiting has a significant effect on the commercial development of the Web. This is especially so, given that competition is but 'a click away' and the firm's traditional channels are but a phone call away. Some users reported that the way they felt about using technology and about interacting with service employees would be relevant. In other words, users who actually wish to avoid interaction with service employees are more likely to use technology-based self-service (Meuter *et al*, 2000; Dabholkar *et al*, 2003). Dabholkar and Bagozzi (2002) also refer to impeding situational factors such as 'emotionally charged technology-based self-service' contexts such as health kiosks, medical kits at home, or online investment banking in a turbulent financial market.

Furthermore, Bobbit and Dabholkar (2001) caution that users may also perceive technology-based self-service as being more risky than traditional forms of service due to the risks associated with some of these options, particularly the Internet. Featherman, Valacich, and Wells (2006) found that consumers often perceive e-services as being artificial and non-authentic, and that these characteristics increase the consumers' risk perceptions. It appears that consumers perform this assessment when deciding whether new e-services are viable alternatives to traditional service methods. These risks include financial, psychological, performance and temporal risks (Bobbit and Dabholkar, 2001). From a financial risk perspective, users may be concerned about using their credit cards online. A degree of psychological risk is also associated with not knowing the entity with which you are shopping. Performance risk could include the perception that the Internet does not provide enough information to make decisions. In these situations, users may prefer to interact with employees who can provide advice and recommendations. Temporal risk includes download times and delivery lead times. Not all users have access to broadband or high-speed data lines. Some users may view the Internet as too time-consuming for shopping purposes.

Developing a more compelling value proposition is therefore an important strategy (Ravald and Gronroos, 1996:20) for many e-service firms implementing Internet-based self-service technologies. Although value plays a significant role in determining customers' choices and their decisions to continue or end a relationship, up to now this concept has received less attention from scholars studying how customers evaluate e-services. Recently a number of researchers have studied the influence of the price component of value on behavioural intentions (Kung, Monroe and Cox, 2002; Reibstein, 2002). While price was found to be effective in acquiring customers, it was not very effective in retaining customers.

For Internet commerce, Kenney (1999) defines perceived value as the net value of the product's/service's benefits and costs, including the process of finding, ordering and receiving. However, while customers may have judged value in the past by combining price and quality, today's online customers may have a more elaborate concept of value. Therefore benefits and costs can be tangible and intangible. For example, an e-service cost can include the time it takes to find, order and receive a product or service. An example of an intangible aspect is the psychological cost associated with the mental effort (fear) of using a credit card online. Ravald and Gronroos (1996) propose that perceived value is also associated with the different values, needs and preferences as well as the economic resources of individual consumers. The dimensions of value also depend on the type of product or service.

Marketing's perceived value concept is not too dissimilar from the IS concept of perceived value. Perceived usefulness is an instrumental and outcome consideration that has been well established in the IS literature as an individual's subjective utility of an information system. Davis (1989) defines perceived usefulness as the extent to which users believe that using an information system will enhance their job performance. Other researchers have also supported the view that users will tend to use or not use an information system to the extent they believe it will help them perform their tasks better (Goodhue and Thompson, 1995). A number of empirical studies have confirmed that the performance benefit of using a system is a significant predictor of usage (Adams, Nelson and Todd, 1992; Davis, 1989). However, the study of perceived usefulness has been limited to job-related contexts where few information system alternatives are available. In addition, for hedonic purposes, where the focus is on the fun-aspect of using information systems such as home and leisure activities, factors such as enjoyment and ease of use were found to be more important than perceived usefulness (van der Heijden, 2004).

Nevertheless, this view has been supported by the marketing literature findings that convenience, saving time and money, being in control and avoiding interpersonal interaction are some of the benefits that customers look for in self-service technology (Dabholkar, 1996; Meuter et al, 2000).

Another important concept is service quality. Although the traditional literature supports the notion that service quality is closely tied to e-commerce success (see Zeithaml, 2000; and Zeithaml, Berry and Parasuraman, 1996) there is still no clarity on the applicability of traditional service tools and concepts to the online environment (Bitner, 2001; Bitner, Brown and Meuter, 2000:141). Only a handful of papers have looked at the conceptualisation of 'e-service' quality (Zeithaml, 2002; Zeithaml, Parasuraman, Malhotra, 2002; Loiacono, Watson and Goodhue, 2002). One of the earliest definitions of service quality alludes to the difference between what customers' expect and what they perceive to be receiving from the firm (Parasuraman, Zeithaml and Berry, 1988). Recently Zeithaml (2002:136) defined e-service quality as:

... the extent to which a Web site facilitates efficient and effective shopping, purchasing and delivery.

Although this definition is relevant to the e-tailing⁵ context, it does not appear to be appropriate for information-based services such as online banking, brokerage and health firms. A more appropriate explanation of e-service quality for the 'purer' e-services refers to the manner in which customers perceive and evaluate activities and outcomes before, during and after the e-service process (Zeithaml, Parasuraman, and Mahlotra, 2002:362). The latter definition captures the extent to which the website and support staff facilitate, perform and deliver on activities relating to information requested by the customer. This distinction between tangible and information-based products and services is important since these characteristics may influence the dimensions that customers use in their evaluation of e-service quality.

For more than a decade both traditional service and IS disciplines have used Parasuraman, Zeithaml and Berry's (1988) SERVQUAL to gauge the customers' assessment of service quality (Pitt, Watson and Kavan, 1995). Although SERVQUAL has been widely used, some of the main criticisms in the past included the ambiguity in defining and confirming the value of measuring

⁵ E-tailing refers to online retail stores.

expectations (Van Dyke, Kappelman and Prybutok, 1997). Others have questioned the applicability as well as the dimensionality of SERVQUAL in different service contexts (Carman, 1990). The literature is now debating whether SERVQUAL is applicable to e-services even though information processing is the focal point of both IS and e-services. The main area of contention is that IS and other traditional services depend on the direct involvement of service personnel, whereas e-services rely largely on the Web interface to enable customers to produce a product or service (Loiacono *et al*, 2000; van Riel *et al*, 2001).

Since the five SERVQUAL dimensions – reliability, responsiveness, assurance, empathy and tangibles – were developed from interpersonal encounters, some researchers suggest that while they may remain useful, they may not adequately explain e-services (Zeithaml *et al*, 2002, van Riel *et al*, 2001). Other researchers suggest that it may have to be reformulated to be meaningful in the e-service context (Voss, 2003, Chaffey and Edgar, 2000). For example, Voss (2003) suggest that reliability could express the extent of information accuracy and the error-freeness of links. Responsiveness could capture responses to user requests and feedback. Assurance could convey the safety of conducting transactions and the firm's policy on the use of personal information (Chaffey and Edgar, 2000). Empathy could be interpreted as the personalisation of communications as well as the awareness of the user's needs. Tangibles could refer to the appearance of the website. Other researchers suggest that e-services may require additional service quality constructs that are not captured by traditional information systems (Bhattacharjee, 2001:365; Molla and Licker, 2001:6). However, to date there has been little consensus on the dimensionality of e-service quality.

WEBQUAL provides further progress in conceptualising e-service quality (Loiacono, Watson and Goodhue, 2000). Twelve dimensions to measure e-service quality are proposed. These are 1) informational fit to task; 2) interaction; 3) trust; 4) response time; 5) design; 6) intuitiveness; 7) visual appeal; 8) innovativeness; 9) flow (emotional appeal); 10) integrated communication; 11) business processes; and 12) substitutability. Some critics suggest that WEBQUAL is more appropriate for measuring the quality of the interface design of the e-service rather than its service quality (Zeithaml, Parasuraman, and Mahlotra, 2002). While WEBQUAL might not capture the service quality of an e-service fully, it does focus on salient attributes of e-service quality such as the extent to which the e-service provides accurate, timeous and appropriate information that meets the users' needs. It also attaches importance to the response time for a

webpage to load in a user's browser, as well as the time it takes to complete transactions. Furthermore, it does address security and information privacy concerns as important aspects of trust.

Zeithaml, Parsuraman and Malhotra *et al* (2002) recently extended their e-SERVQUAL scale to provide what is possibly the most advanced conceptualisation of e-service quality to date. They produced seven dimensions including 1) efficiency; 2) reliability; 3) fulfilment; 4) privacy; 5) responsiveness; 6) compensation; and 7) contact. Efficiency, reliability, fulfilment and privacy form the core of the model. In this scale, efficiency refers to the process of getting the customer to access the website, search and find the product and related information, and to check out with little effort as possible. Next e-SERVQUAL limits its conceptualisation of reliability to the extent to which the site is available and functioning properly. Fulfilment is concerned with the accuracy of service promise, stock availability and the ability to deliver the service within the promised time. For an e-service firm, fulfilment can be translated to accurate processing and delivery of information. Then similar to WEBQUAL, e-SERVQUAL views privacy as the assurance that customer information is not shared and that transaction-related information is secure.

Zeithaml *et al* (2002) also regard responsiveness, compensation and contact as important dimensions during service recovery. For example, firms show their responsiveness when handling returns and managing complaints. They demonstrate compensation when meeting money-back guarantees and handling returns. Finally, the accessibility of customer service agents through the phone or alternative channels explains contact. Therefore according to this scale, capturing e-service quality requires multidimensional constructs that include core and recovery dimensions. However, the e-SERVQUAL scale has only been validated in the e-tailing context where products are ordered over the Internet. More recently, Delone and McLean (2004) revised their model by adding service quality to reflect the importance of service and support in successful e-commerce systems.

One of the most comprehensive models for measuring IS success was developed by Delone and McLean (1992). Based on the Shannon and Weaver's theory of communication, they identified six dimensions, namely system quality, information quality, use, user satisfaction, individual impact and organisational impact (See Delone and McLean, 1992). This model emphasises the

transformation of data into information (production) and information (product). Delone and McLean (1992) suggest that use and user satisfaction depend on system quality and information quality, but overlook the intangible, service elements of providing information to users prevalent in an e-commerce context (Pitt, Watson, and Kavan, 1995). In extending this model, Molla and Licker (2001) propose that e-commerce success depends on system quality and content quality but they also emphasise the importance of trust, support and service for e-commerce success. On the other hand, Liu and Arnett (2000) found that information and service quality, system use, playfulness, and system design quality were critical to website success. Nevertheless, they admit that e-commerce systems require additional constructs that are not captured by traditional information system success models (Molla and Licker, 2001).

Parasuraman and Colby (2001) developed a technology readiness (TR) typology of individuals to predict technology-related customer behaviour. Practitioners are being persuaded to use the typology to formulate their e-service strategies for acquiring and retaining ‘technology’ customers. They distinguish between five types of technology customers: explorers, pioneers, sceptics, paranoids and laggards (Liljander, Gillberg, Gummerus, and van Riel, 2006). For example, the theory assumes that explorers are easy groups to attract because they have an extremely high TR score, as opposed to laggards, who are usually the last group to adopt new technology. While this ongoing and evolving theory has been based on empirical research, the researchers do acknowledge that there are other ways to view a ‘technology market’ and caution that their theories should be regarded as models and not truths (Parasuraman and Colby, 2001:85).

The literature also extended the TR theory to distinguish gender differences in the propensity to embrace self-service technologies. The findings in the retail environment suggest that male and female consumers exhibit different perceptions and attitudes towards the usage of self-service technologies (Elliot and Hall, 2005). According to Elliot and Hall (2005), it appears that male consumers express a stronger desire to experiment with new technologies, while female consumers tend to exhibit less confidence in making new technology work and require greater assurance that the new technology will operate reliably and accurately.

The way in which a conventional user who is internal to the organisation interacts with technology is fundamentally different from an external user. This is especially relevant when the

organisation wishes to introduce a cutting-edge application that threatens to replace some of the human elements in the existing relationship (Orlikowski and Schultze, 2004; Barrett, 1999; Barrett and Walsham, 1999). Users may vary considerably in their receptivity towards the new innovation, and organisations may find it difficult to coerce users into compliance (Markus and Pfeffer, 1983). Orlikowski (2000) examined the emergence, improvisation, and change over time as users reconfigured their technologies or altered their habits of use, and thereby enacted different technologies-in-practice. In a developing country context, characterised by markets serviced by enduring traditional interpersonal relationships, Chen and Ning (2004) found that consumer evaluation criteria appear to be different between human-dependent and technology-dependent service delivery. Organisations therefore need a greater understanding of traditional relationships, which the self-service wishes to replace, and individual receptivity towards new relationships. To achieve this understanding, one needs to understand the technology as well. However, most research in this section ignores the technology perspective, and too few of these studies have attempted to explore the concept of the service encounter beyond the consumer's perspective. A broadened view would address the self-service technology as well.

3.4.3 From the perspective of self-service technologies

In the previous section, researchers focused primarily on user characteristics and on user behaviour. At the other extreme, the literature related to e-commerce has focused heavily on the medium.

The primary enabler of Internet-based self-service technology is the Internet. The Internet is a public network that is connected and routed over gateways, enabling communication between millions of connected computers and related devices, over most parts of the globe (Turban, King, Lee, Warkentin and Chung, 2002). Users use their PCs as clients to request services from server computers that hold information, and host business applications. The client PCs within homes and firms are connected to the Internet via their local internet service providers (ISPs) who have connections to the major national and international infrastructure or backbones (see figure 3.5). The user's request is sent to the ISP and routed across the Internet to the destination server. The server then returns the requested webpage if it is a static webpage, or if it requires reference to a database, it will pass the query on to a database server and return a dynamically created webpage to the user.

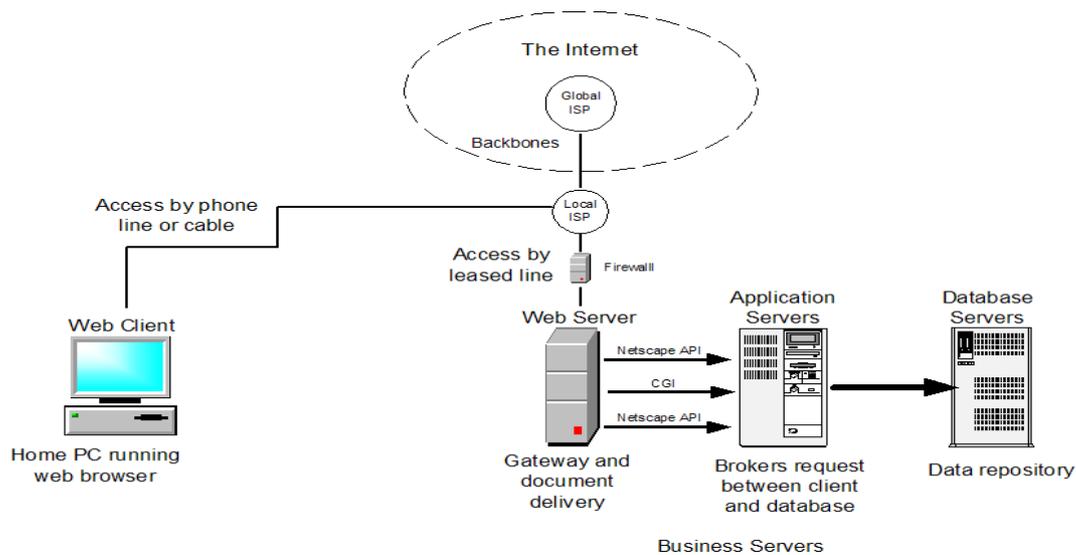


Figure 3.5 Internet-based SST infrastructure components

While Internet-based self-service technologies rely on the coming together of various components, the Web browser has taken centre stage in the research on self-service technology implementation. The browser has possibly become the most widely used software application and thus a de facto technological standard (Faraj, Kwon and Watts, 2004). It is not surprising then that early research on Internet-based self-service technologies also emphasised the importance of the browser and more specifically the user interface. Research in this area focused on flow and other experiential aspects. Flow has been described as a psychological state where users become totally absorbed in an activity, narrowing their focus of awareness, losing self-consciousness, yet feeling in control of their environment (Csikszentmihalyi, 1990). Csikszentmihalyi identified immediate feedback, the balance between the user's skill and the level of challenge and sense of potential control as some of the key dimensions of flow. Intuitively a website whose pages are free from errors and that responds quickly, whose navigation design is aligned to the user's skill level and creates an impression of control is one that is reliable, responsive and has good design. Although studies have shown that flow does facilitate repeat visits (Novak, Hoffman and Yung, 1999), the flow approach is probably more suited to specific service categories such as entertainment-related services. Furthermore, the flow dimensions cater mainly for intrinsic motivators of information system use that only partially explain acceptance of e-services (Davis, Bagozzi and Warshaw, 1989). Related to the concept of

flow is another quality or non-functional requirement used to describe the web interface, usability. According to Nielsen and Loranger (2006:xvi):

Usability is the quality or attribute relating to how easy something is to use. More specifically, it refers to how quickly people can learn to use something, how efficient they are while using it, how memorable it is, how error-prone it is, and how much users like using it. If people can't or won't use a feature, it might as well not exist.

However, there is no guarantee that a website that is easy to use will be used if it does not offer some instrumental value as well.

Up to now we have assumed that PC-based Internet access is the only way to interact with self-service applications. However, alternative digital technologies include interactive digital television and mobile or wireless access to the Internet. For example, mobile phones have been used to send emails or short message service (SMS) (eg order confirmation) to compete or complement the PC-based channel. Wireless application protocol (WAP) phones or, in more common parlance, Internet phones have also been used to access information on websites. Interactive TV, delivered by a range of media such as cable, satellite, and terrestrial (aerial), offers similar e-commerce facilities to the Internet as the PC-based Internet access, but provides a simpler interface that can be operated from a remote control. For the moment, the amount of services available on interactive TV is lower, given bandwidth issues, but the potential for self-servicing is high, given that in some countries, like the UK, levels of access to interactive TV rivals the Internet (Chaffey, Mayer, Johnston, and Ellis-Chadwick, 2000). A number of studies (eg Black, Lockett, Ennew, Winklhofer and McKechnie, 2002; Gupta, Su, and Walter, 2003) have tried to ascertain what drives consumers in their choice of a particular technology-based channel. For example, Black *et al* (2002) investigated why consumers, although purchasing essentially similar financial products, used particular channels in preference to others. The results of their study showed that aside from consumer characteristics already discussed, three categories of factors influenced consumers' choice of channel: product characteristics, channel characteristics, and organisational factors.

Whether a user deems a technology-based self-service to be appropriate may depend on the product category. For example, users may be comfortable with using online banking to view

their statements, but may have different opinions about using the Internet for transferring funds. This may be due to the perceived risks or the lack of experience associated with a product category. A number of researchers have confirmed that users are hesitant to purchase expensive or technically complex products through the Internet. Users who do not have experience of a particular product may be reluctant to purchase it online. Research confirms that software, books and music are commonly purchased through the Internet. They involve little risk in terms of defects, fragility, and style, etc. Another factor relates to product classification. According to some researchers, users evaluate products according to search goods or experience goods classification (Bobbit and Dabholkar, 2001). Search goods are characterised by those goods for which complete information on the dominant properties are available before purchase and can be evaluated by the user. This may explain why airline tickets are purchased over the Internet. On the other hand, experience goods or services are difficult for the user to evaluate without experiencing the product. For instance, an experience product includes a visit to a restaurant. Users may use the Internet as a preliminary source of information and visit the site for the experience. The third category are credence products, which are difficult to evaluate even after they have been experienced. Therefore users who receive medical treatments cannot evaluate these services because of lack of knowledge and experience in these areas. They are likely to be very wary of receiving these services through the Internet, but may be open to searching for information in an effort to learn more about these complex products or services.

While the application of Web-based technology is central to most SST solutions, the solution brings together other important technology components. SSTs are only possible because of new forms of client server and network computing. They also rely on intra and inter-organisational links, made technically and economically viable because of enterprise software and other sophisticated integration software. For example, Wade (2002) elaborates on the ICT infrastructure components making up a cardiac monitoring system at the Mid America Heart Institute in Missouri. The goal of the cardiac monitoring system is to provide real-time patient monitoring and continuous access of patient data to the caregiver. The solution consists of a full array of technologies, including a virtual private network (VPN) connecting multiple hospitals, wired and wireless patient monitoring devices (heart monitors) within each facility, and the use of Windows CE devices to allow physicians to monitor patients real-time via the Internet.

The literature places significant emphasis on the operational characteristics of technology. The quality of the system, robustness, availability (eg 24/7), connectivity, and consistency are some of the key operational characteristics of a SST system (Chaffey *et al*, 2000). Another aspect of Internet-based SST infrastructure capability covers risk management. Here consideration is given to exposure to intruders, which implies the need for site security and firewalls to prevent break-ins. Exposure to online crime implies the need for payment security systems, etc. The global reach of SSTs also implies operational robustness and the need for continuous service. One of the great challenges for management is to be able to assess which new technological innovations can be applied to enhance the SST performance. For example, personalisation technology can be used to potentially enhance the user experience and increase their loyalty (Manvi and Venkataram, 2005). However, a technique such as personalisation requires a significant investment in software and hardware technology.

The way in which technology innovations change the way people interact, thus profoundly influencing social structure, has received scant attention in the literature. The greatest potential impact of these technological changes is on the structural properties of societies in general (Callon, 1986; Madon and Sahay, 2001; Montealegre, 1997). For example, the Internet has not eliminated the need for various actors within a specific context through disintermediation. Now, in hindsight, some researchers are recognising that it is more appropriate to examine the ‘reconfiguration’ of roles within a specific context (Schultze and Orlikowski, 2004; Barrett and Walsham, 1999). An understanding of self-servicing requires an understanding not only of technology and its capabilities, but also of the existing structure of which it becomes a part, and how these capabilities might alter that structure (Walsham, 2001). For example, the tacit skills of the health insurance broker may not be amenable to the online health insurance purchasing application (Knights, Murray, and Willmott, 1993; Lowe, 2000). Furthermore the digital divide may exclude customers from accessing these services (Madon, 2000; Madon and Sahay, 2001). For these reasons, self-service technologies must be understood within the broader societal context.

3.4.4 From the perspective of organisational change

The transformation of the service process using technology also requires organisational changes such as the redesign of work, adapting skill requirements, and organisational structuring

(Hammer, 1997; Orlikowski, 1996). It is therefore important to assess the capacity of these organisations to effectively implement service innovations. From an organisational perspective, the relationships between strategy, structure, systems, people and environment are crucial to the organisation's capacity to implement SSTs. According to Afuah and Tucci (1998), from a structural perspective three aspects are important. The first aspect deals with *coordination*, specifically of resources so that they can be deployed in an efficient and effective manner in order to offer customer value. The second problem deals with *differentiation and integration*. Organisations are structured functionally, thereby developing specialist skills in their specific area by building on the stock of knowledge that underpins their activities. However, the implementation of Internet-based self-service technologies often entails cross-functional collaboration and interaction. Therefore the functional organisation structure may be integrated for achieving optimal performance via a project organisational structure. In a project organisational structure, employees will be organised by the SST project and not according to traditional functions. The lateral communication enabled by a project organisational structure is widely regarded as being an advantage for innovation. Organisation structures can also be characterised as *organic or mechanistic*. Whereas organic structures are more loosely defined, fostering an environment for idea creation and exchange, mechanistic structures follow a traditional chain-of-command approach.

Willcocks *et al* (2000) identified five approaches to organising the use of e-commerce by large organisations. In a *Greenfield* approach, the firm puts its e-business arm into a separate organisation and isolates it from the parent firm, with linkages typically only through the head of the new unit. The advantages of such a model are that it allows for a spin-off with an IPO; and it is a good way of retaining Net culture, unstifled by the parent firm culture. It is often excellent for attracting new people who may be tempted by a dotcom initiative. It is also potentially attractive to alliance partners who want access to the parent firm brands, but without the red tape of big-firm hierarchy. The second approach is *semi-autonomous in parent firm*. Here the company has more linkages than the Greenfield approach. This form of organising relies on a corporate culture that is open to innovation and one where there is considerable senior management support. A third approach is *fully integrated into firm in functions*. Here e-commerce reports in to functional and business unit heads. The potential advantages of this design are twofold: first, senior management is more apt to engage the firm into electronic commerce; and second, the e-commerce culture may diffuse more fully through the organisation.

A disadvantage is that the traditional culture may overwhelm the net culture, rather than the reverse. This approach relies on strong leaders who are able to lead their firms to take a Net culture. A fourth approach is *fully integrated in parent firm IT*. In this approach technology is treated as sovereign and IT directs the approach. Some researchers have questioned the business impact that these initiatives will have without the business units directing development. However, others argue that it depends on the level of business orientation of the IT department. *In a parallel organisation*, a new organisation is enabled which pilots and experiments with e-commerce and Net or e-culture from its inception. New acquisitions become part of the new division as the e-organisation is viewed as a good place to initiate transformation. In time, the e-organisation and the traditional organisation merge, infusing the mother firm with an e-culture and new e-approaches. This approach is uncommon among firms. Organisation structures and forms tell us *what*, but very little about *how* implementation actually takes place in organisations. Thus far we have seen how structure and organisational forms can be changed to accommodate e-commerce. Similarly, implementing an Internet-based self-service implies a fundamental change to the architecture of the business. In many cases processes, structures, culture, internal control systems, and human resource mechanisms have to be adapted.

According to Willcocks *et al* (2000), a major issue facing firms is whether e-culture should be adopted and how far traditional cultural elements and practices need to be part of the e-business strategy. As alluded to earlier, the rise of the Internet and accompanying changes in business models and practice have created a formidable challenge to established and establishing organisations. Furthermore, the rapid liberalisation and technology diffusion has important implications for the job market (Willcocks *et al*, 2000). Some studies indicate that the current IT skill deficit in Europe is around 1.7 million jobs. Projections in the US suggest that IT vacancies could rise to 1.2 million over the same period. The demand for these skills provides real challenges for employers. Higher-level skills requiring a university-level training take three to five years to develop. The 'war for talent' will steadily move up a gear. Some researchers are suggesting that human resources (HR) practices need to change if the opportunities of e-business are to be realised. Career paths and employee motivation are two of the major issues facing IS professionals (Igarria, Meredith and Smith, 1995). In South Africa, the perception of affirmative action policies and technical orientation of IS professionals are also important issues to consider. In the knowledge business, researchers have observed that whole teams are poached from competitors because of the tacit knowledge and work relations of the team that create more value

than one individual. These trends are amplified in a developing country context where technical skills are scarcer (Amos, Scott, William and Scott, 1996; Du Plooy, 1995; Igbaria, Meredith and Smith, 1994) and can have negative implications for the delivery of quality self-service applications.

3.4.5 From the perspective of inter-organisational change

In broad terms, inter-organisational information systems refer to transactions conducted electronically over the Internet, extranet, intranets or private networks between organisations (Turban *et al*, 2002). Figure 3.6 below describes how the exchange process – which is traditionally initiated by the seller by producing goods or services to meet the needs of the buyer – can change with the implementation of ICT, where for strategic reasons buyers are also now able to initiate the exchange process. Therefore the buyer or seller may initiate the implementation of an inter-organisational information system (electronic intermediary) to automate the trading process. The restructuring of channels to the consumer by means of such phenomena as the Internet offers opportunities for traditional service providers, but also holds the threat of new entrants to conventional markets, so-called pure-plays⁶ challenging traditional intermediary niches. This has been termed disintermediation.

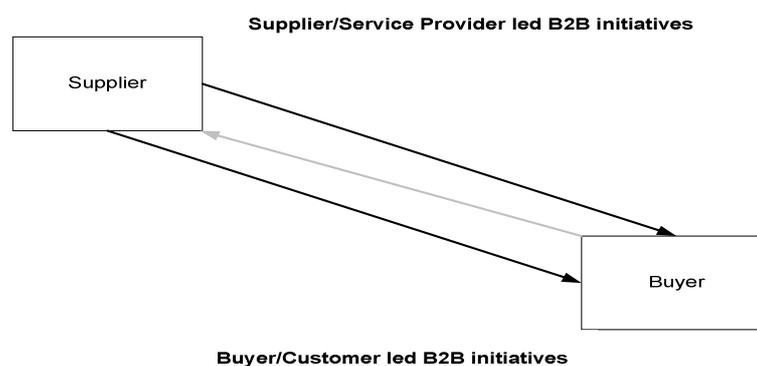


Figure 3.6 Market exchanges: traditional and reverse

Source: Chaffey *et al* (2000)

In practice, the reality of channel proliferation, and new opportunities for different kinds of organisation to create commercial value have resulted in an effective re-intermediation of

⁶⁶ Pure-play refers to the phenomenon where traditional intermediaries are bypassed and goods and services are offered solely through the Internet.

channels with new players and new configurations of the network and actors. These new intermediaries are taking advantage of the Internet's capability of linking and aggregating information and knowledge. An example is the special comparison site in financial services. These new entrants are also altering traditional relationships by creating new kinds of customer relationships, mediated via technology. These relationships can be explained using two perspectives: the transaction-based view and the social embeddedness view (Schultze, 2003).

The transaction-based view suggests that as buyers and suppliers become physically connected by networks, they may revert to transaction-based relationships. In contrast, the relational view suggests that any long-term relationship depends on 'emotional' relationships based on trust, and are questioning the appropriateness of electronically mediated interactions where trust has already been established through face-to-face personal relations. Proponents of transaction cost economics⁷ seek to implement a self-service strategy to replace existing interpersonal relationships between organisations, intermediaries and users with technology. They favour arm's length relationships between the user and the organisation because of the perceived reduction in transaction costs, coordination and search costs.

On the other hand proponents of the social embeddedness theories⁸ argue that embedded relationships are more efficient than arm's length relationships and suggest that such relationships will remain unchanged despite advancement in communication media (Granovetter, 1985; Uzzi, 1997). Lately, some researchers have observed that existing personal relationships between organisations are more subtle and complex than is portrayed by the mainstream literature (Uzzi, 1997; Uzzi, 1999; Webster, 1995). Kraut *et al.* (1999) found that the use of interpersonal relationships for co-ordination which many firms view as an alternative to electronic network use was positively associated with greater network use.

⁷ The theory of transaction cost economics proposes that the use of electronic communication media will reduce the costs of inter-firm coordination. Malone *et al.* (1987) suggests that modern computer and technology networks sufficiently reduce the cost of coordination, allowing firms to achieve these benefits, without incurring the transaction costs traditionally associated with intermediaries. The theory assumes that the electronic brokerage effect will promote disintermediated, arms-length exchanges replacing socially embedded relationships.

⁸ Uzzi (1997:37) defines social embeddedness as 'the degree to which commercial transactions take place through social relations and networks of relations that use exchange protocols associated with social non commercial attachments to govern business dealings'.

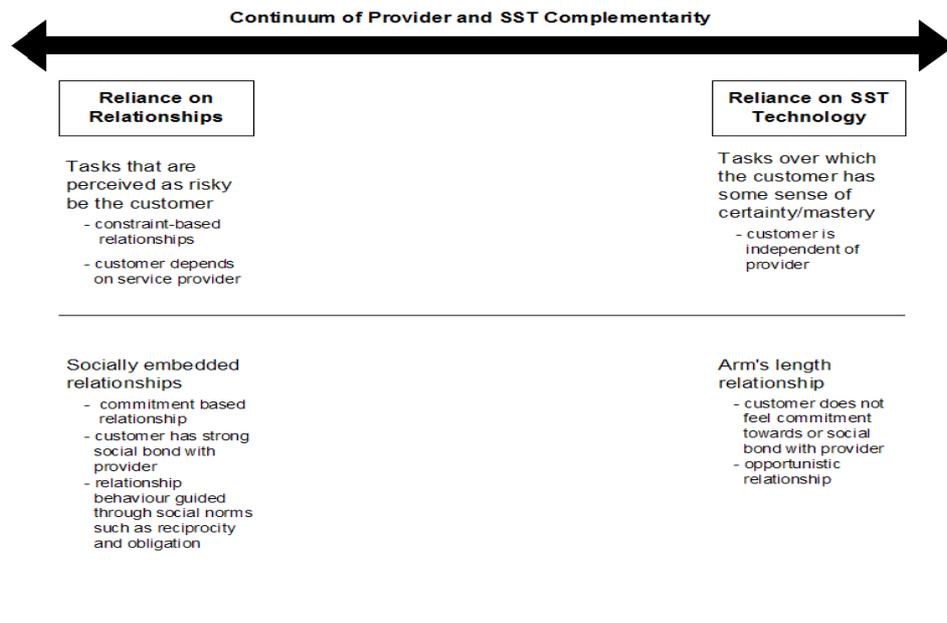


Figure 3.7 Continuum of SST and relationship complementarity

Source: Schultze (2003)

Surprisingly, Kraut *et al* (1999) report that electronic networks are more likely to have negative outcomes on quality and efficiency goals, while personal linkages are shown to lead to more positive outcomes, such as greater client satisfaction. Customers appear to place greater value on personal relationships they have built with suppliers. Organisations need to understand the favourable forces that maintain existing broad and deep interpersonal relations before resorting to other forms of service delivery, or face severe resistance. Schultze (2003) observes that firms using SSTs are creating a continuum of service delivery mechanisms ranging from the user's exclusive reliance on service relationships to their exclusive reliance on SST (see figure 3.7). On the one side of the pole, service relationships imply a social contract and embedded relationships while SST-based service encounters are governed by formal contracts and embedded relationships.

Schultze and Orlikowski (2004) emphasise the importance of traditional relationships in designing a coherent service strategy that integrates existing service relationships and the SST. In fact, Schultze (2003) argues that the challenge of integrating tensions inherent in rationalisation and relationships provides more insights than media traits such as leanness and social presence. Schultze (2002) relates how in-house sales representatives increasingly relied on their personal relationships with brokers, despite the introduction of the Web-based self-service technology. In the context of insurance sales, the embedded relationships between the sales representative and

the broker and their social capital are critical success factors. In this instance, the online quoting technology serves to weaken the embedded relationships, as it reduces the emphasis on the feeling of interdependence, reciprocity, and obligations. Furthermore, Schultze (2003) also discusses how SSTs can change existing relationships. In exploring whether service delivery systems that promote repeated personal interactions between a customer and a specific service provider will adopt self-service technology, Bhappu and Schultze (2006) found that customers associate operational performance gains and relational performance losses with a prospective SST. According to this study, whereas perceived operational performance gains increase customers' intention to adopt SSTs, perceived relational performance losses decrease it. Although these studies have made a significant contribution to our understanding, they lack consideration of the broader social context. These aspects are considered in the next section.

3.4.6 From the perspective of broader social perspectives

The first perspective to be examined is the developing country context. There remains a marked disparity between developed and developing nations in their take up and ability to use ICTs, central to the creation of e-commerce and, hence, economic development (Genus and Nor, 2005). The uneven nature of Internet diffusion across and within nations is well documented (ITU, 2004). This disparity has the potential to reinforce social and economic inequalities and is of particular concern for developing countries. The importance of understanding SST implementation is amplified in such a context, because both consumers and marketers have had long exposure to employee-dependent service delivery (Chen, 2005). Furthermore, chronic infrastructure deficiencies, low literacy levels, insufficient experience with technology, and inadequate regulatory structures produce complex interactions (Dutta and Roy, 2005), making for an intellectually richer, but complex context for understanding IS implementation.

Sahay and Walsham (1996) emphasise two aspects of social context relating to government organisational structures and the scientific tradition, and relate these to the initiation, operationalisation and continuation phases of the GIS implementation process. As Sahay and Walsham (1996) observed, contradictions arising from interactions between the 'old' and 'new' are more durable in countries where existing traditions are deep-rooted and difficult to change. Developing countries often provide environments which by their very nature do not naturally support a culture that is based around the use of IT (Sahay and Walsham, 1996). For example,

Hawk (2004) found that low credit card penetration and poor delivery systems are serious problems for business to consumer (B2C) in developing countries such as Russia, India and places in Latin America. As a result, the extent and nature of the changes related to new ICTs and globalisation among developing nations are significantly different in terms of quality, magnitude, and intensity compared with related transformations taking place in the Western world.

Genus and Nor (2005) noted that there were two prominent streams of research on ICT implementation in developing countries. The determinist stream holds that ICT drives social change in an autonomous fashion and has created the information society, while the social-shaping stream assumes that social processes shape the form and features (ie content) of particular technologies and the patterns, general characteristics, and direction of technologies. It follows that in a determinist view, a form of technological utopianism is expressed, because ICT infrastructure is viewed as a 'tool' by which developing countries can change their societies 'for the greater good' and 'catch up'. Another appeal of the determinist approach is that ICT development is typically experienced as something external, often a remote process.

In addition, determinist approaches that subscribe to psychological theories are using the Internet for the creation of immediate digital rewards offered by loyalty partners such as ClickRewards.com, GoldPoints, and MyPoints.com. For example, MyPoints.com offers cash for customer visits, registrations, or purchases. This cash can be used to make purchases at participating sites or transferred to the customer's credit card or bank account. The ease at which loyalty schemes can be developed on the Internet suggests that competitors can counter with a me-too scheme, a better scheme, or offer more immediate rewards. Despite the commoditisation of online loyalty programs, clicks and mortar firms are also differentiating their loyalty incentives by integrating offline and online loyalty programs to promote repeat usage. In fact, the Forrester Report estimates that US online retailers alone will spend \$14 billion on online promotions and rewards by 2005 – a large part of these promotions will be in the form of loyalty incentives. Despite their popularity, there has been virtually no prior research that has compared retention strategies with loyalty incentives (Bhattacharjee, 2001).

Furthermore, wealthier nations in the form of transnational corporations and institutions such as the United Nations or the International Telecommunications Union tend to be proponents of the

‘technology-push’ approach which assumes that ICT will drive economic development. Finally, technological determinism tends to endure because it remains tempting to imagine that we can predict the social dimensions of ICTs. While such views probably hold more truth for developed nations, inferring particular configurations and behaviour patterns of users in developing countries is not as plausible. Another weakness of the deterministic approach is the way in which it underplays social, political and economic factors (Bussen and Myers, 1997).

A number of critics have challenged the rhetoric that ICTs are merely an instrument for economic and social benefits within the context of a market regime (Avgerou, 2003). An alternative approach is drawn from institutional theory to explore ICT development by emphasising the importance of standards and telecommunications infrastructure in supporting ICT applications. There is also a need to unpack the notion of culture rather than seeing it as a fixed entity in the ICT development context. In contrast, in the social-shaping perspective, skills, human capital, technological cultururation, local needs, price and ease of access are some of the factors that can contribute towards the acceptance and use of ICTs (Genus and Nor, 2005). Yet little is known about how these factors interact in the developing context. Furthermore, little is known about how public policy and the role of government can shape or stimulate developments that match the needs of the local context. Economic, social, political and technical problems tend to undermine implementation efforts in a developing context. For obvious reasons, the general concerns for information systems in developing countries are intensified when it comes to the domain of healthcare, a specific focus in this research. Establishing working Internet-based self-service technology for healthcare in a developing country therefore presents an enormous challenge.

Other broader social challenges are regulatory. For example, in the United States, healthcare systems must comply with the Integrating the Healthcare Enterprise (IHE) and the Health Insurance Portability and Accountability Act (HIPAA) standards (Vegoda, 2002). These standards are concerned mainly with the confidentiality of patient information. They provide specific technical guidelines on how to implement health systems, such as query display for clinical information; master file update procedures; and desktop integration. Online healthcare systems must also comply with broader regulations. For example, in the US virtual physician consulting systems must comply with disparate state licensing regulations (Schaffer, Plona, Omori, Miller and Harris, 2002). Regulations can either enable or constrain an IS

implementation. Privacy and security are also potential obstacles. Mack (2002) suggests that consumers in the healthcare context might be reluctant in case their employers misuse their information. This leads to issues relating to ethics.

In the US, healthcare practices should also comply with the Internet Healthcare Coalition code of ethics. Another area of particular concern among physicians and healthcare providers is the process of disintermediation discussed in previous sections. They argue that patients may be getting inaccurate or wrong information on the Web. On the other hand, Mack (2002) believes that physicians risk some loss in credibility if they say, ‘Don’t go on the Internet’, or ‘You can’t believe what you see on the Internet’. While organisations such as the American Medical Informatics Association (AMIA) offer some guidelines about patient/physician communication, there is still a clear need for professional guidance and mediation as to the use of trusted sources of medical information on the Internet.

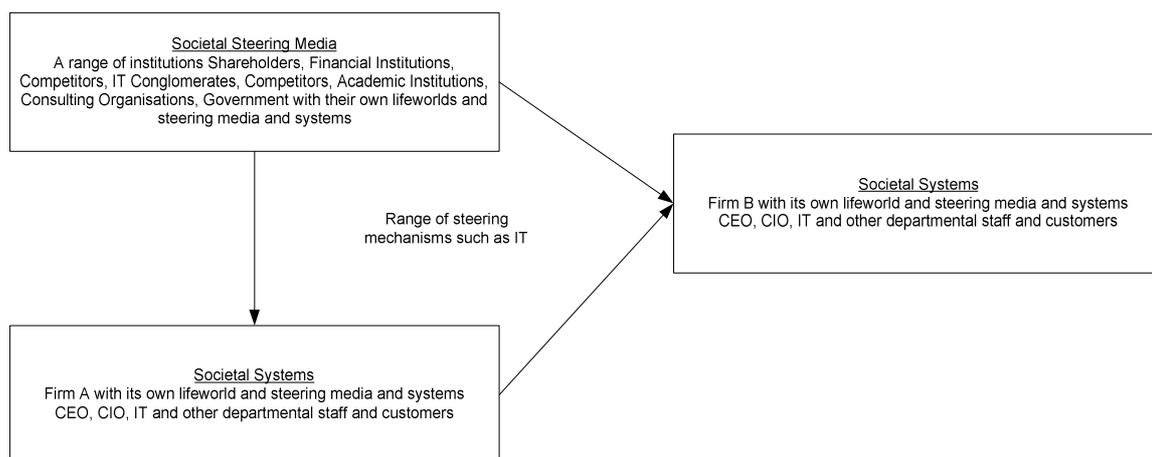


Figure 3.8 The nature of the relations between firms contemplating B2B implementation

Source: Adapted from Broadbent *et al* (1991)

Some IS researchers have adopted Habermas’s model of societal development to explore the broader political aspects of IS implementation (Broadbent et al, 1989; Myers and Young, 1997). Habermas defines modern society as an amalgam of ‘lifeworlds’, systems, and steering media. ‘Lifeworlds’ are life experiences and beliefs that are formed via communication over time which guides attitudes, behaviour, and action. The three main elements of the lifeworld are culture, society and personality. ‘Systems’ are expressions of these lifeworlds in terms of functionally

definable, tangible organisations (Myers and Young, 1997). These economic systems are guided to follow ‘lifeworld’ concerns. At the same time these systems are held together by ‘steering media’. The steering media can steer societal systems such as organisations in ways which are at odds with ‘lifeworld demands’. This process is called the ‘internal colonisation of the lifeworld. Broadbent *et al* (1991) found that IT can impact the entire working of the organisation by forcing onto it objectives of a higher authority without proper legitimation (eg Y2K). Similarly SSTs can be viewed as ‘steering mechanisms’ which can colonise the ‘lifeworld’ of an organisation.

To provide a more comprehensive framework, the Broadbent *et al* model (figure 3.8) has been extended to include IT conglomerates, powerful corporations, consultants and academic institutions (as they are responsible for perpetuating certain ideological perspectives such as ‘consumer-driven healthcare’ which can act as an influencer for organisations to implement SSTs). Similarly, Kling (1996) argues, institutional practice is shaped by ‘social regimes of truth’. The model has also been extended to cater for inter-organisational impacts (Firm A and Firm B). This extended framework can be used to provide broader and deeper insight into the social processes of implementation.

Li (2005) is of the opinion that because of the emergent nature of Internet-based e-commerce, many scholars and practitioners who entered the field from other disciplines hold divergent and incoherent views about the social aspects of e-commerce. While those with a mechanistic perspective focus on the capacity of information technologies to improve organisational efficiency and bring about overall advances in social conditions, the romantics are concerned with the adverse effect of information technology from a user, work and overall social perspective. The romantics view information technology as weapons in the armoury of capitalist management against employees. Instead of solving efficiency problems and reorganising work, SSTs have the potential to destroy, degrade and deskill the human process, thus further heightening the subordination of employees and customers. According to this view, technological determinism approaches – which emphasise the impacts of technology without considering the contexts within which they arise – are unhelpful, ahistorical and one-sided. Organisations need to balance these mechanistic approaches with approaches that recognise the need to implement a SST system in a socially responsible and sensitive manner. In this section we briefly reviewed the developing context, regulation, ethical issues, and broader steering media. The next section concludes our discussion on the social context of IS implementation.

3.4.7 Conclusion on the social context of SST implementations

The literature review above was dominated by rational and deterministic models of SST implementation. As a result, the literature discussed above is rather narrow and highlights only particular aspects of self-service technology implementation. Richer theoretical perspectives were lacking that emphasise transformation and multi-level contexts on process and on the links between process and context, that can deepen our understanding of IS implementation. Furthermore, based on the review we can assume that there are great variations in the nature of SST-mediated social contexts across organisations. These variations arise out of a variety of inter-related factors including variations in history, access to technology, social structure, organisational forms, structure of existing work arrangement, client-firm arrangements, traditional channels and individual characteristics that exist in specific social contexts. As such, the exact configuration of the context for an implementation will always be unique. The next section discusses how to overcome some of the limitations in the literature and understand the unique SST context.

3.5 A critique on the current implementation literature

3.5.1 Introduction

In this review I focused on studies that bear directly and indirectly on the shaping of self-service technologies by social, economic, technological and political influences. I also reviewed studies that are advancing our understanding on the interplay between self-service technology and traditional service channels.

The paucity of context/process research advocated by Walsham (1993), which could provide rich insight in the area of self-service technologies, was apparent. In contrast, most SST implementation studies typically consider independent variables (eg based on traits of the user or elements of the self-service technology innovation, the organisation and environment or context) as determining the outcome of the implementation process. In knowing the variables, they claim that providers or users of innovations can determine the outcome of an SST innovation or even influence outcomes by manipulating variables in a way that is more favourable. Typically, such factor-based approaches to theory have a normative character. They prescribe factors which

should be attended to in order to ensure a more successful implementation of self-service technologies ('critical success factors').

Ontologically, factor-based or variance research can be seen to be aligned with the positivist paradigm. Although these theories in reducing the world to a number of factors become applicable in practice, they lose out on richness in their simplification of the phenomenon under study. It has been argued that social reality cannot be reduced to a small set of discrete variables (such as traits, attitudes, values, beliefs, and norms) that can be documented and manipulated in an instrumental way. The implementation of complex systems such as SSTs does not have to have distinct and measurable features, but 'interpretive flexibility', thus having different significance depending on context and time.

Moreover, research on information systems and technology-based services in particular has been critiqued for producing endless lists of factors which are inconclusive, inconsistent and characterised by low levels of explanation. An explanatory theory based on research aimed at finding such factors has been elusive, because virtually every determinant employed can be proven to be a highly and inexplicably erratic predictor of IS success with an impact that varies dramatically across studies. The influence of factors can be shown to be dependent on the time, history, situation and context in which they are applied. Institutional arrangements, context and technologic and economic constraints reshape the implementation space in which the service innovation is diffused. Though this is acknowledged by some SST theorists, contending that knowledge of the extent to which factors affect different stages in the implementation process differently is still limited, they continue to hold on to theories to discover such factors through progressive research (Lyytinen and Damsgaard, 2001).

Newell, Swan and Galliers (2000) recently demonstrated the limitations of factor-based theories in business process re-engineering (BPR). With BPR, factor-based approaches would predict a protracted acceptance process due to certain characteristics of BPR, for example that it is complex, incompatible with current practice, not easily observable and alters organisational practice. However, practice shows a rapid and widespread use of BPR (with various levels of utilisation and success) in communities of firms and academics (Newell *et al*, 2000). They argue that factor-based theories ignore the notion that the defining characteristics of new technologies are not, as assumed by traditional models, given and permanent, but rather are perceived and

therefore influenced by cognitive, social and political processes (Kling, 2000). In other words, the attributes of complex technologies are not fixed and rigid, but socially constructed. Thus it is contended that factor-based research has produced negligible findings that are consistent regarding the causes, consequences or management of the IS implementation process. Thus making generalisations and predictions typically associated with the natural sciences is consistently being undermined by the complexity in the IS social context (Kling, 1994). Another major critique is the unitary view of theories underlying implementation-based theories. Proponents of these approaches view organisations as stable systems of rational individuals who work together to achieve goals through hierarchy and division of labour (Rogers, 1995).

In addition, these functionalistic assumptions normally view politics in the implementation process as disruptive (Markus and Pfeffer, 1983). They also view technology as having embedded qualities that somehow determine its acceptance, and regard social influences merely as barriers to technology's natural trajectory. As Introna (1997) argues, the mainstream literature typically portrays managers as being rational and purposive, while paying little attention to the power relations that exist within organisations. However, evidence of conflict and power struggles is pervasive in organisations, and it is becoming apparent that technology is not the sole determining force on an organisation and its socio-political life. However, despite these limitations, factor-based approaches still have an important influence in IS research. Walsham's (2002:213–214) perspective sums up my impression on the current self-service technology and related implementation literature.

The factors approach, whilst it takes some account of the human and social aspects of IS implementation, has a rather static feel to it, with no consideration of the dynamics of the process of organisational implementation.

The major inadequacy of the current implementation approaches is the tendency to view the SST context as static and stable and so assume that it can be adequately measured by cross-sectional studies. The other major shortcoming is the failure to examine the complex reciprocal action between context and action wherein social context affects and is affected by SST and behaviour.

3.5.2 Advancing IS implementation thinking

Kuhn (1970) describes the dominant set of assumptions adopted by a professional community which allow its members to share similar perceptions and engage in commonly shared practices as a paradigm. Accordingly, we could say that the IS implementation paradigm is dominated by a factor-based approach. Over the years various attempts have been made to arrive at a commonly accepted approach for understanding IS implementation (Marble, 2000). Rather than factor-based research, process research is advocated to aid in understanding the nature of the implementation process. The factor approach discerns general properties of implementation phenomenon. Its purpose is to investigate the variables related to implementation in a generalised way across different IS innovations. However, factor-based research does not show any order of events; neither does it provide insight into the process of IS implementation. Process research, by contrast, seeks to study the conceptual stages of the implementation process and determine the time-ordered sequence of a set of events to explain the causes and effects. It attempts to explain the occurrence of an outcome by identifying the sequence of events preceding it.

In this research, I advocate a process research approach to explore the nature of the decision process involved in the implementation of the self-service technology and explain the causes and sequences of related events over time. As was argued in the previous section, factor-based research fits into the category of positivistic research. Process research, though still connected to factor-based research to find influential factors or characteristics, is more open to understanding why in a certain context specific characteristics seem to influence events in a particular way. Although the characteristics of this process are still often reduced to a limited number of generalised ‘factors’, the analysis is much more descriptive and qualitative, and does not require statistical generalisation (Shaw and Jarvenpaa, 1997). Moreover, it acknowledges to a greater extent probabilistic and random influences which may cause cause-and-effect paths to deviate from the expected path (Shaw and Jarvenpaa, 1997). In its analysis, it is more contextually conscious and is supported by interpretive assumptions (Sarker and Sahay, 2003). Research shows that stages overlap, are iterated, surpassed and frequently change order (Newell *et al*, 2000). More sophisticated insights are gained when a move is made to look beyond perspectives of technology with fixed and permanent attributes. It can be concluded that more sophisticated studies typically view implementation as a process. Some seminal research in IS has

convincingly shown that organisational changes owing to IS implementations in organisations are often emergent and unanticipated (Orlikowski, 1996).

Furthermore implementation processes are not politically neutral, but are politically shaped. Particular aspects of the implementation can be communicated selectively according to the interests of the designers. Notably, the way IT suppliers, vendors and consultants selectively communicate about new IT implementations has been highlighted as being influential in the acceptance of IS innovations, even enticing users to adopt technologies that were inappropriate for them (Newell *et al*, 2000). Expanding the micro-organisational view of implementation, Newell, Swan and Robertson (1998) call for an analysis of meso-industry and macro-national level contextual factors that influence the implementation of innovations. Such an analysis can show how innovations spread, regardless of their technical merits. Similarly, Edwards (2000) argues that achievement in any innovative action relies on the dynamic contingencies within the institutional context.

Further understanding of implementation comes from social constructivists who demonstrate the influential role of actors beyond the suppliers or targeted users involved in the innovation (Butler, 2003). For example, in the promotion of computerisation, there is a large contribution from all kinds of actors, including colleagues, trade associations in the computer industry, professional societies, regulatory agencies and the media (Swanson and Ramiller, 2004; Iacono and Kling 1996). Social groups which share the set of meanings attached to the specific artefact present various solutions for dealing with these conflicts and problems. Some have termed this approach ‘emergent’, since the innovation can be seen to be influenced by unpredictable and inevitable setbacks and surprises, arising out of the organisational and social context (Orlikowski, 1996). The next section demonstrates how this emergent phenomenon can be understood using an interpretive approach.

3.5.3 An interpretive perspective of IS implementation

Interpretive approaches emphasise the subjective meanings that human actors ascribe to technology in its context of implementation and use. According to Sahay and Robey (1996), three basic assumptions guide the interpretive approach. First, in contrast to the factor-based theories explored earlier, neither human actions nor technologies are assumed to exert direct

causal impacts. Instead, the consequences of technology – such as Internet-based self-service technologies – are assumed to be indeterminate because of the inherently unpredictable nature of social processes. Second, human actors are assumed to endow technology with social meanings as they engage in processes to propose, design, develop, implement and use the technology. These meanings can shape the implementation process and the subsequent use of the technology, independent of the technology's material properties. Third, understanding of the implementation phenomena is distinctive within a specific context. As such, inferences developed from a particular study cannot be generalised to other settings because of the inherently contextual nature of this knowledge. Thus, the level of generality at which knowledge claims are made needs to be approached cautiously. Combined, these three basic assumptions reduce the temptation to regard information technology, including Internet-based self-service technology, as capable of producing social results directly. Rather, the social meanings that emerge from the processes of designing and using applications of information technology lead to technology's social consequences.

The validity of these assumptions has been corroborated by a growing number of studies. Studies of similar or identical technologies in comparable organisation settings were especially revealing. For instance, Barley (1986) reported on the divergent social consequences of the same medical technology (computerised tomography) in two neighbouring hospitals. Although the material features of the technology were virtually identical, divergent social processes were triggered by its implementation in each organisation. Barley argued that technology was an 'occasion for', not a determinant of, social change. Orlikowski's (1993) comparison between two organisations adopting computer-aided software engineering (CASE) technology also reveals a diversity of outcomes not explained by the characteristics of the technology alone. Elsewhere, Robey and Rodriguez-Diaz (1989) reported the divergent experiences encountered by an implementation team installing the same system in different offices of a multinational corporation. They concluded that the cultural context of implementation influenced the formation of different interpretations in each office, which in turned help to shape the patterns of adoption and use. Gash and Orlikowski (1994) also reported divergent interpretations of identical technologies in their study of a Lotus Notes implementation, a software product designed to facilitate collaborative work. The technologists and managers in the same organisation held different interpretations of Notes, which affected its implementation and use. More recent

research on implementation also helps us explain why information technologies are prone to different adaptations of use, or ‘re-inventions’.

Our research problem also bears directly on how the different social groups in this study were capable of influencing the implementation and use of technology. Since Internet-based self-service technology development normally occurs within the context of formal organisations, the structure of an organisation becomes an important influence on social interpretations of information systems. Implementing an SST involves the participation of multiple, interdependent, social groups, typically representing specialised perspectives related to departmental or professional affiliations. For example, different groups are typically responsible for the design of an SST application. Business analysts, system analysts, system architects, software developers, database administrators, Web graphic designers, product managers, usability experts, users and community managers all participate in one form or another in SST implementation. These groups differ in political and social interests, educational backgrounds, occupational culture, and power in the organisation. These differences mean that each group develops different interpretations of the SST. As these groups interact, they shape the use and consequences of the SST. Because the nature and composition of social groups are likely to differ among organisations, the implementation and consequences of SST are also likely to differ between organisations. Interpretive research is powerful in revealing the social constructions of technology by the relevant social groups.

Interpretive flexibility, the capacity of a specific technology to sustain the divergent interpretations of multiple social groups, is another important part of interpretive research. In general, information technologies may be more interpretively flexible than, say, production technologies. Information technology, specifically its software component, presents fewer material constraints and is easily portable to different locations. Internet-based SSTs in particular consist of various component soft technologies for retrieving, storing, manipulating and presenting data. Data input is provided by online forms, on-line transaction processing systems, and via customer service systems. Data is stored in relational or object relational databases such as Oracle and may be processed via stored procedures. In the front end the system is connected to search engines and document management systems. Because SST components are subject to multiple interpretations, they are exposed to a wide variety of interpretations.

However, members of certain groups do share common relationships with a particular technical application. Gash and Orlikowski (1994) describe this larger frame of meaning by which groups come to understand organisational realities as the technological frame. Technological frames of one group may differ from technological frames of another group. For example, software developers and business analysts share different frames of meaning because their interactions with a particular application differ and they come from different social positions, educational backgrounds, information systems, historical circumstances, and interests. Orlikowski and Gash (1994) refer to the notion of ‘congruence’. Congruence suggest a similarity in structure (common categories of frames) and in content (similar values on common categories) between groups, and implies that these groups have similar expectations for the role of information technology. Incongruence of frames suggests different expectations for different groups. The capacity for information systems to support multiple, and potentially incongruent, frames of meaning is greater in applications with more interpretive flexibility.

As a consequence, the functions of a self-service technology are not pre-given but are negotiated during the course of its implementation and through its manner of acceptance by users (Lea *et al*, 1995). Other researchers are suggesting that social groups are themselves constructed in part by the technology; that the process of constructing users is a reflexive one in which both technology and social groups mutually elaborate each other. Latour (1991) argues that actors co-evolve in a process of translation of technology and the social. Whereas traditional studies of implementation are characterised by notions of introduction, rejection, resistance and adoption of new technologies by end users, the social groups that comprise these studies are reconstructed themselves through a process of mutual elaboration together with the technology. Researchers who follow this approach believe that technology is interpreted and formed through the interactions between social and technical actors. If one follows this approach, Internet-based SSTs are not merely technical, but are better viewed as socio-technical systems. By studying how a self-service technology comes into being and is evolving over time, I share Orlikowski and Iacono’s (2001:121) critique of present SST research as:

*... conceptualizations of IT artifacts as relatively stable, discrete, independent,
and fixed ...*

and respond to their call to theorise how IT artifacts are designed, constructed, and used by people and shaped by the interests, values, and assumptions of a wide variety of communities such as developers, vendors, investors, users, and so on. Furthermore, a review of the SST literature demonstrates that user-centred information studies have emphasised individualistic cognitive models to examine the criteria that influence the adoption and use of SSTs. A number of the models described (Liljander, Gillberg, Gummerus and van Riel, 2006; Dabholkar and Bagozzi, 2002) are based on rational decision theory models of customer choice and attribution theory. The central assumption of these approaches is that the user is an atomic individual with well-articulated preferences who can exercise rational discretion in choosing and using ICT. Lamb and Kling (2003) have recently argued that research approaches based on an individualistic concept of the user limits our understanding of IS implementation issues within complex social contexts. They propose approaches that portray the complex and multiple roles that people fulfil while adopting, adapting and using information systems. While still in its formative stages, it is anticipated that their social actor concept can play a valuable role in understanding not only organisational, but inter-organisational, cultural and global contexts relevant to this research. A notable example of this approach is Sahay's (1998) probing of cultural aspects, particularly the use of time and space concepts that are associated with GIS systems in the Indian social context, to demonstrate how the cultural perspectives of time and space contributed to problems in a GIS systems implementation.

Myers (1995) proposes critical hermeneutics as another theoretical perspective for understanding IS implementation. In this approach an integrative framework combining interpretive and critical elements is developed. The objective is to make sense of organisations as text analogues, in which the various stakeholders may have confused, incomplete, cloudy, and often contradictory views on implementation issues. It emphasises both the subjective meanings of the individual actor and the social structures that condition and enable such meanings (Butler, 1998). The aim is to make sense of the whole, and the dynamic relationship between the organisation and the implementation of new technology. In this way, it is hoped to overcome some of the mechanistic perspectives that have tended to dominate the IS implementation literature. Despite its ambitious treatment of implementation within a broader social and historical context, this approach has not gained wide acceptance.

3.5.4 Conclusion on current theoretical approaches

Though I have not come across literature that studies the topic of Internet-based self-service technology implementations specifically, the elements identified, originating from different SST studies, can be seen to shape the implementation process. If I were to employ a factor-based approach, I would start by defining some hypotheses about such elements or factors that are likely to influence the Internet-based self-service technology implementation. A factor-based research in IS implementation would argue that from a statistical analysis the most important factors could be uncovered and measured on a scale of some sort. Though I do not aim to determine statistically which factors are in general the most influential, as a variance approach to implementation would dictate, all of these elements (and more) can influence the implementation of an information system within any context.

However, only by closer analysis can one discover which factors are influential in a particular context, and why in that particular case they are in fact influential. By saying that factor-based studies have such limitations, it is not my conclusion that they are not helpful in understanding IS implementation. The factors identified by these and others studies can be very helpful in understanding this case. However, I do not subscribe to the belief that factors can predict or be used to control the outcome of the implementation process. Neither will I try to validate acceptance models or identified implementation critical success factors. Instead, the factors will be used as complementary to the more socially acknowledgeable theories, and their sole function is to analyse the case study in this research, from an interpretive perspective.

3.6 Conclusion

The status and maturity of Internet-based self-service technologies (SST) can be characterised as an emerging subfield of information systems. Despite strong interest in the subject, there is clearly a need for empirically testable theories, conceptual models, and frameworks to move research forward. Research on e-commerce and particularly self-service technology displayed a major focus on user characteristics and the Internet medium. This holds an oversimplified view on SST implementation on how processes with regard to the implementation of self-service technology take place. Furthermore our current knowledge about IS implementation in general and SSTs in particular has not been synthesised into a coherent theoretical account. This chapter

has been devoted to the complexity of all the areas, related to the research questions, which should be combined in this research. In synthesising the SST literature, it became apparent that current understandings of Internet-based self-service technologies using conventional theoretical approaches are too narrow to provide the understanding required to address the research questions and the research goal of developing a more holistic framework for understanding SST implementation.

Although the paucity of research on self-service technologies extended to the interpretive literature, a review of the interpretive perspective did suggest that self-service technology implementation is a complex and dynamic social construction. In particular, Internet-based self-service technologies are related to highly complex issues at user, organisational, inter-organisational and broader social level. Understanding the implementation of such technologies, within such complex contexts, requires a research approach that is not limited, but includes ideas related to social, economic, political, cultural, technological and historical perspectives. Such an approach should be able to account for action/context, agency/structures, intended/emergent consequences and rationality/irrationality. It should also account for both social and technical attributes of the self-service technology implementation phenomenon. Combining insights from the previous chapter on my underlying philosophical paradigms and the explicit ideas on self-service technologies presented in this chapter, I will discuss, in the next chapter, two particular theoretical perspectives that can broaden our understanding of the social context of SST implementation.

Chapter 4

Structuration Theory and Actor-Network Theory as Conceptual Frameworks for Analysis

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4.1 Introduction

In the previous chapter I discussed various functional and variance-based theories used in researching online electronic services and highlighted some of their conceptual flaws. Furthermore, I emphasised the use of process and context-based theories as substantive social theories to understand the implementation of an Internet-based self-service technology. The previous chapter also alluded to my belief that Internet-based self-service technologies should be viewed more broadly to include the understanding of social and behavioural dimensions. Therefore, neither technological determinism nor strong social constructivism may be suitable to explain the process of online self-service technology implementation (Orlikowski and Barley, 2001). A model located somewhere between the poles of technical determinism and social constructivism is deemed to be appropriate.

The purpose of this chapter is to discuss structuration theory and actor-network theory, two social theories which together form the basis of the initial conceptual frameworks created to analyse the case study. A conceptual framework can be defined as the structure, the scaffolding, or the frame of a study (Merriam, 1998). Some researchers refer to it as the lens through which we view the world (Walsham, 1995; Orlikowski and Baroudi, 1991) or the territory to be explored (Carroll and Swatman, 2000). I envisage that using structuration theory and actor-network theory to form these conceptual frameworks will account for the gaps in knowledge ascertained in the literature review and also address the research questions expressed in chapter 1. In addition, it will guide me through the analysis and the way I eventually interpret the findings, in future chapters.

Walsham (1995:76) cautions that:

... although a theory can provide a valuable initial guide..., there is a danger of the researcher only seeing what the theory suggests, and thus using the theory in a rigid way that stifles potential new ways and avenues of exploration .

Following the advice of Walsham (1995), and Carroll and Swatman (2000), I will maintain an open attitude and willingness to change my initial assumptions and theories captured in this

framework. However, in designing this conceptual framework I will remain faithful to my philosophical orientation and stance discussed in chapter 2.

In the next section I draw upon the key concepts, ideas, terms, definitions, and models espoused by these theories. I start by describing structuration theory, a more dominant theory used for understanding the social context of information systems. Although analysis with this theory has been more common in information systems and has provided interesting insights in the past, I argue that a different understanding can be gained by using the actor-network theory (ANT). I will demonstrate this in chapter 7 by first analysing the case study using structuration theory, showing the insights such an analysis gives, and then pointing out some interesting answers it provides to the research questions. I will then analyse the same case study using ANT in chapter 8 and compare the manners in which ANT and structuration address the research questions.

4.2 Structuration theory

4.2.1 Introduction

The research questions in section 1.4 demonstrate the idea that SST implementation is implicated in broader social context and processes, even more so compared with conventional organisational information systems. This was confirmed in the literature review chapter. Since structuration theory is used to conceptualise the linkage between context and process in society, it is a good candidate for analysing these types of questions. A number of studies have used structuration theory to carefully analyse the manner in which context is involved in the production of action. This body of research has been broadly associated with content-process-context schema research (Walsham, 1993). I therefore envisage that structuration theory can play a substantial role in helping us understand the societal, organisational and personal contexts within which the self-service technology is embedded. Structuration theory suggests that this linkage is crucial for understanding Internet-based self-service technology, which is enabled or constrained by the social context in which it is implemented, and, in turn, is a medium for maintaining or altering that context. Since this is a logical starting point for analysis, I will discuss this theory further. In the next section, I discuss the main elements of structuration theory.

4.2.2 Key elements of structuration theory

Structure and agency

Structuration theory was developed by British sociologist Anthony Giddens (1984). Giddens' main aim for his theory was to integrate two opposing strands of social thinking: structuralism and functionalism, emphasising notions of social structure; and interpretivism, bestowing prominence to human agency and meaning. However, Giddens is concerned neither with the experience of the social actor nor with the existence of any form of social totality. Instead, in structuration theory, his main emphasis is on understanding how social practices are ordered across time and space. In structuration theory, Giddens (1984) attempts to recast structure and human agency as the duality of structure and action. In other words, social structure is drawn upon by agents in their day-to-day actions, and is therefore produced and reproduced by this action. At the same time, action is both constrained and enabled by structure. Accordingly, action is only possible then because of structure, and structure itself can only be constituted through action. At this point it is important to consider carefully what Giddens means by agency, and therefore how it operates in a structure.

The agent and agency

One of Giddens' main tenets in structuration theory is that human social activities are recursive. These activities are not brought into being by social actors. Instead, by expressing themselves as actors, activities are continually recreated by social actors. It is in and through activities that agents reproduce the conditions that make these activities possible. However, unlike knowledgeability displayed in the natural environment in the form of coded programmes, human agents exhibit cognitive skills. Human knowledgeability is therefore essential to human action. According to Giddens (1984), it is especially the reflexive form of knowledgeability that is involved in the recursive ordering of social practices. Giddens (1984) defines reflexivity as the monitored character of the ongoing flow of social life. In other words, human beings are purposive agents, having reasons for their activities and being able to elaborate discursively upon these reasons. Giddens (1984) is quick to caution that his use of the terms such as 'purpose', 'reason' and 'intent' should not be disentangled from the context. Instead, human action should

be seen to occur as a *durée*, that is, as a continuous flow of conduct, as does human cognition. As such, purposive action is not made up of a series of separate intentions, reasons or motives.

Reflexivity then should be articulated as the monitored character of the ongoing flow of social life, and not as an aggregate or series of separate intentions, reasons and motives. Giddens (1984) argues that this reflexive monitoring of action depends on rationalisation. Rationalisation is understood as a process inherently associated with the competence of the agent, and not as a state. Furthermore, action cannot be divorced from history. Neither should action be viewed as a combination of acts. Action also has to be observed in conjunction with the agent's surrounding world and what Giddens terms the 'acting self'. So, reflexive monitoring, rationalisation and motivation of action are treated as embedded sets of processes. These dimensions are viewed as routine in the process of human conduct. In fact, an actor is evaluated by other actors according to the level of competence exhibited in the rationalisation of his or her action.

However, not all processes are accessible to the discursive consciousness of the social actor. Giddens (1984) explains that the 'stocks of knowledge' or 'mutual knowledge' incorporated in encounters are not directly accessible to the consciousness of actors. Most knowledge in social encounters is of a practical nature, accessed within an agent's practical consciousness that enables social actors to 'go on' within the routines of life. Nevertheless, he does clarify that the lines between discursive and practical consciousness are fluctuating and permeable, depending on the experience of the individual agent and the evaluation between social actors engaging in different social contexts. Discursive and practical consciousnesses are viewed separately from the unconscious motives of the agent (more on these distinctions later). He distinguishes between discursive consciousness – where reflexive monitoring, the ability to explicitly describe actions and motivations, takes place; practical consciousness – the ability to act in a knowledgeable way and where there is rationalisation of action; and lastly unconscious motives. For now, it is sufficient to know that the unconscious does not assist us in advancing our knowledge of how social actors are able to control and sustain their conduct.

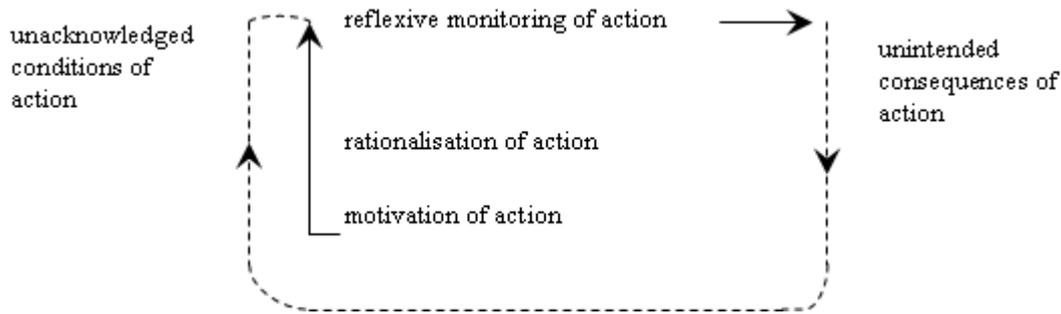


Figure 4.1 The stratification model of the agent

Source: Giddens (1984:5)

The stratification model of the agent in figure 4.1 illustrates how individual actors and other actors continuously monitor the flow of their activities. Giddens distinguishes between reflexive monitoring and rationalisation of action from its motivation. In doing so, Giddens contrasts ‘reasons’, as the grounds for action, with ‘motives’, which refer to the wants which prompt the action. Motivation is defined as a potential for action. Whereas reflexive monitoring and rationalisation are directly bound up in routine or continuity, motivation occurs in relatively unusual circumstances and serves in some way to break with routine. Motives tend to supply overall plans, projects or programmes. However, much of a social actor’s day-to-day conduct is not directly motivated. Giddens (1984) points out the contrast between the ability of competent actors to report reasons for their actions and the motives for their actions. This difficulty may have something to do with the fact that motives are linked to the unconscious. Nevertheless, while unconscious motives are an important feature of human behaviour, practical consciousness takes centre stage in structuration theory. In explaining practical consciousness, Giddens emphasises the role of the agent in day-to-day life. Day-to-day life occurs as a flow of intentional action. However, acts have unintended consequences, and these unintended consequences may feed back to the unacknowledged conditions of further acts. Giddens also distinguishes between intentional and unintentional doings. An intentional act is characterised as one in which the instigator knows the outcome or quality of an act and how to go about achieving this quality or outcome. Unintentional doings refer to those doings which would not have happened if the individual had behaved differently, but are not within the scope of the agent’s power to have brought about.

The next concept we review is agency. Giddens does not view agency as the intentions people have in doing things, but as their capability of doing things. As such, for Giddens, agency implies power. Agency concerns events in which an individual is the instigator, in the sense that the individual could have chosen at any point in his or her conduct to have acted differently. Agency therefore refers to doing. For Giddens (1984), human agency is the ‘capacity to make a difference’, also known as ‘transformative capacity’ (1984:14). Agency is intimately connected with power. In fact one of the defining characteristics of agency is power, since the loss of the capacity to make a difference is also powerlessness. As Giddens (1984:283) himself explains, ‘there is no more elemental concept than that of power’. In practice, human agents almost always retain some transformational capacity, albeit small. Power plays a central role in the exploitation of resources. Thus, power is inherent in social action, as it relates to domination involving resource authorisation and resource allocation. Authoritative resources derive from the coordination of the activity of human agents, while allocative resources stem from control of material products or aspects of the natural world.

For Giddens, action addresses not only individual moments of doing, but rather the *durée* of human life, the ‘continuous flow of conduct’. Giddens is particularly interested in the problem of order (Jones, 1999). The continuity of social life, that is, the recursive ordering of social practices, is of particular importance. According to Giddens (1984), recursive ordering is only possible because of the continuity of practices that makes them distinctly similar across space and time. Thus recursive ordering presumes reflexivity. Reflexive monitoring of action is grounded in some sort of rationalisation, itself based on a motive, an overall strategy, plan or programme for the range of conduct.

It follows then that both discursive and practical consciousness are ‘directly bound up with the continuity of action’ (Giddens,1984:6). Individuals, in particular, acquire ontological security through their engagement in predictable routines and encounters. Although Giddens (1984) claims that routine is the predominant form of social activity, this does not imply that action is programmed. On the contrary, routinisation in most social conduct has to be continually ‘worked out’ by those who sustain it in their day-to-day conduct. Thus local practice is always indeterminate. Interactions are always shaped by actors as they interpret their local context, even when such interactions are routine.

Routines are important because most daily practices are not directly motivated. In addition, the knowledgeability of human actors is to some degree bounded by the unconscious on the one hand, and by unintended consequences of their actions on the other. However, this does not imply that actors do not skilfully engage in their daily practices. At least at the practical consciousness level, it is assumed that all human beings are knowledgeable agents, understanding what it is that they do, in a manner that is not incidental to their activities. In other words, people can monitor and reflect on their own practice and that of others. They can reflect on the effect of planned and unplanned effects of their intentional actions. Subsequent actions are based on reflexivity, suggesting that these actions are not mere repetitions of what was done before. Therefore, this observation that agents engage in routine should not be construed as predetermined or even simplified behaviour. Instead, Giddens (1984) maintains that knowledgeability embedded in practical consciousness exhibits an extraordinary complexity. The essence of the duality of structure, then, is the complexity of human action within the ongoing flow of life stretching over lifetimes, and institutions giving continuity or 'fixity' to social practice. Action, therefore, is crucial to the stability and overall existence of social life. However, the ability of human beings to monitor their own conduct in a reflexive way and the unintended consequences of human conduct imply that all action carries within it the seeds of change (Walsham, 2001).

Structure and structuration

Giddens (1984) offers a unique conceptualisation of structure. According to Giddens (1984:28), structure is better understood as 'normative elements and codes of signification' that exist as memory traces in the mind of the agent. Therefore structure is not to be seen as a thing, an object or some kind of skeleton or morphology (Orlikowski, 1992). Instead, structure is defined as rules and resources recursively implicated in social reproduction. As such, institutionalised features of social systems have structural properties only in the sense that relationships are stabilised across time and space (Giddens 1984:xxx). In contrast to conventional views of sociology, then, that view structure as being 'external' to action, in structuration theory structure is viewed as 'a source of constraint on the free initiative of the independently constituted subject' (1984:16). Following this line of thought, social practices are not composed of 'structures', but rather exhibit 'structural properties' (1984:17). This structuring property allows for the 'binding' of

time and space in social systems, which make it possible for discernibly similar social practices to exist across varying spans of time and space and which lends them a 'systemic' form.

Structural properties that manifest themselves in social practices (action) are often deeply embedded in these recursively reproduced practices. As such, they act as rules and resources for action, constraining, but also enabling the form of action that can take place. Rules and resources, that is, 'structuring properties', like the idea of structure itself, should not be viewed as 'things' or 'objects', because such perspectives perpetuate a mechanistic view and deterministic outcomes. It is therefore useful to consider rules and structure, briefly.

What sets structuration apart from other social theories is its dismissal of the traditional notions of rules as formalised prescriptions external to the human agent. Instead, from a structuration perspective, rules do not occur in isolation, but in sustained practice in the reproduced relations between individuals that we recognise as social systems. The human agent's capacity to deal with an unknown variety of circumstances is enabled and constrained by rules implicit in the agent's mastery of social practice. As such, rules can serve to constitute meaning in a context and to sanction the conduct of the human agent. Apart from engaging these rules to understand the circumstance or to determine how to act, the agent's ability to act depends on resources. This ability to act can be allocative or authoritative. As pointed out earlier, 'allocative' refers to the human agent's command over objects, goods or material phenomena, while 'authoritative' refers to the human agent's command over persons or actors (Giddens, 1984:33). Rules and resources, whether or not we can identify for them a 'real existence' (procedure manuals, laws, raw materials, people), become rules and resources 'only when incorporated within processes of structuration' (Giddens, 1984). In simple terms, 'the rules and resources constituting structure exist only in the agent's heads' (Jones, 1999:99). There are numerous structures that agents enact when engaging in a social context. This implies that in any structurational analysis, one must foreground some structures and background others (Giddens, 1984.)

The duality of structure

Giddens (1984) argues that structure consists of the rules and resources that are created through the actions of individuals through practices and routines. A duality emerges as structure constrains action, but, simultaneously, action serves to maintain and modify structure. According to Giddens (1984), as opposed to viewing structure and agency as two independent sets of phenomena (dualism), these two concepts are better portrayed as a ‘duality’. As a result, structure and agency are conveyed as being dependent upon each other and recursively related. In other words, human action is enabled and constrained by structure, but structure is also the result of human action. Thus, the focal point of duality in structuration theory is the manner in which action and structure presuppose each other. Thus, the structural properties of social systems are both medium and outcome of the practices they recursively organise (Giddens 1984). The dimensions of the duality of structure are given in the following well-known diagram in figure 4.2. The separation of this duality into vertical dimensions is simply for analytical convenience. As the discussion in the next section clarifies, the dimensions of structure are inextricably interwoven in and with the production of action.

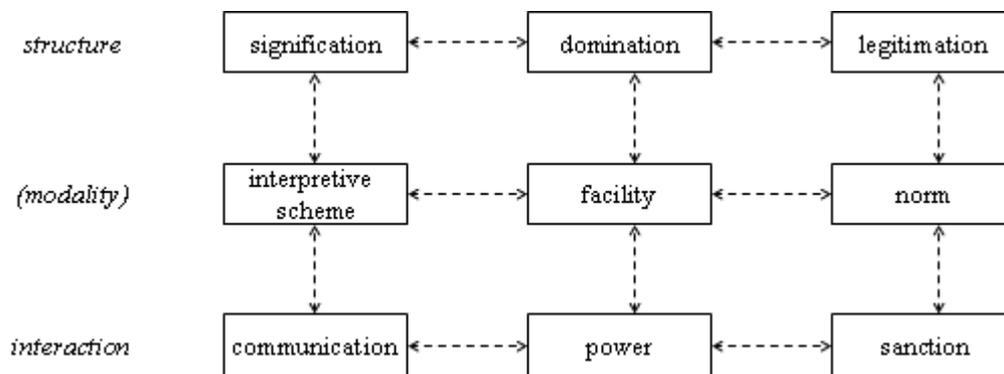


Figure 4.2 The dimensions of the duality of structure

Source: Giddens (1984:29)

Giddens (1984) draws upon the earlier work of Durkheim, Marx and Weber (see Giddens, 1984) to break down social structure and human interaction into three dimensions: signification, domination, and legitimation are interlinked by the three modalities, as illustrated. ‘Signification’ refers to the rules that constitute meaning, while ‘legitimation’ refers to the norms and the resources that determine relations of domination. Given that these structural properties are

evident in action, the latter are also analytically deconstructed into communication, power, and sanction. Giddens (1984) also introduces modalities of structuration to further clarify these analytical dimensions. From this, we can 'relate the knowledgeable capacities of agents to structural features' (Giddens,1984:28). For this reason, the three modalities relating to signification, domination and legitimation are interpretive schemes, norms and facilities, respectively.

According to Giddens (1984), interpretative schemes are the stocks of knowledge that enable actors to understand things as things, whether they are physical (eg table, chairs), or more abstract and conceptual (eg events, words). This implicit (background) knowledge and explicit (foreground) knowledge are acquired through experience. Actors map their experience of the world into cognitive schemes. These are drawn upon in making sense of their own and others' actions (Walsham, 1993). Communicative action in particular is sustained by, and sustaining of, structures of signification through interpretive schemes. While interpretive schemes are the rules for understanding what to know, norms are understood as the rules for understanding how to act. Actors use rules such as standards of morality to sanction or legitimate their actions as appropriate conduct. Therefore norms constitute structures of signification. Facilities are the material and non-material resources which actors bring to bear on their actions, enabling them to exert power over social action. Material resources can be allocated by those who control them. Non-material resources include 'status, special skills, charisma etc, that an actor may bring to an action situation' (Lyytinen and Ngwenyama, 1992:23). These facilities enable actors to draw on and reproduce structures of domination, or the asymmetry of allocative and authoritative resources. Such structures are fluid rather than concrete, because they demonstrate what Giddens (1984) terms a 'dialectic of control'. This means that even those who are subordinate can influence the activities of their superiors. The playing out of this dialectic can lead to asymmetries that can be dramatically or imperceptibly shifted over time.

Giddens (1984) elaborates on two further concepts, namely social integration and system integration. According to Giddens, social integration refers to the reciprocity, that is, autonomy and dependency, between actors in contexts of co-presence. On the other hand, system integration refers to reciprocity between actors or collectivities across extended time-space. Giddens distinguishes between the cohesive effects of social interactions which take place when actors are physically present and wider systemic effects of interactions across distance. Whereas

social integration preserves a concern for praxis in situ, system integration refers to reciprocities between absent agents, that is, agents who are physically and/or temporally situated in different settings (Cohen, 1990). Social integration is particularly useful for social practice involving self-service technologies where wider-scale practices as opposed to when face-to-face interactions are observed.

Another important concept in structuration theory is time-space distancing. This involves the ‘stretching of social systems across time-space, on the basis of mechanisms of social and system integration’ (Giddens, 1984:377). As the recursive and reflexive structuration of social interaction extends between people over geographical distance and over time, so does the embeddedness or ‘bite’ of those practices increase. For example, the user, equipped with access to Internet-based self-service technology, may expect to use the Internet successfully in most parts of the developed world, given that these practices have been more widely accepted there for some time. However, should the user wish to conduct an online transaction in a developing country context, these practices are less widely observed, but may, in the future, become standard. If social practice becomes reasonably stable over time and space, then routines – practices in which actors habitually engage – develop. Routines constitute ‘the habitual, taken-for-granted character of the vast bulk of the activities of day-to-day social life’ (1984:376).

The use of Internet-based self-service technology, once a social practice to be painfully acquired, may, with the years, become commonplace, a routine part of a person’s life. ‘All social interaction is situated interaction – situated in time and space. It can be understood as the fitful yet routinised occurrence of encounters, fading away in time and space, yet constantly reconstituted within different areas of time-space. The regular or routine features of encounters, in time as well as space, represent institutionalised features of social systems’ (1984:86).

4.2.3 Structuration theory in information systems research

Structuration theory is increasingly becoming a well-received theory in the IS literature (Walsham, 2002, 1993; Rose and Scheepers, 2001; Orlikowski, 2000, 1996, 1992; Walsham, 1993; Barley, 1986). For example, there have been a number of attempts to incorporate information systems within the theoretical framework of structuration theory (eg DeSanctis and Poole 1994; Orlikowski 1992). Following Giddens (1985), Orlikowski and Robey (1991) explore the ‘duality of technology’ and argue that an individual’s actions are neither determined by technology, nor are they capable of constructing technology as they see fit. There is a duality of structure, so that technology constrains and enables individual action, while being a product of individual action. In other words, while we develop technology, technology affects our activities. This recursive relationship recognises that while individuals design technologies to enable new actions, these technologies constrain our action. This is often summarised as technologies constrain/enable action.

In Orlikowski and Robey (1991), the tenets of structuration theory are applied to help understand the relationship between IT and organisations. In their work, the ‘duality’ of technology is explored. IT is seen as the social product of subjective human action within specific structural and cultural contexts, and simultaneously an objective set of rules and resources involved in mediating human action, hence contributing to the creation, recreation and transformation of those contexts. The concept of the duality of technology is explored further in Orlikowski (1992). Orlikowski’s approach to rethinking information technology is well in keeping with the tradition of Giddens’ work. DeSanctis and Poole (1994) proposed the adaptive structuration theory (AST) framework to provide insight into group decision support systems (GDSS). However, the AST approach comes in for sustained attack from Jones (1999), who points out that Giddens’ concept of structure is incompatible with the more traditional view adopted in AST, and that no substantive theoretical justification is offered, to produce a contingency-type model of technology ‘impacts’ which Giddens has specifically criticised.

As ‘meta-theory’ from a social constructivist stable, structuration theory does not provide ‘middle range theory about specific phenomena that can be explored or tested directly and empirically’ (Orlikowski and Robey, 1991). Neither is it ‘specific about the technology’ (Monteiro and

Hanseth, 1996). This research style is largely incompatible with Giddens' own, which is bound to lead to tensions. The inherent weakness of some of this theorising is that it tends to reinforce the equation of technology with structure and structural constraint. In IS this tends to take the form that technology is built by human agency; thereafter it constrains what we do – characterised as the 'discontinuous separation of design and use' by Orlikowski (1992). This equation of technology with structural constraint is not consistent with structuration theory. However, the deployment of further structuration theory concepts, such as time space distanciation, routinisation, and system integration helps to explain IS practice while avoiding this problem (Rose 1999).

A study by Barley (1986, above) described the introduction of computer tomography scanners into American hospitals, exploring how the actions of the stakeholders and the institutionalised traditions within the organisation influenced each other as 'occasions for structuring'. By far the most common starting point is the 'dimensions of the duality of structure' model (figure 4.2), using Giddens' concepts as a checklist for guiding social analysis. A fairly straightforward use of these concepts occurs in Karsten (1995), where Lotus Notes implementations in three organisations are analysed. Jones and Nandhakumar (1993) go further in their analysis of the development of an executive information system by reflecting upon the theory – thus completing the circle. Walsham (1993) provides sustained longitudinal case study analysis covering issues of IS strategy, development, implementation and evaluation in three contrasting organisations. Walsham and Sahay (1996) used structuration theory with actor-network theory to investigate problems in developing geographical information systems (GIS) in an Indian government department. They analyse the social context and process of implementing GIS in India, and the inter-linkages between them. They emphasise two aspects of social context relating to government organisational structures and the scientific tradition, and relate these to the initiation, operationalisation and continuation phases of the GIS implementation process. In addition, Lyytinen and Ngwenyama (1992) found that social activity, including work processes, is enabled and constrained by social structures that are produced and reproduced through human action.

More recently, Orlikowski (2000) proposed an extension to the structural perspective by developing a practice lens which examines emergence, improvisation, and change over time as people reconfigure their technologies or alter their habits of use, and thereby enact different technologies-in-practice. Despite the growing popularity of Internet-based SSTs in contemporary

social settings, there is little evidence of any reference to the structuration approach to understand this contemporary phenomenon. The next section adapts Orlikowski's (2000) latest notable advancement in applying structurational theory in IS into a conceptual framework for analysis.

4.2.4 A structurational framework for analysis

Orlikowski (2000) proposes an extension to the structurational perspective by developing a practice lens which focuses on how users' recurrent interaction with technologies enacts distinctive structures of technology use. This model obviously has a particular attraction for the study of IS innovations like Internet-based self-service technologies, compared with previous IS models that attempted to incorporate structuration theory. One of the criticisms of past structurational models is their tendency to focus on stable technology. What sets this model apart is its proclivity to examine emergence, improvisation, and changes over time as designers reconfigure their technologies or as users alter their habits of use, and thereby enact different technologies-in-practice. Recently, Schultze and Orlikowski (2004) applied this model to understand the use of Internet-based self-service technologies in a business to business (B2B) setting. However, this model has not been applied in a business to consumer (B2C) setting and in the context of competing service channels. Furthermore, they tend to focus on 'use' with scant attention being devoted to 'design' facilities, norms and interpretive schemes that are so central to the study of implementation processes.

Table 4.1 lists the key conceptual elements for the initial framework for analysis. The relationships between these key concepts are illustrated in figure 4.4. Figure 4.4 takes a significant departure from the original model by incorporating design as an important analytical element.

Table 4.1

The social context of SST implementation: an initial synthesised analytical framework using structuration theory

Conceptual components	Associated conceptual elements
Practice lens	<ul style="list-style-type: none"> • Facilities, norms and interpretive schemes • Systems of signification, domination and legitimation, • Routinisation • Enabling and constraining features • Intended and unintended consequences

Assumption(s)

The stability of technology and its application is always provisional.

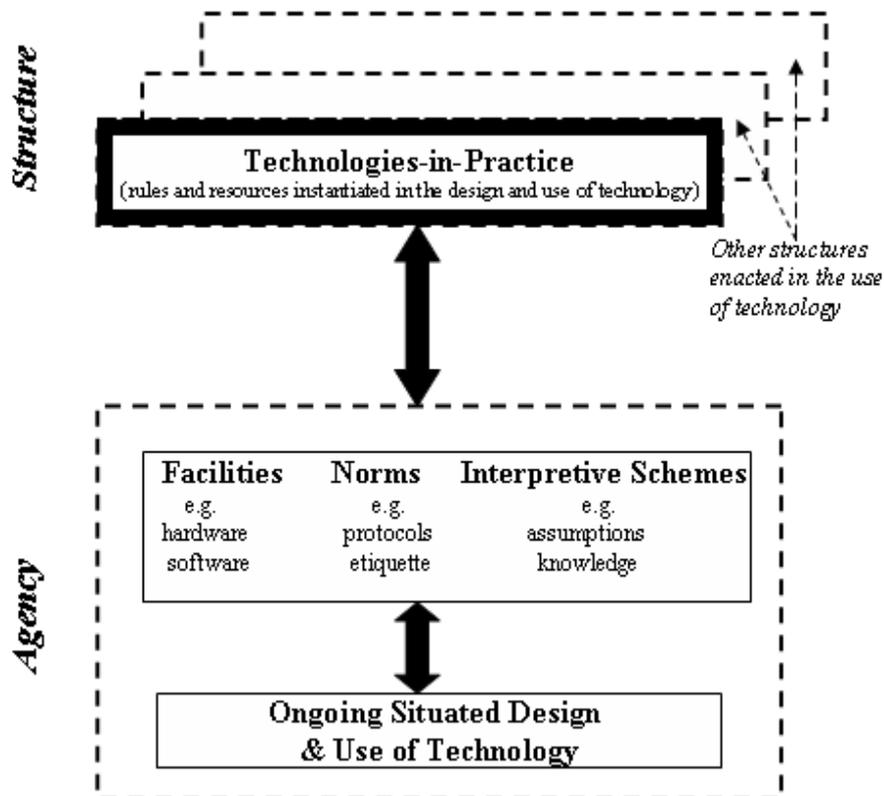


Figure 4.3 Extended enactment of technologies-in-practice model

Source: Orlikowski (2000:410)

Principle

Users always have the potential to change the habits of use, and in this way change the structures they enact in their recurrent practices. Similarly, designers have the potential to change the structures they enact in their recurrent practices.

Agency

Agency refers to the capacity of human actors to do things and as such implies power.

Facilities

Actors draw on the facilities available to them such as hardware and software.

Norms

Actors draw on the norms such as protocols and etiquette that inform their ongoing practices.

Interpretive schemes

Actors draw on their tacit and explicit knowledge of their prior action and the situation at hand.

Ongoing situated design and use of technology

Actors recursively apply their knowledge, facilities, and habits of the mind and body to 'structure' their current action that inform their ongoing processes.

Structure

Structure refers to rules and resources recursively implicated in the reproduction of the technology-in-practice.

Technology-in-practice

Ongoing enactment of technology reinforces it, so it becomes regularised and routinised, an expedient and habitual response to repeated use of a technology within the daily demands of social life.

Rules

Rules refer to techniques or generalisable procedures applied in the enactment or reproduction of social practices (Giddens, 1984).

Resources

Actors depend on two types of resources. Allocative resources (such as land, raw materials, technology) refer to capabilities or to forms of transformative capacity.

Authoritative resources are non-material resources involved in the generation of power, derived from the capability of harnessing the activities of human beings.

Design and use

Design and use of technology using the practice lens involves a repeatedly experienced, personally ordered and edited version of the technological artifact, being experienced differently by different individuals and differently by the same individuals depending on the time or circumstance.

Other structures

The enactment of a technology-in-practice is situated within a number of nested and overlapping social systems. This means that people's interaction with technology will always enact other social structures along with the technology-in-practice, for example English as the primary language over the Internet.

In summary, these structuration concepts provide a rich framework to analyse empirical SST situations.

4.2.5 Critiques and limitations of structuration theory

Despite its growing popularity in IS, a number of social theorists have expressed common concerns about structuration theory's treatment of structure and agency. Archer (1982) argues that conflation, the problem of reducing structure to action or vice versa, weakens the analytical power of structuration theory. Archer (1982) proposes that to allow for their analytical separation, human action should be viewed over the short term, while structures should be seen as more enduring. In addition, Giddens' conceptualisation of structure as 'rules and resources' existing only in memory traces has led to criticisms of subjectivism. Critics argue that Giddens does not so much resolve the dualism of action and structure, as offer victory to the knowledgeable human actor (Clegg, 1989).

Another criticism is directed at structuration theory's inability to explain historical change. Giddens' view of structuration offers a conceptual mechanism for explaining the reproduction of social structure. However, some researchers argue that why some forms of social reproduction succeed and become institutionalised, and others do not are questions of more relevance to contemporary researchers (Stinchcombe, 1990). It appears that for these types of questions, structuration theory offers no direct answers.

Nor is it clear whether structuration allows for improvisation as a kind of purposeful behaviour. Ciborra and Lanzara (1994) propose a distinction between formative and structuring properties. The formative context suggests a background of meaning that can account for shift and drift phenomena. However, upon closer examination there is little distinction between structuration and formative properties. In fact, the treatment of the formative context is not unlike Giddens' (1984) suggestion that structure is paradigmatic.

Other criticisms are aimed at the lack of concrete empirical example in Giddens' own work. Critics contend that Giddens' abstract conceptual focus offers few clues as to how to gather useful understanding of the world of practice.

In IS studies, the limitations of structuration are that it does not allow us to examine the relationship between people and technology beyond the recognition that technology both enables and constrains us. After all, structuration is a theory of social organisation that explains change and stability in a social system over time. For example, structuration does not directly address how power and values are embodied or found in the use of technology. As a result, critics argue that structuration is not capable of unpacking exactly how technology regulates us, and how we react to technology. This leads Monteiro and Hanseth (1996) to argue that structuration simply does not provide a fine-grained analysis of the interaction between individuals and technology. Proponents of the use of structuration theory in IS also conclude that scholars need to better theorise the information technology artefact and move beyond the simple constrain-enable distinction (Orlikowski and Iacono, 1991).

Structuration theory in information systems research has also been criticised (Archer 1982; Barley, 1986; Orlikowski, 1993) for its relative neglect of technology. For Giddens, structure does not exist in material artefacts, such as technology, but in human memory traces and is seen

to be enacted through social practices (Jones and Karsten, 2003). Giddens and Pierson (1998:82) argue that ‘technology does nothing, except as implicated in the actions of human beings’. Monteiro and Hanseth (1996:330) present the following critique of structuration theory’s relative neglect of technology:

Our principal objection to conceptualizations like [Orlikowski and Robey 1991; Orlikowski 1991; Orlikowski 1992; Walsham 1993] is that they are not fine-grained enough with respect to the technology to form an appropriate basis for understanding or to really inform design.

Monteiro and Hanseth (1996) were not claiming that structuration theory cannot deliver a satisfactory level of precision. It may be in its application that researchers have failed to derive a more fine-grained analysis. In applying structuration theory to the case analysis, I will assess the extent to which structuration theory naturally lends itself to how more specific technological elements and functions of an IS relate to organisational implementation issues.

Nevertheless, what is missing from structuration theory are concepts that allow the interrogation of the relationship between individuals and technology. It appears that such concepts can be found within actor network theory (ANT). ANT is largely concerned with the interactions between technology and individuals. According to some of the most prominent interpretive researchers in IS, ANT contains a wealth of concepts for understanding the relationship between technology and individuals, such as actors, networks, the process of inscription, and reconfiguration (Hanseth, 2004; Monteiro, 2000; Monteiro and Hanseth, 1995). They maintain that addition of these concepts will allow for the further theoretical development for the interplay between technology and the social. These concepts will be discussed in the next section.

4.2.6 Conclusion on structuration theory

Looking beyond its common criticisms discussed above, a number of the key tenets of structuration theory still have a particular appeal for the study of contemporary phenomenon like Internet-based self-service technology. First, structuration theory implies that social enquiry should not give prominence to either the individual experience of actors or the social totality, but rather focus on social practice that lies at the root of the constitution of both individuals and

society. Second, social practices are created by knowledgeable agents with causal powers, that is, powers to make a difference. Instead of viewing human agents as cultural dopes or the product of class forces, focus should be directed to their capacity for self-reflection in day-to-day interaction, a practice of ‘tacit’ consciousness of what they are doing and the ability under certain circumstances to do it. In the third place, structuration theory proposes that social practices are not random or voluntary, but ordered and stable across space and time. Simply put, they are routinised and recursive. In producing social practices which constitute society, actors draw upon structural properties (rules and resources) which themselves institutionalise features of society. Finally, structuration theory proposes that structure is activity-dependent. Structure is viewed as both medium and outcome of practices across time and space. Giddens (1984) refers to this process as the ‘double hermeneutic’, the double involvement of individuals and institutions. In the words of Giddens (1984:14), ‘we create society at the same time as we are created by it’. These tenets will serve to broaden our understanding of the SST implementation phenomenon.

4.3 Actor-network theory

4.3.1 Introduction

Although the use of structuration theory to understand the implementation of SSTs offers a natural starting point for addressing my research questions, I explore here the actor-network theory (ANT) as a possible addition to help with a further understanding of the case. One of the main motivations for including actor network in my analysis is that it may offer additional insights with regard to the social dynamics of SST implementation. Structuration theory, including its enhancements, has a strong tendency to neglect the role of technology (the SST) in the social context. However, I would argue that IS implementation has both technical and social merits at the same time, and that therefore it might be appropriate to try to overcome the distinction between technical and social for a better understanding. What sets ANT apart from conventional theories is that neither the inherent properties of the technology, nor some properties of the social context – such as user traits and other actors – drive the success or failure of an implementation. Instead, it is the associations that exist and are created between the technology and its surrounding actors, that is, actors that are both technical and social. ANT presents a view of translation, which by focusing on associations rather than properties is radically different from some of the ideas proposed by structuration theory. In this section I will

describe ANT so that I can use it in my analysis of the case study. I will also highlight some of its uses in IS research and finally discuss its critiques.

4.3.2 Key elements in actor-network theory

In this section, I provide an understanding of the key elements in actor-network theory. ANT employs an idiosyncratic vocabulary, terms which at first glance may appear similar in other theories, such as systems theory, but have quite a different meaning in ANT. For example, ANT provides its own particular ‘interpretation’ to notions such as ‘network’, ‘black-box’ and ‘translation’. These peculiarities will be discussed briefly in the subsequent section.

Overview of actor-network theory

Actor-network theory was pioneered by Michel Callon and Bruno Latour (Callon and Latour, 1981; Callon, 1986), and later extended and further developed by the original authors and other researchers (Latour, 1999; Law, 1991; Law and Hassard, 1999). Drawing on key concepts and assumptions from the social shaping of technology, Callon and Law (1989) make use of the actor-network approach to understand the heterogeneous and interrelated character of social and technological components. ANT contends that both social and technical determinism are flawed and advocates a socio-technical account (Callon and Latour, 1981) in which neither the social nor the technical is privileged. According to ANT, what appears to be social is partly technical and what appears to be technical is partly social (Law, 1991). ANT differs sharply from views that posit that purely technical and purely social relations are possible.

Based on these perspectives, actor-network theory, or the ‘sociology of translations’ is concerned with studying the construction and transformation of the heterogeneous networks (Law, 1992). These are made up of people, organisations, agents, machines and many other objects that constitute the world, existing of both humans and non-humans. As Latour (2005:10) comments on ANT’s treatment of non-humans, ‘They have to be actors and not simply the hapless bearers of symbolic projection’ – a significant distinction from structuration theory, a distinction that will be tackled later (see section 4.6). ANT also delves into the ways in which networks of relations are arranged, how they emerge and come into being, how they are constructed and maintained, how they compete with other networks and how they are made more durable over

time (Tatnall and Gilding, 1999). In other words, when humans interact with other humans, these interactions are mediated through non-human artefacts of various kinds, and such interactions are mediated through additional networks of non-human artefacts, objects and humans. Hence, if material artefacts in these networks disappear, so too would 'social order'. ANT also investigates how actors enlist other actors into their world and how they bestow qualities, desires, visions and motivations on these actors (Latour, 1996). ANT thus offers a unique approach to theorising innovations such as self-service technologies and their implementation; an approach that resists the essentialist notions inherent in the conventional treatment of self-service technologies.

Understanding the essence of ANT

A key feature of actor-network theory is a perspective of the social world that shows it to comprise heterogeneous networks that form actors. All phenomena are the effect or the product of heterogeneous networks (Law, 1992). Even persons are made up out of a heterogeneous network, as Law describes (1992:379-380):

However, I will press the argument in another way by saying that, analytically, what counts as a person is an effect generated by a network of heterogeneous, interacting, materials. This is much the same argument as the one that I have already made about both scientific knowledge and the social world as a whole. But converted into a claim about humans it says that people are who they are because they are a patterned network of heterogeneous materials. If you took away my computer, my colleagues, my office, my books, my desk, my telephone I wouldn't be a sociologist writing papers, delivering lectures, and producing 'knowledge'. I'd be something quite other – and the same is true for all of us. So the analytical question is this. Is an agent an agent primarily because he or she inhabits a body that carries knowledge, skills, values, and all the rest? Or is an agent an agent because he or she inhabits a set of elements (including, of course, a body) that stretches out into the network of materials, somatic and otherwise, that surrounds each body?

In attempting to understand social phenomena, researchers need to study actors without imposing on them *a priori* definitions or expectations. More specifically, ANT researchers must avoid *a priori* distinctions between the technical and the social. Or, put in another way, actor-network theory seeks to avoid both technological determinism and social reductionism (Monteiro, 2000).

ANT does not accept any form of reductionism, either technological or social, that splits up the technical from the social and supposes that the one drives the other. It states that there is no reason to assume, *a priori*, that either objects or people in general determine the character of social change or stability (Law, 1992). As such, ANT supports analytically treating objects and people in the same way; non-humans and humans together form the heterogeneous networks. This is best elucidated by means of an example. In our day-to-day lives, we are influenced by a wide range of factors, including social and technical, but also political and historical factors. For example, when driving a car we are influenced by traffic regulations, previous driving experience, road conditions and the car's manoeuvrability (Monteiro, 2002). To understand the phenomenon of driving a car, we should consider all these influencing factors together.

ANT offers three methodological principles to address the need to treat both human and non-human actors fairly and in the same way (Callon 1986): agnosticism, generalised symmetry and free association. First, in agnosticism, the researcher abstains from censoring or judging the actors, whether they are human or non-human. ANT therefore prescribes analytical impartiality towards both human and non-human actors. In the second place, generalised symmetry requires that researchers explain conflicting viewpoints of different actors in the same terms by use of an abstract and neutral vocabulary. This rule prohibits change registers when moving from the technical to the social aspects of the problem to be studied, and dismisses the affordance of any privileged explanatory status to technical or social actors. Finally, in the principle of free association, the researcher is instructed to abandon all previous distinctions between the natural and the social. There can be no boundary between the two, although they might be separated later, as the result of analysis and understood as outcomes or effects, but cannot be divided *a priori*, assuming it is the given order of things (Law, 1999). Similarly, Callon (1999:183) states:

ANT was developed to analyse situations in which it is difficult to separate human and non humans, and in which actors have variable forms and competencies.

This treatment of human and non-human has a particular appeal for understanding contemporary forms of IS innovations such as Internet-based self-service technology.

Understanding the actor

According to Latour (2005:217) an actor-network ‘is made to exist by its many ties: attachments are first, actors are second’. When we speak of actors, Latour (2005) proposes that we always add the large network of attachments that make the actors act. As alluded to earlier, actors are those elements in a context that shape action while pursuing their interests. An actor is something that acts or to which activity is granted by others. It implies no special motivation of human individual actors or of humans in general. An actor can literally be anything, provided it is granted to be the source of an action (Latour, 1996). But as Law (1992) argues, actors are also an effect generated by a network of heterogeneous, interacting, materials. In other words, social agents are never located in bodies alone, but rather are patterned networks of heterogeneous relations. By punctualisation or black-boxing, actor-networks themselves ‘make up an actor’. Thus each actor is made up of actors and at the same time is part of an actor. Or, in the vocabulary of actor-network, each actor is itself a simplified actor-network and is at the same time part of other actor networks.

Law (1992) states that all attributes we normally associate with human beings, such as thinking, acting, writing, loving and earning, are generated in networks that exist beyond the body. Thus an actor is also always a network. Since actors are actor-networks in infinity, the researcher must choose how the network under research is ‘zoomed in and out’ and which actors are included. ‘It entails that the “actor” of an analysis is of the “size” that the researcher chooses as most convenient relative to the direction of the analysis (Monteiro, 2000:82). However, being seen as an actor and thereby producing a simplification of complexity, either by researchers or, more importantly, by other actors, shows the result of a mobilisation process with black-boxing effects. The ordering these simplifications produce is neither natural nor ‘obvious’. They are made obvious or natural in order to achieve an effect, namely to curb the opposition or alternatives. When choosing the size or shape of an actor, the researcher is not completely free, but bound by other actors’ practice and what is obvious and natural to them (Monteiro, 2000). Thus, actors should have some obviousness and naturalness to them. In summary, an actor in ANT parlance is an effect of heterogeneous relations between humans and objects, and an actor is also, always, a network (Law, 1992).

Understanding the actor-network

The actor-network is realised through the common ‘enrolling’ of human and non-human participants into a network through processes of negotiation and translation (McLean and Hassard, 2004). It is through their alignment with each other that actors form an actor-network. This alignment is achieved through the translation of interests and the enrolment of actors into the network. Translating involves showing how an actor’s non-aligned interests may become aligned. Alignment is established in inscriptions that give a particular precedence in terms of a viewpoint. Latour uses the term ‘immutable mobile’ to describe such network elements, meaning that when they are moved around in time and space, they remain stable and unchanged (Tatnall and Gilding 1999; Latour 1999b). For example, a car can be considered an immutable mobile when it displays a relational pattern of certain properties (such as infrastructure, oil industry, driving licences, traffic signs, garages, etc). Such a network can move through time and space without changing these properties. It displays properties of irreversibility (Walsham, 1997).

Law (1992) asserts that the actor-network approach is curious about how actors and organisations mobilise, juxtapose and hold together the bits and pieces of their composition. Law (1992) is also interested in how they are sometimes able to prevent those bits and pieces from following their own inclinations and ‘making off’. Furthermore, of particular interest is how they manage to conceal for a time the process of translation itself and so turn a network from a heterogeneous set of bits and pieces, each with its own inclinations, into something that passes as a punctualised actor. Law (1992) emphasises ‘time’ because once a network is formed, it is not formed once and for all. It can always become unstable, since new actors, the desertion of existing actors or changes in alliances can cause the ‘black-boxes’ of networked actors to be opened and their contents reconsidered (Callon, 1986b). A black-box, which is also a network in its own right, is a way of talking about the simplified points that are linked together in an actor-network (Callon, 1986b). Latour (1987:108–121) describes five alternative strategies for enrolling others in the punctualisation or creation of a black-box:

- To appeal to the other’s explicit interests (‘I want what you want’)
- To get the others to follow our interests (‘You want what I want’)
- To suggest a short detour (‘I will take care of your interests, if you follow me’)

- To reshuffle interests and goals by tactics such as inventing new goals and inventing new groups ('We all want this')
- By becoming indispensable to others ('You need me to get what you want')

A network recursively generates and reproduces itself, and relies on the active maintenance of its simplifications or 'punctualisation' for its continued existence. The term 'network', contrary to conventional uses of the word, does not imply some fixed thing, but describes a dynamic, actively shifting alliance of actors. A network becomes durable partly owing to a structure where each point is at the intersection of two networks: 'one that it simplifies and another that simplifies it' (Callon 1987:97). As already pointed out, actor networks are relentlessly produced and reproduced. The point here is not whether the actants of a network are social or technical, but, as Latour (1987:140) points out, 'which associations are stronger and which are weaker'.

One of the central concerns for ANT is the issue of power. It is argued, in particular, that power is effected through the production and reproduction of a network of heterogeneous 'actants' (McLean and Hassard, 2004). The notion of power is better explicated using the sociology of translation.

Understanding the sociology of translation

One of the central concepts in ANT is the sociology of translation. For Latour (2005:64)

ANT is the name of a movement, a displacement, a transformation, a translation, and enrolment. It is an association between entities which are in no way recognisable as being social in the ordinary manner, except in the brief moment when they are reshuffled together.

More recently Latour (2005:108) defined translation as a relation that 'induces two mediators into existing'. However, 'translation' is a term used in many different ways. Literally the term 'translation' denotes two meanings, both relevant to ANT. In the first place, it is a change of position and a new interpretation. In other words, translation operates between actors: an actor gives definition to another actor by imputing these actors with interests, projects, desires,

strategies, reflexes, afterthoughts. And second, according to Callon (1986b), a translation is ‘the methods by which an actor enrolls others’. These methods involve:

- The definition of roles, their distribution, and the delineation of a scenario
- The strategies in which a future state actor-network renders itself indispensable to others by creating a geography of obligatory passage points
- The displacement imposed upon others as they are forced to follow the itinerary that has been imposed

In the creation of the actor-network or the process of translation, Callon (1986) discerns four ‘moments’: problematisation, interessement, enrolment and mobilisation. During the first moment of *problematisation* one actor, the initiator, makes an effort to make other actors subscribe to its own conceptions by demonstrating that it has the right solutions to, or definitions of the problem. Initiators try to demonstrate their quality of being indispensable to the solution of the problem during the initial stage. The problem is redefined or translated in terms of solutions offered by the initiator (Bloomfield and Best, 1992), who then attempts to establish themselves as an ‘obligatory passage point’ which must be negotiated as part of its solution. To pass through the obligatory passage point, the other actors must accept a set of specific conventions, rules, assumptions and ways of operating laid down by the first actor (Tatnall, 2000). Introna (1997) defines an obligatory passage point as a rhetorical device that presents the solution to the problem in terms of the resources of the agency proposing it. During the second moment of translation, *interessement*, an attempt is made to impose and stabilise the identities and roles defined in the problematisation on the other actors, thereby locking other actors into the roles proposed for them (Callon, 1986). Gradually existing networks are replaced by the new network (Grint and Woolgar, 1995). The third moment is *enrolment*. Enrolment occurs when a stable network of alliances is formed, and the actors yield to their defined roles and definitions. This involves a multilateral political process where the initiators seek to convince other actors. It is for this reason that Callon (1986: 211) states: ‘To describe enrolment is thus to describe the group of multilateral negotiations, trials of strength and tricks that accompany the interessements and enable them to succeed.’ The final moment is *mobilisation*. Mobilisation is a set of methods that initiators employ to ensure that allies do not betray the initiators’ interests. During mobilisation the proposed solution gains wider acceptance and achieves stability. Stability implies that the

technology's content is institutionalised, and is no longer controversial, that is, it becomes taken-for-granted and is 'black-boxed'.

From an ANT perspective, material artefacts are significant in the structuring of these relations. As Lowe (2001:82) so lucidly puts it: 'Objects provide receptacles for human knowledge and vastly enable the process by which facts become accepted.' According to Latour (1987), the spread of ideas and their conversion to accepted facts is a rhetorical process. A fact is only established as such when a following is built up which uses such ideas increasingly and without modification. The fate of ideas depends on how those who come later use these ideas. In other words, ideas become more accepted, or taken for granted, as they are translated into inscriptions and incorporated into instruments and technology.

For example, the equivalent is the spread of self-service technology through the consumer-driven healthcare industry as healthcare insurance service providers have come to accept the technology as a fact, as a 'black box', a fact which can be accepted without modification. The networks constituted by SSTs are spread in this manner. Challenges are 'muted' as a consequence of the strength which the network achieves as least in part from many of the service providers who deploy these systems. Translation is necessary for stability in these networks, since actors from the outset have a diverse set of interests (Monteiro, 2000). Aligning these interests causes a network to become stable and durable. However, according to Mahring, Holmstrom, Keil and Montealegre (2004), the translation process does not necessarily pass through all the stages described above. It is plausible, then, that translation processes may fail and halt at any stage, depending on the strength of the network's inscriptions. In contrast to diffusion models, which assume technologies to be immutable, actors in ANT not only reshape technologies, but are themselves changed as the changing artefact spreads through the social network.

Besides the four stages of translation, the process of inscription is critical to building and stabilising actor-networks, as most artefacts within a social system embody inscriptions of some interests. Inscriptions refer to the way technical artefacts embody patterns of use (Monteiro 2000), or how certain viewpoints, values, opinions and rhetoric are converted into devices or materials such as reports, documents and scientific papers or frozen into codes or computer applications (Bowker and Star, 1994). For example, technological artefacts can also embody a worldview (inscription) that reflects the socio-economic context and rationality in which it was

created (Avgerou, 2001; Heeks, 2002). Chilundo and Aanestad (2005) also found that in the implementation of technologies in developing countries, the potential for a clash of rationalities is greater where the values inscribed in Western technologies conflict with values of developing countries.

During the development of a technology and in its placement in an actor-network, inscription takes place. This means that the technology does not have to be physically constructed for it to exist. It has to be conceived, but once it is conceived, it is a force to be reckoned with (Latour, 1996). Inscriptions also prescribe a program of action for other actors, which the latter may or may not follow, depending on the strength of the inscription (eg Latour, 1991). In relation to translation, inscription to a large extent takes place simultaneously and interrelatedly, that is, it starts as soon as a technology enters the picture and is beginning to be formed by its creators (Latour, 1991).

So, inscription implies that a material or technological artifact never begins as a blank slate. In other words, artefacts always embody the designer's beliefs, social and economic relations, previous patterns of use, and assumptions as to what the artefact is about (Akrich, 1992). For example, inscription is used when designers formulate and shape self-service technology in such a way so as to lead and control users. Inscription can also refer to the way technical artefacts embody patterns of use, including user programs of action. The term also encompasses the roles users and the system play (Monteiro, 2000). Since inscription can guide users to join or behave in a way that forces a definition of the form and function of the technology, many actors actively seek to inscribe their vision and interests into the artefact (Faraj, Kwon, and Watts, 2004). Inscriptions may also lead to irreversibility.

Another important phenomenon and concept of ANT, then, is irreversibility. Irreversibility refers to the degree to which in a certain situation it is impossible to go back to a point where alternative possibilities exist (Callon, 1991). Irreversibility is often the result of the inscription of interests into technological artifacts, whereby those interests become increasingly difficult to change (Hanseth and Monteiro, 1998; Mahring *et al*, 2004). As ideas are inscribed in technology artefacts and as they diffuse in their relevant contexts, they help achieve socio-technical stability (Latour, 1987). While technology artefacts are, in part, open to interpretation, there are some features that are in practice 'beyond' (re)interpretation and that increase stability in the networks

in which technologies are encompassed (Latour, 1991). According to Bloomfield, Coombs and Knights (1997), information technologies in particular ‘stand in for’ or ‘speak for’ human actors. In this way they can hide decision processes and become ‘frozen organisational discourse’ (Bowker and Star, 1994:187). Walsham (1997) notes that inscriptions developed in software, as frozen discourse, may resist change and display signs of irreversibility.

Hanseth and Monteiro (1997) suggest four notions of inscription and translation that should be emphasised in a study:

- The identification of explicit anticipations or scenarios of use held by the various actors during design
- How these anticipations are translated and inscribed into materials
- Who inscribes them
- The strength of these inscriptions, that is, the effort it takes to oppose or work around them

Another important concept related to translation and inscription is framing. According to Faraj *et al* (2004), inscribed patterns of use do not succeed when users do not conform to their assigned program of action. In many new technologies, users modify and adapt the artefact into new forms of use. Based on actual practice, unexpected uses are developed and new functionality is envisioned, leading to a new perspective on what the artefact does and is expected to do. Thus, when studying the user of technical artefacts, one necessarily shifts back and forth ‘between the designer’s projected user and the real user’ in order to describe this dynamic process of negotiating design (Akrich, 1992).

According to Faraj *et al* (2004), it is necessary to measure which of these superimposed inscriptions actually succeeds in shaping the pattern of use in order to measure the strength of an inscription (Monteiro, 2000). Faraj *et al* define framing as the emergent outcome of the process of an artefact instantiation-meeting practice. Once a set of accepted facts is recognised as core to the technology, the process is hard to reverse: these facts are embedded in the expectations of users, evaluation routines (standards), and the beliefs of developers themselves. New versions of the technology must then incorporate or improve on this functionality. On a macro level, framing is defined by how key actors engage in actions in support of a certain vision or pattern of usage.

As with the micro level, this results in irreversibility (Hughes, 1994; Hanseth and Monteiro, 1997). Faraj *et al* (2004) claim that the examination of how users and actors together frame criteria for selecting and stabilising features is essential to understanding the irreversible and path dependent aspects of technology evolution.

4.3.3 ANT in information systems research

Researchers have long recognised the potential of employing ANT to investigate the successes and failures of technological innovations. Some seminal examples include Callon's (1986a) study on the failure of the domestication of the scallops of St Brieuc Bay and the development of the electric vehicle by the Electricité de France (Callon 1986b). Latour also used actor-network theory to analyse the development of a revolutionary public transportation system known as Aramis (Latour 1996) and to discuss the achievements of Louis Pasteur (Latour 1999b). More closely related to IS are organisation studies which have applied ANT in organisational analysis (Hassard, Law and Lee, 1999) and studies in accounting systems (Lowe, 2000, 2001).

More recently, many IS researchers have gone to great lengths to demonstrate the potency of ANT in IS studies. The use of ANT in IS has been popularised by the attempts of Scandinavian academics to apply the sociology of translation and inscription to the study of information infrastructures (Monteiro, 2000; Monteiro and Hanseth, 1996). Monteiro and Hanseth (1996) also studied the role of standards in electronic data interchange (EDI) systems and information infrastructure. Wagner (2003) recently drew on ANT to study the design and implementation of an enterprise resource planning (ERP) system in an academic environment. Mantovani and Spagnolli (2004) also used ANT to describe the struggle in a firm to negotiate and legitimate a new network technology.

ANT has been used to interpret the political processes of IT implementation (eg Walsham and Sahay, 1999). More specifically, ANT's treatment of information systems implementation as a complex socio-technical and heterogeneous network comprising actors, institutional arrangements, textual descriptions, work practices and technical artifacts has a particular appeal for this study. For example, Walsham and Sahay (1999) used ANT to demonstrate the mutual

dependency between technological properties and the social context in the implementation of GIS systems by Western developers in a local Indian setting.

Research drawing upon ANT seeks to:

examine more than just the technological system, or just the social system, or even the two side systems side by side; ... but the phenomena that emerge when the two interact (Lee 2001:iii).

In addition, Hanseth and Aanestad (2004:117), in their introduction to a special issue of ANT in the *Information Technology and People* journal recently emphasised the superiority of ANT over structuration theory in its analysis of technology:

'The Structuration theory approach has been picked up by a vast number of scholars and a wide range of studies have been carried out. These have given us many valuable insights into the social processes related to adoption and use of information systems. There is one aspect of these studies that is of crucial importance here. That relates to the role of technology in these studies as well as the theories they are based on. These go equally well (or more precisely, badly) for both Structuration theory and institutionalism. The studies of information systems based on these theories do not address the role of technology in a proper way. This fact is largely a consequence of the fact these theories totally ignore technology. This makes ANT – and the technology studies part of the STS field – different. And in this respect ANT offers some unique and very important contributions to information systems.'

In the special issue mentioned above, five exemplar papers were presented on ANT applications to different technologies and settings. Marres (2004) used ANT as a conceptual and methodological tool for the development of research practice. Adams and Berg (2004) used ANT to show how the notion of 'reliability' of health information is subject to negotiation. Allen (2004) studied the concept of inclusion in multiple technological frames using a socio-technical approach and Mahrng *et al* (2004) tackled a comparative use of ANT and escalation theory to analyse dysfunctional IT projects. A study which has a particular appeal for this thesis is Faraj *et*

al's (2004) study, which used ANT as a basis for studying the evolution and complex processes of World Wide Web technology. Nevertheless, like structuration theory, ANT is not free from criticisms either.

4.3.4 An actor-network framework for analysis

Actor-network theory will be used to analyse the same case and investigate how explanations provided by structuration theory to the research questions can be understood differently using ANT. Although ANT and the sociology of translation have become prominent streams of research on IS innovations, few of these models were able to distinguish between the designer's beliefs, the user and the evolving artefact. Recently, Faraj *et al* (2004) built on actor-network theory as a basis for studying the complex evolutionary processes of modern information technologies. A particular appeal of this approach is the authors' attempt to reject the subject-object distinction. Furthermore, their theoretical lens was able to reveal the interdependencies between actors and how processes of inscription, enrolment, and framing dynamically enabled and constrained information technology development. However, their original model overemphasises the role of designers and neglects the user in these processes.

Table 4.2 lists the key conceptual elements for the initial framework for analysis. The relationships between these concepts are illustrated in an adapted model in figure 4.4. Figure 4.4 presents the core ANT processes utilised in this study for understanding Internet-based self-service technology implementation model.

Table 4.2

The social context of SST implementation: an initial synthesised analytical framework using actor-network theory

Conceptual component	Associated conceptual elements
Sociology of translation	<ul style="list-style-type: none"> • Translation • Framing • Inscription

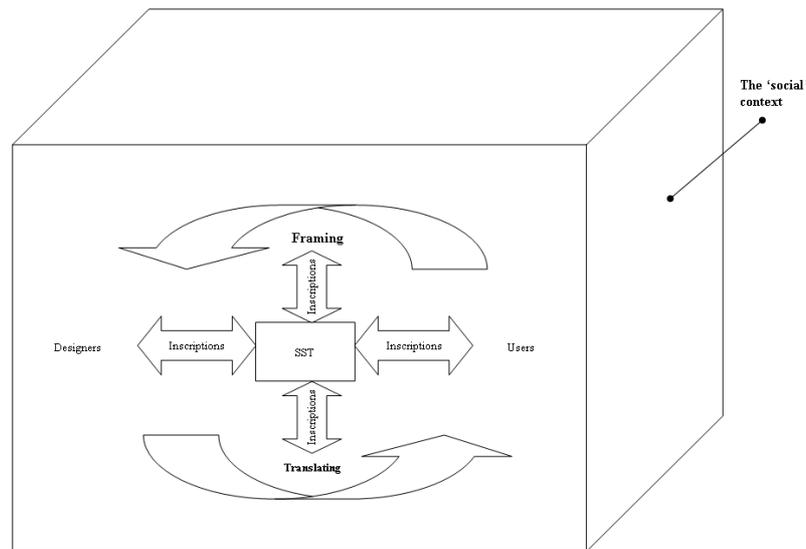


Figure 4.4 ANT process model for SST implementation

Source(s): Adapted from Faraj, Kwon and Watts (2004: 190) and du Plooy (1998)

Principle

Implementation processes show recurring operations in which networks of actors continuously react and interact, creating a spiral of technology implementation. These processes operate recursively within a social context.

Assumptions

Technology artefacts are not merely physical because they include and embody the active projection of actors, such as the motives, intentions, interests and prejudices of the designers and users.

Processes

Implementation of technologies should emphasise broader processes of implementation encompassing efforts across organisations and communities.

Inscribing

Entities that make up a network are often converted into inscriptions of devices such as documents, reports, models and software. This process is concerned with how ideas, values and intentions of social actors become inscribed in technology. Inscriptions

prescribe a program of action for other actors, which the latter may or may not follow, depending on the strength of the inscription. An inscription that remain stable and unchanged, that is, exhibits strong properties of irreversibility, is termed immutable mobile (Latour, 1997, Walsham, 2001).

Translating

Translation describes a variety of ways in which actors actively seek to interest others in supporting the construction of a claim, enrolling them directly or indirectly in a coalition dedicated to building a fact or a machine (Latour, 1987). The process of creating these actor-networks consists of four major stages: problematisation, interessement, enrolment, and mobilisation. Translation processes do not pass through all these stages and may fail and halt at any stage.

Framing

The framing process describes the emergent outcome of the technology meeting practice. Key actors engage in actions in support of a certain vision or pattern of usage. However, unexpected uses are developed, leading to a new perspective on what the technology does and is expected to do.

It is envisaged that analysing these processes that are bound in a particular social context will draw greater attention to the dynamics of IS implementation and provide rich insights into their emergent consequences. To complement the above ANT process model for SST implementation, figure 4.6 will be used to describe the translation sub-processes in more detail.

Principle

Actor-networks are configured by enrolment of human and non-human allies via a series of negotiations in a process of redefinition where one group of actors imposes definitions and roles on other actors (Callon, 1986b).

Assumption(s)

The model in figure 4.5 assumes that the enrolment of human and non-human allies is developed through four distinct subprocesses.

Stages

Problematismation

In the problematisation stage, a group of one or more key actors defines the problem and suggests solutions that make them indispensable to the solution.

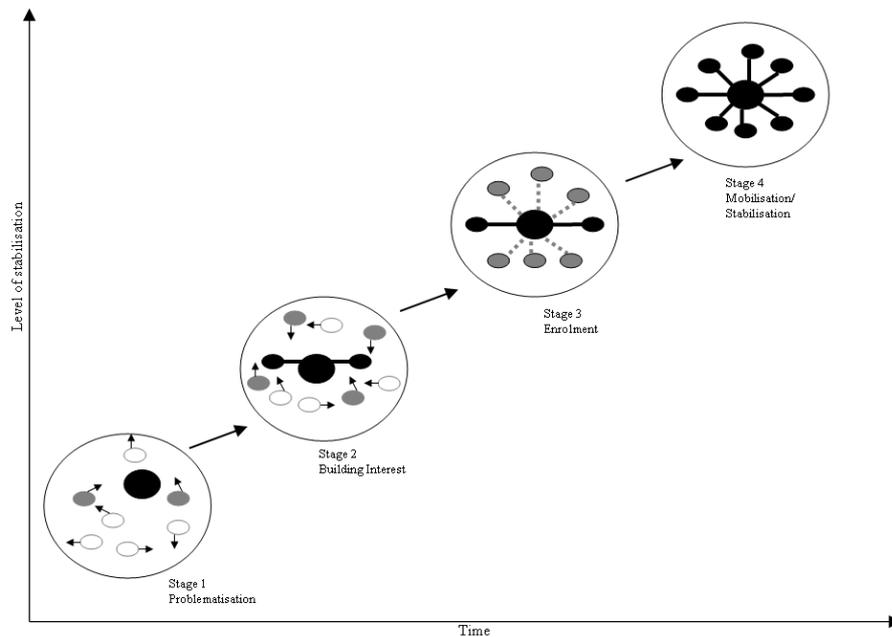


Figure 4.5 The four moments of translation

Source: Adapted from Callon in Law (1986:196–223)

Interessement

In this stage, the key actors build interest and lock key allies in, by finding ways to (re)formulate the problem or solution in such a way that key allies will associate their own interest with the formulation

Enrolment

In this stage, the problem or solution is established as an accepted fact, that is, the problem or the solution is legitimised, by controlling or influencing the production of facts, by using allies and spokespersons, and by inscribing problem or solutions in the organisational memory (eg documented agenda, minutes).

Mobilisation / stabilisation

Finally, during mobilisation, the solution gains wider acceptance. Compliance is ensured by monitoring the network and addressing descent as and when it arises. The key actors use the stability in the network to enact solutions.

The model above uses the notion of weak ties (depicted by broken, thinner and disconnected lines) and strong ties (depicted by darker and connected lines). Whereas actors during the earlier stages such as problematisation are characterised by fragmented alliances and instability (weak ties), through the process of translation, actors are progressively locked into alliances, whereupon they come together and the network stabilises (strong ties). The depiction of the orderly sequence of the translation sub-processes is merely an analytical convenience. It allows us the ability to construct an understanding around the sequence of events that lead to the outcome of the SST implementation.

To summarise, ANT views implementation as an emergent process initiated and guided by actors (agenda setters) with specific interests. Their agendas are enacted through processes of inscription, translation, and framing. Inscription and the sub-processes of translation are used to enrol dissidents who oppose the new agenda. By inscribing the agenda in material artefacts, actors enable material artefacts such as information systems to assume the role of actors in the network; that is, they stand in for the agenda setters. However, unexpected uses are developed, leading to a new perspective on what the technology does and what it is expected to do. The framing process describes the emergent outcome of the technology meeting practice.

4.3.5 Critiques on and limitations of ANT

Walsham (1997) recognised four main areas of critique directed at ANT in the literature. These include ANT's disregard for social structures; its disregard for moral and political analysis; its symmetrical treatment of humans and non-humans; and its descriptive power as opposed to power to explain, together with the problem of managing vast amounts of detail.

ANT has been criticised for neglecting macro social structures and focusing only on local contingencies, that is, how to relate the local and global. However, ANT proponents argue that

macro levels can be investigated with the same methodological tools as the micro-level, since the macro-structure of society is made of the same stuff as the micro-structure (Latour, 1991). ANT allows movement between levels of analysis. Latour (1999a: 19) denies a difference between macro structures and micro interactions. To Latour, differences between network and actor 'are two faces of the same phenomenon'. Walsham (1997) suggests drawing upon the structuration theory by Giddens (1984), which links levels of analysis from the individual to the global and offers models of social action and structure at multiple levels to overcome this problem. However, Latour (1999a:17) argues that the social possesses the bizarre property of not being made up of agency and structure at all, but is a 'circulating entity'. Following Latour's (1999) perspective then, the social is always circulating between actor and network. This treatment of society is similar in many ways to Giddens' treatment of structure and agency – as a duality. In addition, Callon and Latour (1981) argue for the use of the same framework of analysis for tackling both a 'macro-actor' and a 'micro-actor' and for making the notion of an actor-network scalable: one element of an actor-network may be expanded into a new complete actor network, and vice versa, a whole actor-network may be collapsed into one element of another actor-network (Monteiro, 2000). Impacts on the micro or respectively the macro level can thereby be analysed to show their effect on either of these levels. In this way, structuration theory is very similar to ANT. Giddens also (1984:139) dismisses distinctions between 'micro' and 'macro' social studies as being nothing more than a 'phoney war' and as 'misleading'. 'I do not think that there can be any question of either having priority over the other' (Giddens, 1984:139). Thus, for reasons outlined above, some researchers have dismissed Walsham's (1997) position on synthesising ANT with the work of Giddens.

A key criticism of ANT stems from its assumption of according symmetry between the social and the technological in the actor-network (Walsham 1997). The main critique is that people have been reduced to the same level as things and machines. A number of critics argue that treating all actors as equal is problematic: not all actors are equal; some exert a stronger influence than others. However, human qualities such as emotions, which play a vital role in human activity, seem to be lost (Mutch, 2002). Moreover, with the notion of inscriptions, technology seems to have been granted some deterministic property. But ANT does not claim humans and machines are the same – it merely states that one should first attempt to discover the influential elements that actually determine action, be it technical or non-technical (Monteiro, 2000). Hanseth *et al* (2004) counter this criticism by arguing that this is an unfounded claim.

They argue that while it is true that ANT assumes everything to be an actor-network, and accordingly so are both human and technologies, all networks are nevertheless inevitably different. In other words, different technological artefacts and different humans play different roles in social life. For example, to discover the influential factors that affect the way we drive our car, we need to know the engine's capacity (technical) as well as the driver's training (non-technical). Rather than distinguishing technical and non-technical a priori, ANT argues that they might have more in common than not. To perceive the term 'inscription' as being an action that is inscribed and hard-wired into an artefact is a misconception (Monteiro, 2000). It is merely used to describe how concrete anticipations and restrictions of patterns of use are involved in the development and use of a technology. It is neither the case that the object determines its use, nor that an object is infinitely flexible in its interpretation and appropriation by its user; it is an interplay between both extremes. Nevertheless, Collins and Yearley (1992) insist that ANT concedes too much to realist and technical accounts. Similarly, Grint and Woolgar (1997) accuse ANT of technicism in its need to refer to actual technical capacities of technology. Brey (1997) argues that ANT is somewhat similar to social-shaping approaches, and suggests that the notion of inscriptions can be viewed as a metaphor for the 'politics of artefacts'.

Walsham (1997) also criticises the amoral stance of ANT and its associated lack of insight concerning political viewpoints. He proposes that additional political and ethical theories might be needed to understand case findings. For example, the reason for the African continent almost totally being excluded from the Internet cannot be understood by simply investigating the network. He suggests that the empirical results from an ANT study should also be debated in terms of the moral and political issues.

Knights and Murray (1994) also criticise ANT for the way in which it gives little or no attention to the broader powers and inequalities that are both the condition and consequence of network formations. Latour's (1999:197) counter-argument is that critical theorists rely too much on inequalities of the social.

Critical theory is unable to explain why artefacts enter the stream of our relations, why we so incessantly recruit and socialize non-humans. It is not to mirror, congeal, crystallize, or hide social relations, but to remake these very relations through fresh and unexpected sources of action. Society is not

stable enough to inscribe itself in anything. On the contrary, most of the features of what we mean by social order – scale, asymmetry, durability, power, hierarchy, and the distribution of roles – are impossible even to define without recruiting non-humans. Yes, society is constructed, but not socially constructed. Humans, for millions of years, have extended their social relations to other actants with which, with whom, they have swapped many properties, and with which, with whom, they form collectives.

In other words, while it is true that there are inequalities, inequalities are not *a priori*, dividing the social and technological. ANT does not accept any reductionism; neither machines nor human relations are determinate. It is argued that there is no reason to assume, *a priori*, that either objects or people in general determine the character of social change or stability. Indeed, in particular cases, social relations may shape machines, or machine relations may shape their social counterparts. The social and the technical might be considered separate when understood as effects or outcomes, but not as given in the order of things (Law, 1999). Both, through inscriptions, can have an impact on the resulting inequalities between actors. The same conclusion as before can be drawn: ‘Moral and political issues should be debated from a solid empirical base, and actor-network theory offers a contribution to the latter if not directly to the former’ (Walsham 1997:475).

ANT is also posited to be much more a method for describing than explaining (Bloomfield and Vurdubakis, 1999). However, Latour (1999) argues that ANT does not claim to explain the actor’s behaviours and reasons, but only to find the procedures which render actors able to negotiate their ways through one another’s ‘world-building’ activity. In other words, ANT was never intended to explain the behaviour of social actors, but in a much more ethnographic sense a way for researchers to study what, how and why actors behave the way they do, and not claim to explain this behaviour by all kinds of exterior forces unknown to the actors themselves (McLean and Hassard, 2004).

Another point of critique on ANT is the position of the researcher. The role of the researcher in labelling actors, defining passage points, scoping the actor-network, telling the story and so on is very influential in the results that an ANT study delivers (McLean and Hassard, 2004). The researcher enters the study with his or her own theoretical backgrounds, ideas and

preconceptions (Clarke, 2001). A way to deal with this critique is to adopt a more reflexive approach towards the researcher within the study. Moreover, Monteiro (2000:76) argues that ‘employing ANT still requires a researcher to make critical judgements about how to delineate the context of study from the backdrop’, that is, the researcher should be critical in his or her labelling of actors and in the analysis in general, thereby being guided by the actors themselves.

Some critics have argued that ANT might be too ‘flattening’. In other words, by perceiving actors equally, important social constructions and discourses may be lost. Furthermore, critics continue to assert that reliance on the configuration of actor networks is not enough to explain why and how some actors are more empowered, while others are disempowered (McLean and Hassard, 2004). In applying ANT, the role of ‘exogenous contingencies’ such as economic crisis, deregulation and management principles may be undervalued. Some critics argue that conceptualisations of the market, economics, organisations, management or culture should be explored further (Bloomfield and Vurdubakis, 1999). Other researchers are suggesting that it is not sufficient to understand that actors hold particular beliefs or interests. Instead, an analysis is needed to understand how and why a certain actor has taken these beliefs for granted and how they have shaped the actor’s interests .

Monteiro (2000) highlights a few issues regarding ANT as a methodology. These include that unpacking a network will cause an explosion in terms of complexity as each actant can potentially be expanded into another whole actor-network. Furthermore, ANT does not specify how to delineate one actor-network from the next (Monteiro 2000). Despite these criticisms, I am still convinced that ANT points to a better possibility of understanding technology in the social context.

4.3.6 ANT and interpretive research

Looking beyond the criticisms of ANT, a number of researchers have argued that using ANT as a lens in interpretive research contradicts ANT’s fundamental ontological stances (Cordella and Shaikh, 2003). I do not claim to have used ‘the actor-network theory’ as an ANT purist would have, even though there is currently not any single definition of what that might be. In fact, the approach that I have used is likely to offend an ANT purist. Notwithstanding this, it is my intention to show how some of the ANT concepts are extremely powerful and appropriate

analytical devices for understanding the SST implementation phenomenon. For interpretive case study research, ANT provides a lens through which to review the research setting and a language for discussing the dynamic events in which the research is located. While I would reiterate that I will not explicitly use ANT in a purist sense, it has indeed tacitly influenced my research owing to my prolonged exposure to and immersion in its concepts and applications.

ANT will guide my research primarily epistemologically related to my choice to study the process of SST implementation as based on a complex actor-network. I will emphasise how technology and related components, as well as other actors, influence the actions of the variety of the actors. Implementation of an SST should thus be seen as based on a negotiation process involving a heterogeneous and socio-technical actor-network. My interpretation of the implementation process will not be based only on my interpretations of the interviews, but also on my interpretations of the roles of the various social and technical actors involved. In this way I will try to make sense of how the various social actor interests and intensions are reflected in non-human components and further, how this is reflected in their use. ANT will also sensitise me to important aspects of SST implementation by focusing on how technology influences human behaviour (Monteiro, 2000). It will help me to transcend technology and social determinism by focusing on the mutual influences of humans and non-humans. Furthermore, the use of ANT for sense-making and as a device for interpreting and describing so as to improve understanding has long been supported by stalwarts in IS interpretive studies such as Walsham (2001). On a closing note, my use of ANT is not restricted to certain analytical levels, but will rather encourage me to open those black boxes which I found interesting, and to close others. By using ANT in this way, I have also tried to avoid the risk of not being open to field data which a more rigid use of theory may produce (Walsham 1995).

4.3.7 Conclusion on ANT

We contend that actor-network theory can be useful in studies of information systems where interactions of the social, technological and political are regarded as particularly important ... We suggest that actor-network theory, and the theory on innovation translation, can be particularly useful for studies in areas such as the business use of the World Wide Web ...' (Tatnall and Gilding, 1999:963)

ANT provides an approach to analyse the case study that is promising. It offers a language of analysis that sensitises us to new ways of understanding. The dichotomy between the social and the technical is solved by the perception that both are intertwined. Moreover, ANT does not reduce *a priori* IS implementation to simplistic factors, but it is able to analyse it in all its complexity. It cuts across economic, political, strategic, social and technical issues related to IS implementation and allows for making sense of the unfolding implementation process (Monteiro, 2000). Though still a nascent theory in IS research compared with structuration theory, ANT has already demonstrated huge potential in IS research.

4.4 Comparing structuration theory and ANT

I have discussed two theories to help to understand the implementation of IS in organisations. In this section I will zoom in on some of the key differences between the two.

The main difference between the structuration theory and ANT is in their social-technical stance. In structuration theory, technology's capability to make a difference is unacknowledged. It is relegated to the status of a facility or tool employed by human agents. In actor network theory, on the other hand, technology becomes an independent actor in its own right, yet no distinction is made between the agency of technology and humans. In ANT, the social system and technology are considered inseparable.

In comparing these two theories, some researchers have argued that the different and incompatible treatment of agency is irreconcilable (Rose, Jones and Truex, 2005). They argue that neither structuration theory nor actor-network theory offers a particularly convincing account of the interaction of humans and machines, and that their different accounts of agency make them hard to integrate in any meaningful way. Some researchers are suggesting that structuration theory exaggerates the role of human agency in creating and producing its context. Proponents of ANT perceive the context to be both social and material, which is a hybrid of both human and non-human actors. Advocates of structuration theory argue that human and non-human agency cannot be labelled as equivalent.

However, despite the issue of agency, Walsham (2001) made a valuable contribution by combining these two theories in the same case, using structuration theory to guide broader social analysis, and ANT to describe the detailed socio-technical processes that took place. While these concerns over agency are valid, they do not hold for the purposes of this research since ANT is not applied here as a rigorous scientific theory, but rather as a flexible methodology.

... (ANT) not only provides theoretical concepts as ways of viewing elements in the real world, it also suggests that it is exactly these elements which need to be traced in empirical work. (Walsham 1997:6)

So while some researchers have made some valid calls to review our understanding of agency, this was not deemed to be a particular objective of this study. Despite the theoretical differences between ANT and structuration theory, I use the two theories separately as sensitising devices (Walsham, 2001; Rose, Jones and Truex, 2005). More specifically by using these two theories, I will be able to conduct two separate analyses and assess how these two theories compare, and furthermore establish what different insights they bring to the case. I envisaged that insights from the analysis of these theories in chapter 7 and chapter 8 and the development of a conceptual framework in chapter 9 may advance our understanding of the ‘agency problem’.

4.5 Conclusion

In this chapter I discussed structuration theory as a starting point from which to analyse the case study. Structuration theory was chosen because of its wide acceptance by researchers interested in technology and the social context, and hence for its compatibility with this study’s research questions. However, after having considered the potential limitations of structuration theory, actor-network theory was added to the case analysis. In chapter 7 we will start with a brief analysis based on Giddens’ structuration theory to show where this theory can be helpful in understanding the social context of self-service technologies. In chapter 8, ANT will be used to analyse the same case even further and investigate how potential problematic explanations from structuration theory can be understood differently. It is envisaged that these two separate lenses will help to provide a greater understanding of the social context of self-service technology implementation. The next two chapters focus on describing the case study to be analysed.

Chapter 5

Background to the Healthcare Insurance Context

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5.1 Introduction

In chapter 1, I expressed the problem of self-service technology implementation, and how this was shaped and influenced by broader processes such as global, organisational, inter-organisational, group, and micro processes of change experienced by individuals. In the literature review a number of international- and national-level contextual influences could be seen to be playing out within the implementation of Internet-based self-service technology in the healthcare insurance context. The goal of this chapter is to provide a description of the case within this wider social context, before providing an organisational background in chapter 6. By sketching this broader context, it is envisaged that richer interpretations will be made possible in chapter 7 and chapter 8. The separation of broader and local contexts is largely an analytical device. In chapter 7 and chapter 8, the inextricable link between the broader and organisational contexts will become self-evident in the way they are implicated in the SST implementation. Thus, to understand the environment of the case study, this chapter presents background information on healthcare and healthcare financing models in particular, and situates the phenomenon of self-service technology implementation within a developing country and first world healthcare insurance industry dynamic.

The first section of this chapter provides a synopsis of global and local issues in healthcare generally and the implications for the healthcare insurance market in particular. The second section of this chapter provides a brief background to the South African healthcare insurance services industry and contextualises the role of other social actors, including regulators, insured members, service providers, brokers, and employers. The third section draws attention to the historical and current status of ICT and e-commerce in the South African context and the financial services industry specifically, with emphasis on the Internet and the enablement of online self-service technologies.

As Walsham (1993) advises, the analysis of information systems should not be restricted to the boundaries of that system. Accordingly, this chapter sets the scene for the following three chapters: chapter 6 being a description of the case study organisation; and the subsequent analysis of the case in chapter 7 and chapter 8, using the initial conceptual framework conceived in chapter 4.

5.2 Broader social issues in healthcare

5.2.1 Introduction

Healthcare worldwide in the new millennium can be characterised as facing enormous challenges. In some circles, global healthcare is being viewed as undergoing a severe crisis. Some of the key reasons for the crisis include the startling inequities between the haves and have-nots, the proliferation in healthcare technology and its costly application to medicine and healthcare in the form of healthcare innovations, and the sedentary lifestyle of the wealthier, coupled with rapid population growth and changing disease profiles during this century (World Health Report, 2002). Hence, setting the right financial incentives for providers and ensuring that all individuals have access to effective healthcare is becoming an even more daunting challenge. These factors have led to intense debates on the design and structure of healthcare financing systems. The search for the perfect solution has eluded many healthcare experts. It is not surprising then that healthcare financing systems in many countries continue to be both of an eclectic nature and in a state of enormous flux (World Health Report, 2000). To understand the environment of the case study, I explore some of the broader trends influencing the healthcare insurance industry.

5.2.2 A synopsis of global healthcare

Dr Gro Harlem Brundtland (2002:4), director general of the World Health Organisation (WHO), sums up lucidly the statistics presented in table 5.1 below:

*The world is living dangerously either because it has little choice
or because it is making the wrong choices about consumption and activity.*

The first striking observation in table 5.1 is the number of deaths or diseases related to causes that are viewed to be within the control of individuals. For example, chronic non-communicable diseases which are linked to factors such as smoking, obesity and a sedentary lifestyle cause 20% of the society's disease burden. While an enormous part of the crisis in healthcare can be attributed to individual behaviours related to risk, such as food intake, smoking and sexual behaviour, a number of broader factors are influencing the spread of non-communicable diseases. According to the World Health Report (2002), changes in food processing, production, distribution, and agricultural and trade policies are affecting the daily diet of hundreds of

millions of people. At the same time, changes in living and working patterns have led to less physical activity and less physical labour. Even in the United States, Merrill, Shields, and White and Druce (2005) report that many adults live a sedentary lifestyle, although a variety of health benefits have been associated with regular physical activity. Similarly, a 2002 report from the US Department of Health and Human Services indicated that 7 in 10 adults are not involved in regular physical activity, including 4 in 10 who are not active at all, contributing to an estimated 300 000 preventable deaths.

In addition, infectious diseases that are perceived to be beyond the control of individuals are responsible for 30% of the disease burden. People located in less-developed countries such as sub-Saharan Africa and Asia are among the most vulnerable to infectious diseases. Factors that are beyond the direct control of individuals include environmental factors related to water, sanitation, and a rising drug resistance to major pathogens. In developing nations (especially in Africa) that are battling to conquer infectious diseases that have always afflicted them, factors that were commonly associated with the industrialised nations are creating a double burden. For instance, more than 40% of all deaths in the poorest 20% of the world's population are already due to non-communicable diseases (World Health Report, 2002). In addition, the consequences of HIV/Aids, the fourth biggest cause of mortality in the world, are extending beyond mortality as children are orphaned and entire economies are affected (Sen and Bonita, 2000).

At the same time there have been impressive and unrivalled gains in health status worldwide in the 20th century, with increasing life expectancy being observed in both developing and developed countries (Sen and Bonita, 2000). In fact, life expectancy at birth in most developed countries at over 80 years is double that of the most disadvantaged countries. However, already more than half (57%) of the world's population over the age of 65 years live in less-developed countries.

Table 5.1*Summary of key global health statistics*

Subject	Measures
Underweight children (developing countries)	170 million
Overweight (worldwide)	1 billion
Deaths from obesity-related diseases	0.5 million per annum
Lung cancer from smoking	
Men	90%
Women	70%
Global deaths from tobacco-related causes	8.8% (4.9 million per annum)
Global deaths related to alcohol	4% (1.8 million per annum)
Physical inactivity (causes about 15% of some cancers, diabetes and heart disease)	1.9 million deaths per annum
HIV/Aids infections	40 million people
Global burden of infectious diseases	30%
Chronic non-communicable disease burden (Five risk factors: unsafe sexual practices, alcohol use, pollution, occupational exposures, and tobacco use)	20%
Life expectancy (global average)	
1950	46 years
1998	66 years
Europe	73 years
Low- and middle-income countries	68 years

Source: WHO (2002)

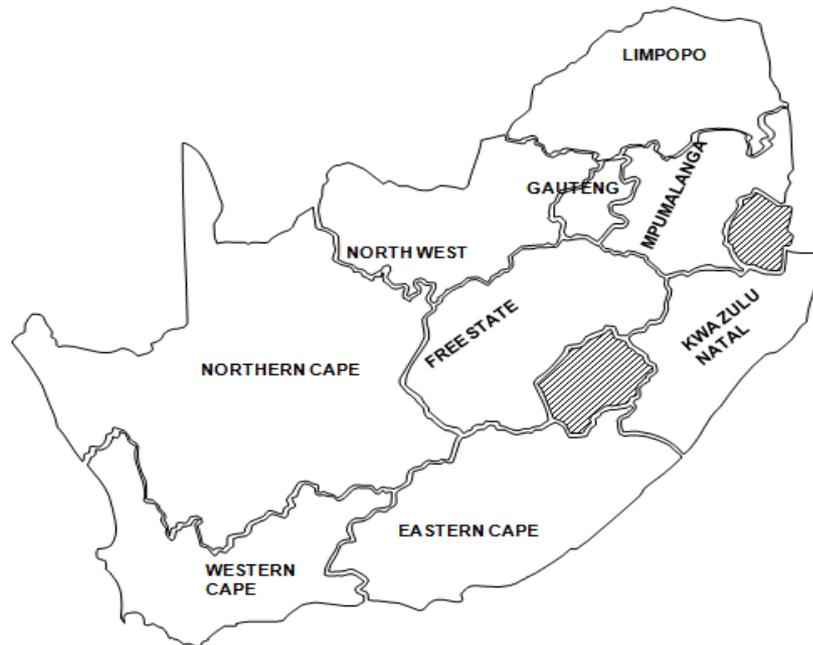
The greatest proportion of deaths caused by alcohol was in the Americas and Europe.

HIV/Aids is the fourth biggest cause of mortality in the world: 28 million (70%) of the population with HIV infection are concentrated in Africa.

These rapid demographic changes, characterising an ageing population, are adding to the heavy burden of chronic non-communicable diseases, infectious disease and HIV. These challenges will potentially worsen already marginalised regional and national health inequalities, and place added pressure on healthcare financing systems. Trends in healthcare expenditure which show a rise from 3% of world GDP in 1948 to 7.9% in 1997 are already indicative of such pressures (WHO, 2002). This dramatic increase in spending worldwide has prompted societies everywhere to look for health-financing arrangements which ensure that people are not denied access to care

because of affordability issues. In the next section I focus on these particular trends in South Africa and their implications for healthcare funding.

5.2.3 An overview of the South African healthcare status



Map 5.1 Map of South Africa¹

Source: Africa Institute

In some ways South Africa's healthcare position represents a microcosm of the globe. In other ways, the challenge is quite unique. During the era from 1948 to 1994, the apartheid system² affected people's health in many ways. Various social conditions contributed to ill health (Hassim, Heywood and Berger, 2007). For instance, the migrant labour system forced millions of black men to leave their homes and families, and work as cheap labour for industries and mines.

¹ South Africa is situated in the southern tip of Africa and has a land mass of more than 1.2 million square kilometres, which makes it bigger than France, Germany and Italy combined.

² 'Apartheid' was a term coined by the Afrikaaner National Party (NP) during their 1948 election campaign to promote a policy of 'separate development' in South Africa, along racial lines. Many experts suggest that the Nazi philosophy and propaganda at the time influenced the ideas of Afrikaaner leaders in their political thinking. In effect it granted the white government state control over the African, Indian and coloured labour market. According to Terreblanche (2002), the 'practical' conception of apartheid was propagated by emerging Afrikaaner entrepreneurs whose profits at the time depended on an abundant supply of cheap non-white labour. Over time the NP's segregationist legislation was not limited to discriminatory labour practices, but also to discriminatory social engineering programmes and draconian security systems used to perpetuate white social, political and economic domination. However, the concept of non-white inferiority in South Africa has a history of over 350 years, from periods of more blatant slavery during Dutch colonialism to the British imperialism of the 19th century, propaganda which was based on ideological strands from Social Darwinism. South Africa had its first democratic elections for all races in 1994.

These men lived in single-sex hostels in urban areas. These overcrowded living conditions in the hostels resulted in a number of illness epidemics as well as mental health concerns and problems of alcoholism. In addition, the apartheid government passed special laws and policies to enforce racial inequality in accessing healthcare services (Hassim *et al.*, 2007). For instance, health departments were structured according to race. Furthermore, black students were prevented from training as doctors or dentists at white universities. Moreover, black doctors and nurses were not allowed to supervise white nurses, even if they were more qualified. Another issue was the unequal spending on health services. On average, spending according to race in 1987 was R137 for blacks compared with the R597 for whites (Hassim *et al.*, 2007). There was also a lack of significant challenge by civil society, including health professionals and workers, to the apartheid health system. Many white health workers either collaborated with the system or did not oppose it. For example, doctors even helped police cover up the murder of political activists like Steve Biko (Hassim *et al.*, 2007). In 1998, the Truth and Reconciliation Commission (TRC) established that:

The health sector, through apathy, acceptance of the status quo and acts of omission, allowed the creation of an environment in which the health of millions of South Africans was neglected, even at times actively compromised, and in which the violations of moral and ethical codes of practice were frequent, facilitating violations of human rights.

More than 10 years after the first democratic elections, the South African healthcare system, plagued by the profound legacy of apartheid, continues to be characterised by a number of distressing contradictions. On the one hand, it espouses an undisputedly high standard of modern medical education and a private sector that aspires to high standards of patient care (Benatar and Van Rensburg, 1995). According to a study by the United Nations, South Africa's private system ranked 39th out of 162 nations for technological innovation and achievement. On the other hand, the public sector is beleaguered by fragmented and duplicated services, wide disparities in health and access to healthcare, and the lack of preventive and rehabilitative services (Ntuli and Day, 2004).

In addition, South Africa's burden of disease is not shared equitably among the population. The pervasive social inequities that have their roots in the apartheid era are evident in morbidity and

mortality figures among racial groups. For example, the current life expectancy is 68 years for a white male and 46 years for a black male (Bradshaw and Nannan, 2004). Child mortality among black children has risen in the last decade, with HIV/Aids and low birth weight among the highest causes of death. Recent infant and under-five mortality rates have been climbing closer to 100 deaths per thousand live births, compared with the national target of 30 deaths per thousand live births (Ntuli and Day, 2004).

Furthermore, the devastating impact of the Aids epidemic has profoundly affected the health system (Carton, 2003). HIV prevalence among public sector antenatal clinic attendees has risen from around 7% in 1994 to 27% in 2002. Current estimates suggest that 1 in 9 South Africans are infected with HIV (Dorrington, Bradshaw and Budlender, 2002). The Aids epidemic has also fuelled a tuberculosis (TB) epidemic, resulting in increased deaths due to pneumonia, diarrhoea and other related conditions. A burden of disease study by Bradshaw and Nannan (2003) reports that HIV/Aids accounts for 38% of the country's total premature death burden.³

Diseases usually associated with poverty and underdevelopment accounted for 25% of the total burden, while non-communicable diseases accounted for 21% and injuries for 16% of the years of life lost (Bradshaw and Nannan, 2003). The study also confirmed an extremely high burden owing to violence, homicide and road traffic accidents. Consequently, the care needs of patients have placed severe strain on services, often disproportionately on some of the most disadvantaged facilities in the public sector. Moreover, health personnel in the public sector cite low levels of job satisfaction, poor working conditions, despondency in the face of the HIV epidemic, and unsatisfactory management, as well as inadequate salaries, as underlying their dissatisfaction with working in the public sector (Ntuli and Day, 2004).

Table 5.2 illustrates the inequalities in access to basic amenities resulting from apartheid that still persist today. Africans account for 79% of the population, whites for 9.6%, coloureds for 8.9% and Indians for 2.5%. Unemployment is much higher among Africans, with 51.1% unemployed compared with 27% of the coloured population group, 5.3% of the Indian population group and 1.4% of the white population group.

³ Premature death burden refers to years of life lost based on a standard life expectancy for the age of death, with future years discounted at a percentage and age weighting formulated by the Global Burden of Disease Project study.

Table 5.2*Racial inequalities*

Subject	Measures
Population**	
Africans	79%
Whites	9.6%
Coloureds	8.9%
Indians	2.5%
Unemployment	
African	
Coloured	51.1%
Indian	27%
White	5.3%
	1.4%
Formal households	
African	55%
White	95%
Television (TV)	
African	
Coloured	44%
Indian	>70%
White	>90%
	>90%
No toilet facility	
African	
Coloured	17%
Indian	6%
White	<1%
	<1%
Electricity	
African	
Indian and White	66%*
	>90%

Source: Health Status (Bradshaw and Nannan, 2004) MRC Burden of Disease Research Unit

* About two thirds of the African households use electricity for lighting, but only a third use it for heating. Nearly a third of African households use candles for lighting.

**2001 census estimates the population to be 44.8 million.

Moreover, over half (55%) of the African households live in formal housing compared with 95% of white households. Access to facilities differs sharply; less than 1% of white and Indian households have no toilet facility, while 16.9% of African and 6% of coloured households have no toilet facility. Barely 44% of African households have TV, while over 70% of coloured and over 90% of Indian and white households have TV. The energy source is also alarmingly different according to population group. About two thirds of the African households use

electricity for lighting, but only a third use it for cooking or heating, while nearly a third of African households still use candles for lighting. On the contrary, over 90% of the white and Indian population groups use electricity for all household purposes. While the majority of households (84.5%) have access to piped water, for most African households water is not immediately accessible in the home, but in a yard or a nearby public facility (Day and Gray, 2003). These factors appear to have a direct bearing on the health status of the different population groups.

Generally, population health in South Africa has declined rapidly in the last decade, as evidenced by a decreasing life expectancy, largely as a result of the rapid spread of the HIV epidemic. Furthermore, demographic differences and pervasive disparities in basic amenities between the population groups persist even after 10 years of democracy (Ntuli and Day, 2004). As we will observe in chapter 7, these broader contextual elements had an implicit or explicit influence on the SST implementation process. The ongoing inequity between those with access to private medical care and those dependent on the public sector represents another major challenge for the South African health system. We review these issues in the next section.

5.2.4 The South African private healthcare sector

In this section I briefly explore the structure of the South African private healthcare sector. I will also consider important trends and changes such as deregulation, competition, and healthcare reforms.

From a structural perspective, South Africa's current health service fits somewhere between the predominantly fee-for-service, privately run, managed-care healthcare system in the United States and the predominantly socialised, non-profit system in the United Kingdom (Benatar, 1993; Benatar and Van Rensburg, 1995). Three interrelated functions of financing are crucial for healthcare systems: revenue collection; pooling of resources; and purchasing of interventions (World Health Report, 2000). South Africa's spending on healthcare of 8.8% of Gross Domestic Product (GDP) via its institutions is unusually high by international standards (Doherty, Thomas, Muirhead and McIntyre, 2003). The system of private care in South Africa is characterised by providers of healthcare services on the one hand and funding institutions that finance the use of private care on the other. Private healthcare providers comprise a range of resources from

general practitioners, traditional healers, specialist physicians, neurologists, cardiologists, surgery, hospitals, and pharmacies to pathology services. These institutions are typically characterised as being independent of one another, competitive, and driven by the aim to make profits for their shareholders from the services they sell.

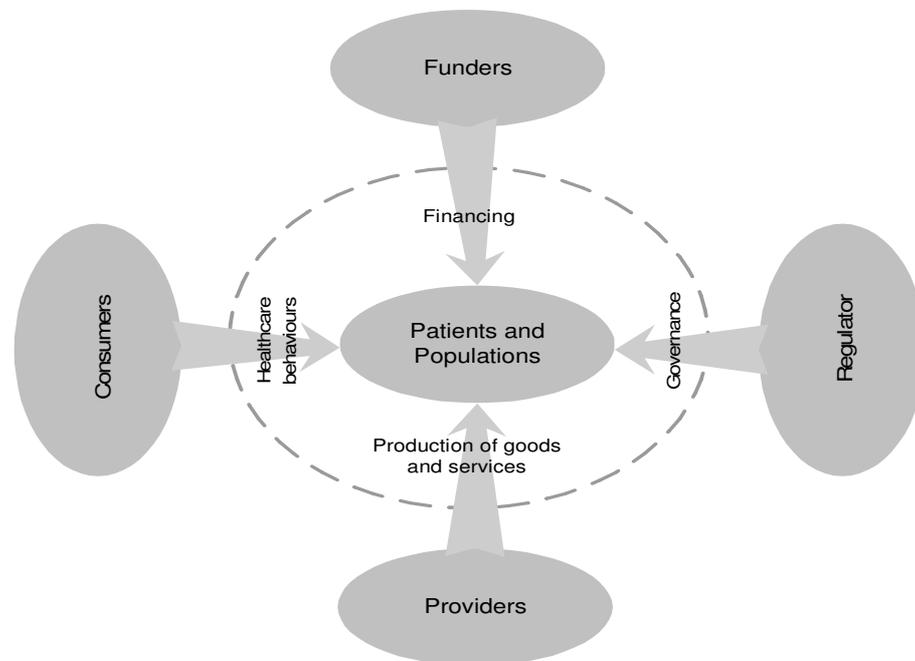


Figure 5.1 The multiple stakeholders in a health system

Source: Adapted from World Health Report (1999)

From a financing perspective, South Africa is following the trends of countries like the USA where a growing number of commercial health products are sold by insurance companies in the form of medical schemes. Within these private insurance schemes, revenue collection and pooling are typically integrated in one organisation and one purchasing process (World Health Report, 2000). The accumulation and management of revenues or pooling is done in such a way to ensure that the risk of having to pay for healthcare is borne by all the members of the pool and not by each contributor individually. In this way, pooling increases the likelihood that all patients can afford services. Recently, however, new designs in products have been passing the onus onto individuals so that they bear some of the risks from their savings or their own pockets.

Between 1974 and 1994, the membership of medical schemes in South Africa grew from 2.5 million to nearly 6 million people. This growth led to an increasing use of outsourced service providers, known as ‘administrators’, to manage the logistics of processing member claims and contributions. While by law medical schemes are supposed to be non-profit entities, meaning that any surplus generated that remains in the scheme belongs to members, their administration partners are profit-driven entities. The industry also includes an increasing number of managed-care organisations, some of which are owned by the very same administrators. Unlike their US counterparts, however, few schemes in South Africa have taken on the essential elements of provider networks and risk-sharing arrangements in their implementation of managed care. In the main, these organisations focus on utilisation rather than on risk-sharing and on advising schemes on hospital admission criteria, appropriate treatment protocols and cost containment (Doherty *et al*, 2003).

Linked to these trends were changes to the structure of medical schemes themselves. Historically, medical schemes were ‘closed’, meaning that membership was restricted to a certain group of people, for example employees in a particular firm. However, from around the mid ’90s, there was growth in the number of ‘open schemes’, with membership open to anyone who could afford to pay the premiums. This rise in open schemes needed the support of another important group of intermediaries, known as brokers. During the ’90s brokers were instrumental in selling medical insurance and increasing the membership of open medical schemes for which they earned a commission fee.

Despite these trends, for most of the period between 1995 and 2000, medical schemes suffered an overall deficit on operations (CMS, 2000; CMS, 2001). By the end of 2000 there were only 165 medical schemes, covering the lives of close to 7 million people (Doherty and McLeod, 2003). The nominal increase from 6 million in 1994 to 7 million in 2000 was as a result of previously disadvantaged groups, consisting mainly of non-white members, who began to experience relatively large increases in income levels (Doherty *et al*, 2003). This trend was aided by the increasing pressure exerted by the trade unions on employers to provide equitable cover for all employees. Despite the total number of schemes having declined steadily over the years, and schemes having larger risk pools, the management of risk and associated healthcare costs was still not contained. Instead, the industry was facing significant challenges, as demonstrated by the cumulative operating loss of more than R1 billion in 2000, despite a gross income from

contributions amounting to almost R31 billion (CMS, 2001). In addition, at the end of 2000, almost 50% of the members of registered medical schemes belonged to schemes with perilously low solvency levels: below 10%, against the minimum statutory solvency level of 25% (CMS, 2001).

The Board of Healthcare Funders⁴ of Southern Africa attributed part of their poor performance to the Medical Schemes Act of 1998⁵ (Kruger, 2002). The act, which was promulgated in 1999 and fully implemented in 2000, faced tremendous opposition from the insurance companies who were underwriting medical schemes. New legislation – such as the requirement of open enrolment, which compels medical schemes to accept all applicants; the introduction of community rating, which meant that schemes could not discriminate against a member on the basis of age or current health status; and the provision for prescribed minimum benefits – was among the major issues contributing to the controversy. As the industry tried to cope with these new regulatory demands, medical aid contributions rose for some schemes by as much as 18% in January 2000 compared with the 7% consumer price inflation (CPI) (Doherty and McLeod, 2003). Indeed, contribution increases in registered schemes had consistently outpaced inflation since the 1980s, sometimes even rising to double the consumer inflation rate in the 1990s. Notwithstanding, the rate of increase was more rapid in 2000 and 2001 than it had been for a long time, at around 11% (Doherty and McLeod, 2003).

Meanwhile, the regulator, in the form of the Council for Medical Schemes,⁶ attributed the problems in the industry to deregulation and inadequate regulatory capacity,⁷ fostered by the

⁴ The Board of Healthcare Funders (BHF) is a non-profit organisation that represents more than 95% of all medical schemes in Southern Africa. It comprises members from South Africa, Namibia, Botswana and Zimbabwe. The BHF used to set tariffs for healthcare services as a 'guideline' to its seven million beneficiaries.

⁵ The 1998 Medical Schemes Act re-regulated medical schemes in South Africa by re-introducing mechanisms that aimed to make health services more equitable.

⁶ The Council for Medical Schemes (CMS) is a regulatory body that is tasked with monitoring and regulating medical schemes. This body aims to address historical imbalances in the sector and improve governance and financial oversight of medical schemes. It reports to the minister of health on issues related to medical schemes.

⁷ Some experts believe that the apartheid government deliberately fostered an environment that is encouraging the growth of the private sector at the expense of the public sector. As a result, there was a steady drift of white South Africans to a private healthcare sector. Thus by 1960, 80% of whites had medical scheme cover. At the same time, 95% of black people were reliant on the public sector (Hassim *et al*, 2007). During the dying years of apartheid, the government introduced two significant acts to deregulate healthcare in the private sector. In 1989, an amendment to the regulations of the Medical Schemes Act removed the prohibition against risk-rating, thus increasing the contribution costs of vulnerable groups, mainly the sick and elderly. In 1994, a further amendment removed the statutory requirement of minimum benefits. As a result, medical schemes were allowed to provide healthcare services and run their own health facilities without state intervention. These reforms encouraged a drift towards selling health services for a profit. In this context, schemes took advantage of their new rights to risk rate and increasingly discriminated in admitting members. For example, by 1999, no open scheme enrolled individuals over the age of 55. Throughout the 1990s, most medical schemes also refused membership to people with HIV, or

previous apartheid government. According to the Council for Medical Schemes (CMS, 2003; CMS, 2004), some of the major problems in the industry included low solvency levels, high administration and other non-health expenditure, inexplicably high levels of net reinsurance losses, unmerited levels of medical scheme expenditure on health brokers, and excessive increases in expenditure on hospitals, medicines and specialists that had been outstripping inflation. Given these challenges between 2000 and 2003, there was a further 13% decline in the number of registered medical schemes, with 26 amalgamations taking place and 23 more medical schemes being wound up or dissolved (CMS, 2004). In 2004, the number of registered medical schemes decreased to 131 from 133. There were now only 47 open schemes and 84 restricted schemes (CMS, 2004). Although there are currently more restricted medical schemes than open schemes, the latter were generally far bigger, and accounted for more than two thirds of members covered by medical schemes. Despite the growing consolidation, the medical schemes industry as a whole was facing significant challenges.

Even with the growth in the number of open medical schemes, the insured population continued to shrink. The total number of beneficiaries belonging to medical schemes declined marginally from 2001 to 2002 by 0.89%. Private sector population shrunk from just under 17% of the population in 1997 to only 15.2% of the population in 2002 (Ntuli and Day, 2004). Meanwhile, the actual number of people dependent on the public sector had grown by 6.5 million people since 1995 (Ntuli and Day, 2004).

A number of experts claim that prohibitive costs made private healthcare too expensive and therefore inaccessible to most people (Fish and Ramjee, 2007). Furthermore, anti-competitive pricing of medicines, laboratory and specialist services, collusion among hospital groups, and the rising premiums of medical schemes, were labelled the main causes of high costs (Hassim *et al*, 2007). The distribution of private health facilities, mainly in urban and affluent areas, was deemed to be another deterrent to accessing private healthcare. This geographic inequality is reflected in a comparison between percentages of people covered by medical schemes in urban and rural provinces (CMS, 2004). For instance, according to the Council for Medical Schemes, 37.3% of medical scheme members reside in Gauteng (urban), whereas only 2.2% live in the

drastically limited their benefits. Thus the consequence of the 1989 and 1994 deregulation was the growing exclusion of the sick, the elderly, the poor, and people with chronic conditions. The further result was inadequate healthcare, a decrease in benefits, higher premiums, and an upward spiral in non-medical expenditure.

Northern Cape (rural). Moreover, approximately 50% of doctors were working to serve only 20% of the population covered by health insurance (CMS, 2004).

The high cost of private healthcare created further inequalities between members of the same medical schemes. For example, lower-income earners contribute disproportionately to medical schemes. This means that for a person with a low monthly income of R2 000 a month, up to 40% goes to paying the premiums of a medical scheme, while for a person earning over R15 000 a month, less than 10% goes to premium contributions (Fish and Ramjee, 2007).

Furthermore, non-health expenditure continued to grow. Between 1992 and 1998 there was a 243.5% real increase in non-health expenditure, largely in the form of broker and administrator costs. In 2003, the cost of scheme administration fees increased to R4.5 billion and this expenditure grew by 10.4% to R5.4 bn in the 2005 review period from R4.9 bn in 2004 (CMS, 2005). From 2000 to 2003, total non-healthcare costs increased by approximately 66.9%. The bulk of this expenditure was owing to administration costs, which represent close to 70% of non-health expenditure. In this period, administration costs increased by 80.4%. Managed-care costs escalated by 24.5%, broker fees by 152.6% and bad debts by 107.7% (CMS, 2003).

Like the medical schemes market, the administrator market is dominated by the top six administrators. While these six administrators controlled only 41% of the market in 1997, they controlled as much as 84% in 2000 (Doherty and McLeod, 2003). Despite the concentration of market share by large administrators, no real economies of scale appeared to be reflected in the level of administration costs. Another reason for the high administration costs is attributable to a system with multiple insurers, which is intrinsically costlier than a single-payer system. For insurers, it means multiple duplicative claims-processing facilities and smaller insured groups, both of which increase overheads. This kind of fragmentation also raises costs for providers, who must deal with multiple insurance products, forcing them to determine applicants' eligibility and to keep track of the various co-payments, scheme rules, referral networks, and approval requirements. Therefore, despite a number of regulations that are intended to decrease costs for consumers, increasing administration costs continue to have a negative impact on the cost of medical schemes and consequently have led to increased membership contributions.

Product innovations such as health savings accounts (HSAs), which medical schemes evangelise as providing consumers with affordable coverage for routine medical expenses, have also come under scrutiny. Critics say they have driven up medical inflation and failed to bring lower-income consumers into the private healthcare net (Fish and Ramjee, 2007). Many experts argue that because out-of-hospital costs are limited and patients run out of funds, they are now being hospitalised for treatments that doctors would previously have done in their practice rooms. Meanwhile, HSAs created a trend where many employers were moving towards a ‘cost-to-company’ payment model, leaving it up to employees to decide what proportion of their salary to use for medical insurance.

Further, there are surprisingly large numbers of corporate and individual brokers (roughly 6 000) whose business is enrolling clients with open medical schemes. The shift of members from restricted to open schemes in the mid ’90s was largely a result of the actions of these brokers. For the regulator, the substantial expenditure on broker fees continued to be a matter of grave concern in an environment in which the overall number of beneficiaries remained fairly stable at around 7 million members. There was a dramatic increase in broker costs from R354 million in 2002 to R581 million in 2003 and R700 million in 2004. Including other acquisition costs, such as initiating, underwriting and selling a membership policy and distribution, total non-health expenditure increased by 22.0% to R939 m from R769 m. This was 14.6% of total non-health expenditure, up from 13.5% in 2004. These substantial increases in broker fees were clearly not being matched by increases in new members.

While non-health costs, including bad debts, were a source of major concern, healthcare costs, which accounts for some 80% of total expenditure of medical schemes, placed even greater pressure on member contributions. Private hospitals accounted for about two thirds of the above inflationary increases on expenditure by medical schemes. This is partly explained by the fact that the costs of healthcare provided by private hospitals have grown enormously. The Annual Report of the Council for Medical Schemes 2005 shows that since 1997, total hospital expenditure has increased by 103%. More specifically, ward fees increased by 85%, medicines increased by 122%, and theatre fees increased by 172% (CMS, 2006a; 2006b). The growth in the number of private hospitals also has serious consequences. It has created an overcapacity of hospital beds and a further concentration of healthcare services in urban areas.

Indeed, few schemes in South Africa have been able to engage in the managed-care arrangements with hospital groups that have been the trend in the US. The result is that mechanisms such as the use of provider networks and risk-sharing arrangements in an attempt to manage these costs are almost nonexistent. This may be as a result of difficulties experienced by the schemes to engage with these powerful provider groups (Doherty and McLeod, 2003). The problem is also attributed to the fee-for-service reimbursement system which has incentivised over-servicing and higher prices. In a well-defined managed-care relationship, a capitation arrangement typically exists where a provider is paid a fixed fee for the monthly care of a group of patients. The provider then has to cover the cost of care within the agreed amount, thus assuming some of the risk normally held by schemes alone. Some experts suggest that such arrangements will force providers to limit unnecessary treatment. Others express the downside of managed care, such as the tendency of providers to undersupply if they are not managed appropriately (Doherty and McLeod, 2003). Although entering into contractual preferred provider arrangements has the potential to result in significant cost control in the medium to long term, the power balance in the market appears to be making this an insurmountable task.

In 2000, the largest of the medical savings portion which equates to as much as 40% is being spent on medicines (Kruger, 2002). Medical specialists, GP consultations, and other health professionals follow this. Within the practitioner category, the growth in specialist expenditure has far exceeded that of other practitioners since the late 1980s. Thus, specialist expenditure accounted for 58% of practitioner expenditure in 2000, more than twice the percentage it was two decades earlier (Kruger, 2002). Evidently, less and less of each rand spent on healthcare benefits is going towards the more economical primary care services provided by general practitioners. This trend may also suggest that members are increasingly paying out of their pockets for general practitioner services.

Meanwhile, technology also began to drive medical bills ever higher. Not only was it expensive, given the poor performance of the South African rand against the US dollar and euro, but some of the expenditure was deemed unnecessary. Doctors were accused of frequently ordering tests without clinical evidence to justify their use. Worse still, it was claimed that many doctors were over-servicing patients. For example, many patients were admitted to hospitals overnight when they could readily be seen as outpatients (Doherty and McLeod, 2003). It was believed that

doctors were also over-prescribing by giving patients prescriptions for several expensive brand name drugs when one or two equally effective and cheaper generics would suffice.

Another reason for rising costs during the period between 1999 and 2003 was reinsurance (Doherty and McLeod, 2003). To protect themselves from unexpectedly high claims, some of the major medical schemes insured themselves with other insurers. While there are legitimate reasons for reinsuring, regulators accused the administrators of using this process as a loophole for channelling money out of a scheme to another company's shareholders as a profit-making arrangement, rather than back to the scheme's members.

In addition, the market for various health services such as hospital and pathology services is concentrated, which means that there is less competition among the providers of these services and therefore higher prices. There are also oligopoly situations where just a few suppliers of a product, such as modern hospitals, dominate an industry. For instance, three big cartels control more than 80% of the South African private hospital market. Despite regulations such as the Competition Act, No 89 of 1989, which seeks to restrict horizontal and vertical integration practices among dominant firms, imperfect competition among dominant firms is still adversely affecting other producers along the value chain and consumers. Nevertheless a Monitor Group (2004) global study revealed that South Africa is fourth best in the world in private hospital care, coming only after Switzerland, the Netherlands and Belgium.

At the same time, despite innovations in healthcare financing, South African households are spending more than double the amount on healthcare compared with 1999. In fact, consumers' out-of-pocket expenditure soared from a little over R1 billion in 1993 to R25 billion rand in 2006 (CMS, 2006a; 2006b). Out-of-pocket expenditure consists of healthcare expenditure by people who are not members of a medical scheme, either because they do not see the value of medical schemes or because they cannot afford the premiums. It also includes expenses which members of medical schemes have to pay because they have reached their scheme limits or because they are obliged to make co-payments in order to access certain services. Trends indicate that at the top-end segment of the market, consumers are opting out of medical scheme membership and are self-funding their medical expenses. On the other hand, lower-income earners, who constitute the bottom segment of the market, are facing a high barrier as a result of unaffordable premiums. The private sector blames these high barriers to entry on the regulator's insistence that the

medical schemes offer many prescribed minimum benefits. On the other hand, the regulator insists that the private sector is paying more attention to shareholder demands for profitability.

In 2004, the Competition Commission carried out an investigation into healthcare sector. It concluded that medical schemes, hospital groups and medical practitioners were acting in contravention of the Competition Act by colluding to fix prices of healthcare services. In addition to influencing the incessant prices hikes, these practices were preventing new service providers from entering the market as competitors.

As a result, a number of regulatory interventions have been tabled to make private healthcare more accessible to most South Africans. The introduction of prescribed minimum benefits (PMBs) meant that all schemes are legally required to provide their members with certain benefits. However, this could affect their financial sustainability and thus the access of poorer and sicker people to medical care if schemes go bankrupt. Therefore to achieve greater fairness among schemes after the implementation of the PMBs, the government intends to introduce a Risk Equalisation Fund (REF) in 2007 (CMS, 2006b). This means that schemes with a younger and 'healthier' membership profile with less risk will contribute to an REF that will be administered by the Council for Medical Schemes. The REF will pay amounts to those schemes with an older or more 'unhealthy' membership profile. The introduction of the REF means that all schemes will have to compete on delivery of quality care at lower costs, thus reducing their community rating, rather than relying on their membership profile.

Another policy issue that aims to create a better balance between the public and private sectors involves the reform of tax subsidies for medical aid. At present this formula covers a percentage of the cost, rather than setting a cap, which has effectively meant that the more expensive the schemes are, the higher the subsidies (CMS, 2006b). This means that better-paid employees are getting bigger subsidies, and it also means that the tax rebate is effectively paying for these services. In effect, it means that government is subsidising the use of private health services. This further benefits the private sector and disadvantages the public sector. The 2003 Taylor Committee of Inquiry reported that this tax subsidy to medical schemes equated to R7.8 billion or R1 000 a member. This is significantly more than the total annual health expenditure for a person in the public sector. In October 2005, the government published its proposals for tax

reforms. Among its recommendations was a proposal that the current system would be replaced with a monetary cap.

The regulator believed that by redistributing tax subsidies via the risk equalisation fund the medical scheme industry will collectively benefit from an increase in premium income. The extra R7,8 bn added to the industry's annual premium revenue of R37 bn in 2001 should drive down costs of a basic medical scheme package, enabling more affordable cover. The health department hoped that between 4 million and 8 million new people would be able to enter the private healthcare market.

Other avenues that were being explored by the regulator to redress obstacles to equity include the possibility of a low income medical scheme (LIMS). In 2005, a consultative process began with the private sector and government to investigate this possibility. The vision of the LIMS is to open schemes to lower-income earners who are either formally or informally employed (Hassim *et al.*, 2007). This legislation could have the effect of increasing the potential lives covered from only 7 million lives to 20 million. For instance, while only 2% of the entire population are covered by fully comprehensive medical insurance and a further 8% by limited co-payment and managed-care schemes, a further 30% of the employed population could be insured (Kruger, 2002). This has spurred intensified competition between medical schemes to grow their markets by capturing this lower-income market segment. It remains to be seen whether these schemes can succeed in these low-margin, high-volume segments.

There are also discussions in government circles in the longer term to introduce social health insurance (SHI). In this approach, all employers will be required to contribute to a national fund that will be used to pay for the cost of medical care for all employers. This could double the size of the privately insured market, creating large risk pools and providing new opportunities for cross-subsidisation. This would in turn improve negotiating power with providers. However, the trade unions are concerned that this will serve only to increase the cost of labour, thus resulting in further unemployment.

Other interventions are in the process of being implemented (Doherty and McLeod, 2003; Gilbert, 2004). These are aimed at controlling the cost of medicines, such as generic prescribing and substitution, limiting dispensing by private practitioners, and creating a single 'exit' price for

pharmaceuticals as they leave the manufacturer. Meanwhile, government's attempt to limit the supply of private hospital services through a moratorium on new beds has failed to have an impact on the industry (Doherty and McLeod, 2003).

By 2002 the regulator was also seeking to curb the unseemly behaviour of brokers. According to Doherty and McLeod (2003), brokers were systematically raiding younger members from restricted schemes and were enrolling them into selected open schemes where they could earn high commission fees. Consequently, restricted schemes were left with a much older beneficiary profile. Recently, as the market became more static, brokerage fees continued to escalate as a result of brokers moving members from one open scheme to another. The latest regulation restricts brokerage fees to a small percentage, 3% of contributions paid, with a maximum monetary cap of R50 paid monthly (Doherty and McLeod, 2003). The purpose of this restriction is to remove incentives for brokers to 'churn' members and to sell only the premium priced products.

By 2004, draft regulations for a transparent pricing system and limits on distribution and dispensing fees, were implemented by the health minister. The market expected the prices of medicine to drop by between 40% and 70% in May. The regulations, part of the Medicines and Related Substances Control Amendment Act, and public comments were to be heard over the next three months. The draft required that yearly price rises would be limited to a ceiling that would be determined by the government, taking into account inflation and the exchange rate. If the savings were indeed passed on to consumers, it could save medical schemes R4 bn a year. Meanwhile, the pharmaceutical industry believed that the health department's plans would beggar the sector. Several multinational companies were threatening an exit strategy. There was concern that multinational firms might decide to scale back the products offered to the South African market, to the detriment of patient care.

Since the first democratic general election in 1994, the issue of economic empowerment had become increasingly more important against the racial imbalances and unequal opportunities of the past. For instance, in 1996 about 94% (8 401) of directors in South Africa were still white men and only 5% of companies listed in the JSE were black-controlled (Du Toit, 1998). By 2004, as a result of the Broad-Based Black Economic Empowerment (BEE) Act, the financial health insurance sector was seeking to transform its shareholding to black-owned equity. During

this period and under enormous political pressure, most of the medical schemes were looking to conclude BEE transactions with black-owned firms. Many critics argue that it was not the noble desire to overcome inequalities of the past in terms of racial discrimination, but government's decision to develop a single medical scheme for public service that catalysed the industry into implementing this policy. As the largest single employer, the public sector represented an enormous financial opportunity for these firms.

While the regulator seeks to apply interventions in the industry to promote equity, efficiency and the quality of care, healthcare insurance organisations are now being forced to seek more cost-effective and innovative approaches for delivering healthcare. This is a direct threat to their profitability and hence their survival. Furthermore, these regulatory trends are starting to shape the organisational strategies of the dominant healthcare insurance companies. Some of these trends are leading to strategies to devise products and services that would be more suitable to their markets. It has also started to become more apparent to these organisations that existing practices were incapable of tackling the root causes of cost escalation, namely the over-servicing and insidiously high prices charged by providers and the disproportionate contributions represented by non-healthcare expenditure. As a result, more elaborate product designs that were adaptable to a fairly unstable regulatory environment with short time-to-market started to become more vital to the strategies of healthcare insurance organisations.

5.2.5 Summary

A number of concerning issues face healthcare globally. It is clear that the startling inequities between the haves and have-nots is a major contributor to this problem. From a South African perspective, racial discrimination against non-whites affected their health in many ways. These included social conditions of ill health, the segregation of health services, the unequal spending on health services, and the failure of the professional medical bodies and civil society to challenge apartheid health. More than 10 years later, after its first democratic elections and despite a number of regulatory reforms, South Africa is still suffering from the serious inequities in health that took place systematically under apartheid laws and policies. Given a turbulent regulatory environment, healthcare insurance organisations are now being forced to seek more cost-effective and innovative approaches for delivering healthcare. A crucial component of resolving the healthcare crisis is via appropriate funding strategies. In the next section, I review

some of the major trends on the design, structure, and healthcare funding systems in the healthcare insurance market.

5.3 The changing healthcare insurance market

5.3.1 Introduction

In this section, I focus on the critical challenges facing the healthcare financial market worldwide. The explosion in scientific knowledge, its costly application to healthcare, the concomitant rise in inflation, and new models to alleviate problems in healthcare financing are explored.

5.3.2 Inflationary environment

It is widely acknowledged that healthcare costs globally are continually rising. Some of the key reasons for this phenomena are located in the area of outpatient and physician services. Rising costs are attributed mainly to expensive, high-tech treatments or diagnostic procedures such as radiation, MRIs, X-rays, lab tests, laparoscopic surgery, and body scans (Kronick, 2005; Cigich, 2002). For instance, while new imaging technologies are very effective at diagnosing and treating diseases at the cellular level, the short-term impact has been unfavourable. As an example, consider how the combination of positron emission tomography and CT is being used, not only to find cancers, but also to evaluate in microscopic detail which treatments are working. While these technological breakthroughs have long-term potential for saving lives and developing new drugs, they result in short-term problems such as creating higher demand for ‘high tech’ treatment from consumers, and healthcare providers who are obliged to offer these treatments to remain competitive (Benatar and Fleischer, 2003). This has a definite effect on healthcare inflation. In countries like the United States there is also the tendency for healthcare providers to conduct more expensive diagnostic tests for liability protection (Cigich, 2002).

Another force that has encouraged inflation is the managed-care backlash⁸ (Gabel, 2003). Since 1996, health plans have retreated from closed or narrow provider networks, utilisation review programmes, provider risk-sharing and limited treatment options. In general, managed-care systems offered cheaper products because they restricted the choice of the patient. This movement away from a 'narrow' managed-care system set off a resurgence in healthcare inflation. This was largely brought about by a consumer backlash against network restrictions and utilisation review processes. Furthermore, providers added to the problem (Robinson, 2004) by consolidating their local markets, demanding rate increases, litigating over delays in payment and denials in authorisation. For example, in the US, premium increases accelerated every year after 1996 to a figure of 12.7% in 2002.

Other cost drivers include the hospital-building boom and widespread inefficiencies in the healthcare system. Furthermore, total spending on healthcare administration accounted for \$261.2 billion, 21.6% US healthcare expenditure. According to Woolhandler, Campbell and Himmelstein (2003) private insurers have high overheads in most nations: 15.8% in Australia, 13.2% in Canada, 20.4% in Germany, and 10.4% in the Netherlands. Functions essential to private insurance, but absent in the public sector, such as underwriting, claims processing and marketing – accounting for about two thirds of private insurers' overheads – are also contributing to rising costs. As a result, private insurance companies are seeking novel ways to control the cost of financing healthcare.

5.3.3 Consumer-driven healthcare

In an attempt to curb the cost of inflation, a number of experts, including both regulators and private sector firms, are suggesting that there is currently an overemphasis on managing the supply side in the provision of healthcare services and are calling for a shift towards demand management (Labiris and Niakas, 2005). The managed-care approach alluded to earlier was a classic attempt to constrain the supply of care. However, many experts argue that the inability of the managed-care era to bring to an end the persistence of the fee-for-service reimbursement system continues to create incentives for providers to oversupply services. Patients have

⁸ Managed care can be defined as the use of selective networks of contracted providers by health insurance companies which encompasses some means of incentivising members to use the networks, and some degree of risk sharing with those networks (Robinson, 2004).

relatively little information or personal authority with which to challenge care decisions made by providers, while the third-party payment system (whereby an administrator settles claims) shields both providers and patients from a full awareness of the cost of services (Doherty and McLeod, 2004).

Consequently, some healthcare insurance companies are now modelling their business on the so-called consumer-driven healthcare (CDH) concept. The healthcare companies frame this emerging concept as one in which the employees play a greater role in making decisions on their healthcare, have better access to information to make informed decisions, and share more in the costs (Cannon and Tanner, 2005). Consumer-driven healthcare plans seek to give employees greater options to choose their providers and their level of benefits. This translates to more point-of-service plans, higher deductibles and co-payments, and, in general, policies in which employees have more financial responsibility for their healthcare and employers and healthcare insurance firms provide better information to employees on their choices. The choice of the employees determines the premium for their health plan, and the employees disburse the difference, should that premium exceed the employers' contribution. A number of healthcare insurance firms are using Web-based tools to enable employees to make decisions such as selecting their network of physicians and hospitals, determining their co-payment levels, among other decision dimensions. From a financial perspective though, this increases an employee's share of total medical spending and resultant risk.

As alluded to earlier, the premise of consumer-driven healthcare is that employees will make more prudent decisions about their healthcare, which implies that patients are now making tactless ones. To support their argument, proponents of consumer-driven healthcare argue that most patients readily accept their doctor's treatment suggestions without question, including which drugs to take or specialists to see (Cannon and Tanner, 2005). They assert that when the patient's own money is at stake, he or she will be more likely to evaluate the best price for a routine visit or to forgo a costly brand name drug for a cheaper generic one. Advocates of consumer-driven healthcare are convinced this behaviour will in turn force pharmaceutical companies, hospitals and physicians to compete more aggressively on quality and cost. To support this claim, healthcare insurance companies are touting numerous studies which show that employees with greater access to information make more effective decisions about their

healthcare. Furthermore they claim that when given a greater burden of the cost, employee spending decreases.

On the other hand, detractors of the consumer-driven healthcare approach argue that employers are helping to drive this vision because it is in their interest to reduce their role in health insurance (Lee and Zappert, 2005). This is especially so, given the recent inflationary spiral in healthcare costs and their increasing liability in the way the medical benefit programs are currently being administered. Some employers have sought to cap the amount that they pay for health benefits through what is now termed a 'defined contribution'. 'Defined contribution' means that an employer pays a fixed amount towards each employee's health benefits, rather than whatever it costs for a fixed package of benefits (Robinson, 2005). In the view of critics, consumer-driven healthcare plans make it easier for employers to evade premium hikes and legal problems.

A majority of employers surveyed by Deloitte and Touche (2003) are seriously considering consumer-driven healthcare as a solution. Nearly 50% of companies surveyed in the US believed that consumer-driven healthcare would be part of their plans by 2003. Despite this, 63% of the companies surveyed stated that current consumer-driven plans have complex and confusing designs. In addition, another 41% reported that they are concerned that the plans benefit only healthy employees. Although plans are being put in place to move towards offering these healthcare solutions, some employers have voiced significant reservations, including a negative impact on healthcare inflation and whether less than healthy employees will be losers under the plan. Employers are particularly concerned about their poor employees who, when confronted with co-payments, may reduce the amount of services they demand, but not necessarily in a more rational way as proponents of consumer-driven healthcare assumes.

Apart from employers, private healthcare funders have enlisted the support of their governments in enlivening consumer-driven healthcare products. Consumer-driven healthcare firms have demonstrated their political power by the ease in which they have been able to frame their political-economic discourse in the media. Indeed, influenced by these health insurers, some governments are supporting further deregulation in social health insurance to encourage healthcare innovation towards this direction (Lehmann and Zweifel, 2004). In his State of the Union address President George Bush made the following remark:

We must work together to...control those costs and extend the benefits of modern medicine throughout our country ... Starting this year, millions of Americans will be able to save money tax-free for their medical expenses, in a health savings account. State of the Union address, January 2004.

Recent trends in particular show a shift in government policy towards further deregulation. For example, in the US the health savings account (HSA) remains a cornerstone of the Bush administration's agenda to control health insurance costs. In December 2003, the Medicare Reform Law in the US allowed consumers to set up tax-free savings accounts to cover their out-of-pocket medical expenses. Here again, the idea is to give consumers a stronger incentive to seek the most cost-effective care.

Many healthcare practitioners who are frustrated with the restrictions and complexity of managed care are supporting consumer-driven health plans (CDHP). They hope that these plans will reduce the intrusion of health insurance into the practice of medicine and restore independence to the doctor-patient relationship.

One of the innovations in a consumer-driven healthcare plan is the health savings account (HSA) mechanism. According to Robinson (2005), although HSAs impose greater cost-sharing on members, they permit broader choices than the health maintenance organisation (HMO) plans of the managed-care era. Healthcare savings accounts works very much like a bank account which the consumer uses to pay for non-hospital expenses.⁹ Typically members pay a monthly contribution towards their HSA. This means that the larger the HSA, the higher the member's contribution, although the maximum amount for the HSA is normally limited by the employer or regulator. Unlike a bank account, some non-hospital expenses are subject to limits, such as spectacles or prescribed medicines on which consumers can only claim up to a certain amount a year. In addition, chronic medication is subject to limits based on an insurance scheme's rules. In most cases, any money accumulated in the HSA is carried over to the next year. Similar to banks, HSAs with a positive balance may earn interest, while HSAs with a negative balance pay interest. Furthermore, unspent balances belong to the account holder instead of the employer, and can be moved when the member leaves his or her job.

⁹ Non-hospital expenses refer to costs when a patient is not admitted to hospitals, such as consultations with healthcare practitioners and approved medication.

HSAs challenge the notion of the ‘use it or lose it’ principle of insured services, where the financial benefit goes to sick members of a pool who incur claims in excess of their premium payments. In the HSA approach, the funds remain the asset of each member. By reformulating the principle to a ‘use it or save it’ principle, it is assumed that the member’s responsibility for costs incurred in own care increases, but decreases his or her responsibility for costs incurred for the care of other members within the pool. For instance, consumers are being incentivised to request doctors to charge medical aid rates rather than private rates. The differential between private rates which are normally in excess of medical aid rates is the responsibility of the consumer. When consumers run out of funds from their savings account, they will have to pay out of their pockets to providers. In addition to contributing to an HSA for routine care, consumers purchase a catastrophic health insurance policy to cover the costs of major illnesses.

HSAs thus shift the locus of rights and responsibilities for financing day-to-day healthcare expenses from governments and employers to individual consumers (Cannon and Tanner, 2006). In doing so, the language of individual ownership weakens society’s sense of collective responsibility for its most vulnerable members, and instead emphasises the importance of individual effort in generating the economic resources that underlie any system of care (Robinson, 2003). According to Robinson (2003), HSAs moves us closer to the notion of a personalised and privatised healthcare system. From a macro perspective, according to this theory, if patients decide whether the care they are receiving is worth their money, the invisible hand of the market will determine the proper level of resources and the efficient allocation of them.

However, critics argue that HSAs may have a negative impact on the outcome of the healthcare of financially vulnerable patients because these patients will choose not to seek care or not to adhere to prescribed medication regimens. Furthermore, other critics are challenging the notion that consumers are capable of assuming most of the responsibility for making decisions about their own healthcare. For example, Lee and Zapert (2005) found that the likelihood of patient care worsened as patients realised they were paying for effective preventative care such as mammograms and Pap smears. To counter this behaviour, a number of CDH firms are offering comprehensive cover for preventative services to motivate plan members to schedule routine care and thus avoid costly treatment in the future (Sharon and Donahue, 2006). Moreover, others have noted that the HSA approach tends to be more attractive to younger, healthier individuals

and are concerned about the impact of these members opting out of conventional insurance pools.

Detractors continue to argue that despite these innovations, healthcare costs will continue to rise. Opponents of consumer-driven healthcare are providing recent evidence that healthcare inflation persists, even though the much-vaunted consumer-driven healthcare movement is supposed to be driving down costs (Chiappetta, 2005). Some experts are arguing that while there is merit in making people aware of the cost of healthcare procedures, there are limits to the extent that cost and information sharing can check overall expenditures. In the first place, the vast majority of spending is on a relatively small subset of the population, such as those with chronic illnesses whose costs far outstrip the out-of-pocket limits in consumer-driven plans. Second, the march of new technology, including hospital construction, continues to experience significant growth. While many critics acknowledge that market forces are effective in improving consumer welfare in markets for many types of products (such as household appliances and personal computers), they maintain that these same market forces will harm consumers of healthcare because healthcare is different. Low-income people in particular may find it difficult to pay for added out-of-pocket costs necessary under CDHP. Third, some critics argue that market competition creates waste in the form of duplication of facilities and diverts resources from patient care to administrative costs and profits. For these reasons, a number of experts are proposing instead a national commitment that addresses systemic changes in disease management, preventive care, clinical research, and information systems, to help manage healthcare more efficiently. They suggest that conventional sources of finance or novel models alone cannot solve the healthcare problem (Afsaw and von Braun, 2005). The more cynical critics are simply viewing these new health plans as another mechanism for giving tax breaks to wealthy citizens.

However, the HSA mechanism is not the only innovation inscribed in the design of CDH products to manage costs. In the next section, we review some of the other key steps healthcare insurance firms are taking, such as integrating elements of wellness into their design of CDH products and services.

5.3.4 Wellness programs

Most CDH providers have also integrated elements of wellness into their product design and are making these available through Web-based portals and traditional channels. Examples of these wellness approaches include online health risk appraisals, preventative care guidelines, lifestyle modification modules and disease management programs. Some organisations have ventured further down this path and are providing comprehensive wellness programs that include on-site fitness centres, managed clinics or pharmacies, intensive health coaching and disease management.

This novel approach has been taken by consumer-driven healthcare insurance companies to curb costs by focusing on wellness rather than on illness and the resultant design of their products on the basis that ‘prevention is better than cure’. These typically take the form of proactive health assessment processes where details of the patient’s lifestyle habits – such as drinking, smoking, stress levels, nutrition, sleep patterns, and physical exercise – are recorded and analysed online or by a qualified health practitioner. Once analysed, a confidential and comprehensive report is typically sent back to the patient. The report is meant to alert the patient to looming health problems, from predictable problems such as being overweight to the unpredictable risk of developing diabetes. The report would analyse the patient’s lifestyle and provide guidance or advice on how to make the patient healthier. Patients would then be entitled to consult specific experts such as a dietician to help modify eating habits, a biokineticist to recommend an exercise regimen, or a psychologist for stress counselling. Some healthcare insurance companies are offering incentives such as discounted gymnasium fees for maintaining a healthy lifestyle or an elaborate points scheme to reward appropriate health-related behaviours. While components of CDH products such as the HSA make consumers accountable for the financial consequences of their decisions, the wellness component seeks to reward them for appropriate behaviours.

Although the predominant view held by clinicians and healthcare decision makers is that prevention inhibits rising healthcare costs, recent empirical evidence suggests that most clinical preventive services may actually increase societal costs (Gandjour and Lauterbach, 2005). Mathis (2005) succinctly argues why healthcare costs will continue to rise, and preventive care and better treatments will be major causes of that rise rather than the panacea:

The medical establishment cured the infectious diseases that took the young lives of so many: yellow fever, typhoid, typhus, small pox, diphtheria and whooping cough. Those who would have died from those diseases were spared to live on into middle age to develop heart disease. Our physicians and hospitals have made remarkable, but costly, strides in combating that killer, sparing many to live on to develop cancer. Now many cancers can be effectively but expensively treated or cured, thus sparing many to live on to develop Alzheimer's disease at great continuing expense to our healthcare system. All of the buzzwords – prevention, early detection, screening, chronic case-management – are nothing more than prescriptions for increasing the overall cost of healthcare.

In any event, the WHO report mentioned in section 5.2 already states that an enormous part of the crisis in healthcare can be attributed to individual behaviours related to risk, such as food intake, smoking and sexual behaviour. It may be simplistic to assume that strong monetary incentives for prevention will resolve the complex problem of consumer health. Despite the mixed views about the efficacy of wellness programs in the literature, the Internet is deemed an important ally in this process. The role of the Internet in consumer-driven healthcare is explored in the next section.

5.3.5 Summary

To summarise, advances in medical care and the ability to improve the duration and quality of life, combined with the growing expectations of both doctors and patients that new modalities of treatment should be implemented in everyday practice, and high administration costs of healthcare insurance firms are among the major reasons for modern healthcare services becoming so expensive. Many frustrated employers and struggling health insurers are adamant that patients should assume greater responsibility for containing healthcare spending and absorbing cost increases. While there are mixed views on the likely outcome of consumer-driven healthcare as the panacea, this steadily growing model which seeks to manipulate the behaviour of the demand and supply side of the market is bound to change consumer behaviour and alter traditional patient-provider relationships. The well-publicised shortcomings of managed care have prompted employers and insurers to promote the attributes of consumer-driven healthcare.

They paint a picture of patient empowerment, highlighted by greater flexibility, wider options and more authority in decision making. In return, patients are expected to make better and more cost-effective decisions. Despite a broad range of challenges, the Web is seen as a suitable tool to help consumers make these decisions.

In the next section, I take a closer look at the ICT sector in South Africa and its ability to enable the implementation of the Web for these kinds of self-service applications.

5.4 The ICT sector and the healthcare insurance industry

5.4.1 Introduction

In earlier sections, I established how, over a period of 60 years, the apartheid policy had skewed the development of healthcare in South Africa along racial lines. In section 5.3 I also recognised that ICT is central to an information intensive industry such as healthcare insurance. In this section I will establish that ICT and the Internet in particular are at the heart of the new consumer-driven healthcare approach to healthcare financing. I will also show how the same legacy of apartheid applies to access to basic ICT infrastructure. I also sketch the broad range of challenges facing organisations wishing to implement financial services via the Internet in the South African context.

5.4.2 ICT in the financial services sector

ICT is of paramount importance to the healthcare insurance market. It plays a crucial role in the sales, underwriting, and claims procedures, procedures that require the collection, manipulation, storage and retrieval of massive amounts of data. Furthermore ICT solutions are being extended to channels such as ‘high-tech’ call centres to make it easier for members, medical practitioners, hospitals and pharmacies to communicate with the firm. With rising medical costs, private insurance companies are looking to reduce their administration costs and improve their service levels. The Internet in particular presents new opportunities to distribute products and services more effectively and efficiently. During the dot.com zenith, the Internet held aloft what was in hindsight the somewhat exaggerated promise of a revolution in commerce. In this section, I trace

the status of the ICT sector in South Africa over the period of the case study and how it influenced the use of the Internet over the same period.

During the period from 2000 onwards, the telecommunications sector in South Africa continued to be characterised by buoyant growth. However, this growth was accompanied by relatively high retail prices, super-profits, job losses, licensing delays and minimal new foreign investment in the sector. The overall growth of the sector in 2003 rose to a total revenue of R74 billion and an increased GDP contribution of around 6%. Furthermore, relative to other African countries, South Africa had a fairly advanced telecommunications infrastructure and boasted the highest teledensity in Africa (Information Technologies Group, 2000).

While there is currently a lack of publicly available data on users of ICT in South Africa and it is even more difficult to ascertain how well South African enterprises are using their ICT facilities, a study completed in 1996 attempted to assess the effectiveness of ICT use in the four major economic sectors (Young and Ridley, 2003; Hodge and Miller, 1996). At the time, the financial services and retailing sectors appeared to be making the most effective use of ICT and in several cases could be considered world-class users. For instance, all the major banks offered a full range of on-line banking facilities. In addition, the four largest banks were placed among the top 500 largest banks in the world and the IT support in the country for financial services was regarded as comparable with or better than that of many developed countries. Furthermore, the local market for call-centre products continued to grow rapidly.

Table 5.3

Examples of Web-style commerce

Segment	Web-style commerce
Financial sector examples	Web-based electronic banking Online bill presentation and payment Asset financing Mortgage applications Online share dealing Unit trusts Insurance product sales Insurance claims processing

Source: BMI-TechKnowledge (2004)

The high investment in ICT by the South African financial services sector represents an interesting dichotomy. For instance, the manufacturing and mining sector, which remains the lifeblood of the South African economy, was clearly behind. A reliable estimate put the IT spend of the manufacturing sector at 1% of turnover, compared with a figure of 4% in Europe at the time. Nevertheless, all of South Africa's major financial institutions were using countrywide electronic networks. These institutions were also engaging in significant levels of e-commerce in various forms (see table 5.3). While some of these observations provide an optimistic view, these performances mask the serious underlying problems in the sector. I will review this position by paying particular attention to the Internet.

5.4.3 The Internet and consumer-driven healthcare

A number of researchers have found that it is becoming a common trend to look to the Internet for information about personal health issues (Larkin, 2001). These range from self-maintenance and personal health insurance to medical information that will enable one to understand one's own symptoms (Lang and Collen, 2005). According to Rainie (in Lang and Collen, 2005:43), a member of the health sites panel that is discussing the building of trust on the Web:

... about 80% of U.S. Internet users have gone online to get health diagnoses or to find out what's wrong with them; to get second opinions ... about what they have and how to treat it; to check out doctors and check out hospitals they might be going to; to go to support groups.

The use of the Internet by consumers for healthcare services is increasing. Therefore the role of the Internet as a potential source of patient information and support can make a significant contribution to the delivery of healthcare services (Laing, Hogg and Winkleman, 2004). This behaviour is especially relevant for consumer-driven healthcare firms, where the process of engaging their members in managing costs is central to their philosophy of consumer-driven or consumer-centric healthcare. As a result, a number of CDH firms are implementing online self-service applications to reduce the cost of servicing customers and to improve customer relationships (Kolsky and Bivin, 2001). These online self-service applications provide

consumers with interfaces to access a CDH firm's data, enabling consumers to serve themselves with the information they need or the service they require.

In the main, self-service capabilities through a Web-enabled portal are allowing employees to monitor their claim activities, access provider information, use tools for self-care and personal health appraisal. Some CDH firms also offer online help sources and access to personal assistance in the form of customer-service representatives and nurse lines (Abbot and Feltman, 2002).

Communication, education and easy access to the right information through the use of Web-enabled technology are critical elements of the processes relevant to CDH firms (Abbot and Feltman, 2002). Proponents of CDH believe that consumers feel empowered because they have direct inputs into decisions about their healthcare, specifically with the online knowledge and tools they need to make those decisions. Consequently, the traditional process of health education has taken on new dimensions with the advent of the Internet and is being introduced in many e-health initiatives (Lang and Collen, 2005). For example, obesity is a growing problem in most developed countries, and the number of people using the Internet to learn more about weight reduction or maintenance options is also growing (Larkin, 2001; Tate, Wing and Winett, 2001). Furthermore, some CDH firms have started to offer tools for comparing hospitals and physicians on the Internet such as physician scorecards.

However, the efficacy of the Web for decision making depends on the transparency and reliability of provider cost data. It is currently very difficult for a consumer to shop for services without information that reflects the cost and quality of those services. Furthermore, it is possible that potential risks can emanate from the use of irrelevant or inaccurate information (Beaulieu, 2002; Crocco, Villasis-Keever, and Jadad, 2002). To empower consumers, one of the challenges is to provide reliable and comparable information (Scheffler and Felton, 2006, Eysenbach, Powell, Kuss, and Sa, 2002). While it is not clear how prevalent Internet use for healthcare really is, or what impact it has on healthcare utilisation (Baker, Wagner, Singer and Bundorf, 2003), proponents of consumer-driven healthcare believe that health insurance companies that have already invested heavily in e-commerce will be in the best position to service this segment.

According to some experts, the key to serving a consumer-driven healthcare plan is the ability to provide personalised, high-value service to the member at any time of the day or night through multiple communication channels (Abbot and Feltman, 2002). Firms should be able to authenticate members over the Internet and present them with a complete transactional history. Furthermore, they should be able to offer personalised educational information in the context of actual transactions processed. E-commerce capabilities should integrate these with customer relationship management tools that allow the delivery of targeted, consumer-focused educational components such as disease management or prevention and early intervention in chronic diseases.

Aetna, a leading CDH provider in the United States claims that its members were more aware of the actual costs associated with their care owing to increased usage of Aetna's Internet portal tools. Members were more likely to view their explanation of benefits (EOB) online, check claim status, use the provider search function and review their HSA balance (Sharon and Donahue, 2006). However, survey data collected by Harris Interactive provide little evidence of an emergence of the 'market-driven healthcare' culture that is critical to the success of CDH plans. On the contrary, they believe there is little evidence that there is a culture in which consumers actually use data on costs and quality to choose their hospitals and doctors. A nationally representative telephone survey of 1 000 adults conducted in 2001 and 2005 found low rates of use of information on the quality of hospitals, health plans, and physicians, and no sign of an increase over this period.

While enrolment in CDH plans is still low, it is expected to increase rapidly in coming years. Some insurers are optimistic that information technology (IT), specifically the Internet, will also spur overall growth of the CDH market. Although IT has been associated among some experts with reduced administrative costs, there is little evidence that it is effective as a sales channel and is thereby contributing to greater enrolment of consumers. While the Internet is altering traditional distribution channels, agents and brokers appear to remain the dominant channel for healthcare insurance products and are perceived to be the core of success in this market. Proponents of conventional channels to healthcare insurance sales argue that brokers and agents are able to interpret the market to potential consumers and thus affect what products they demand (Buntin, Marquis and Yegian, 2004; Schultze and Orlikowski, 2004). Despite attempts

by healthcare insurance companies to the contrary, it appears that consumers are more receptive to the idea of the Internet as a service channel than as a sales and marketing channel.

Another key challenge is catering for the broad array of users with very different information needs (Lang and Collen, 2005; Adam and De Bont, 2003). Furthermore, it is unclear whether providing information to patients will transform them into consumers that are actually able to improve the outcomes of their care. Nevertheless, a Forrester study (see Johnston, Brown, Molvar and Twist, 2001), found that most healthcare insurance organisations are implementing online self-service portals to help them achieve critical business goals such as improved customer service, greater member satisfaction and reduced administration costs.

5.4.4 The status of e-commerce

The Internet is presenting new opportunities to the healthcare insurance industry to distribute products and service more efficiently. During the dotcom boom at the end of the '90s the Internet presented opportunities, such as operating cost reductions, and threats, such as the entrance of new competitors. These opportunities and threats drove many healthcare insurance firms to regard the Internet as a new distribution or service channel. However, according to Goldstuck (2004), at the end of 2002 only 3.1 million South Africans had access to the Internet (see table 5.4). This translates to only 1 in every 13 South Africans. This was marginally up from 1 in 15 at the end of 2001 compared with 3 out of 4 in the United States during the same period. Growth in Internet access showed a dramatic slow-down between 2000 and 2003. Growth in 2002 was around 7%, the slowest since the Internet became available to the public in 1993, and the first time it had been below 20%. Growth in 2003 was set to be only 6%, with 3.28 million South Africans expected to have access to the Internet. However, specific developments were expected to boost growth in 2004, such as the roll-out of services by the Second Network Operator (SNO), which had finally been granted a licence to operate, the roll-out of high-speed or broadband wireless, and the healthy rand-dollar exchange rate, which had dramatically brought down the cost of equipment for rolling out infrastructure.

On a more positive note, the mobile subscriber base in South Africa since 2000 grew by 20% over a five-year period. By March 2004, the estimated size of the active mobile subscriber market was around 14.5 million subscribers (Goldstuck, 2005). The key reasons for the rapid

growth are the limited roll-out of fixed lines and the high cost of fixed-line rentals offered by the Telkom monopoly. Nevertheless, South Africa moved out of the top 20 most connected countries in the world, falling to 34th position (see table 5.5). This dwindling performance was supported by a Global Networked Readiness Study, which assesses the degree to which a nation is *prepared* to participate in the networked world; South Africa was ranked a paltry 40th out of 75 nations.

Table 5.4

Internet access in South Africa, 2004

	2000	2001	2002	2003	2004*
Dial-up	782,000	960,000	1,008,000	1,038,000	1,100,000
Corporate	1,274,000	1,501,000	1,640,000	1,775,000	490,000
Academic	360,000	425,000	450,000	470,000	1,890,000
Total	2,416,000	2,886,000	3,098,000	3,283,000	3,480,000

2004 – Estimated

Source: The Goldstuck Report: Internet Access in South Africa, 2004 (Goldstuck, 2005).

Note: Internet access is growing, but mostly among elite users, who are generally wealthier White South Africans.

Table 5.5

South Africa's Internet connectivity ranking

Date of Survey	Number of Internet	World ranking
January 1999	144,445	21 st
January 2000	167,635	25 th
January 2002	238,462	28 th
January 2003	298,035	34 th

Source: DNS Survey

Note: July 1996 14th

While this drop in position was largely attributed to the more industrialised and richer nations being late adopters of the Internet, many local barriers were slowing the growth of the Internet.

5.4.5 A review of the key barriers to e-commerce

In considering the main barriers to e-commerce, one of the key aspects is the status of telecommunications industry. During the period of political transition in the 1990s, telecommunications in South Africa was governed by the 1958 Post Office Act under which a state-owned company, Telkom, functioned as a telephony infrastructure and services monopoly. Despite the restructuring and corporatisation of the telecommunications sector, the monopoly was re-enforced by a parliamentary act in 1997 that gave Telkom monopoly over South Africa's telecommunications infrastructure until 2002. Since there was no direct competition, market effects prevalent in first-world countries did not play a significant role in bringing down the cost of telecommunication. This discrepancy is demonstrated by the fact that 30 million users of fixed line services were obligated to only one telecommunication company. Therefore, regulations allowing Telkom to maintain its monopolistic position until 2003 caused telecommunication costs to rise even further in a non-competitive market.

Allied to this barrier were the high equipment and Internet service provider (ISP) costs which contributed to low levels of PC penetration. South Africa imports most of its computer hardware from abroad. According to Goble (2004), the initial set-up cost of hardware of this type may be as high as \$1500,00. Consequently, hardware costs were unaffordable for the average South African. Another survey conducted by Milne (2001) found that the cost of connecting to an ISP was significantly higher in South Africa than in other developing countries. Goble's (2004) study also compared the US's cost of broadband services with the equivalent bandwidth in South Africa. At the time, the comparative costs for 512 kbps download speed and 128 kbps upload speed from AT&T was \$200 per installation and \$79 per month, while the equivalent bandwidth in South Africa would cost a R1 275 installation fee plus a monthly rental fee of R1 500. In other words, the relative cost of bandwidth was reported to be 42 times more expensive in South Africa compared with the United States. The year 2003 saw the birth of broadband in South Africa, with the roll-out of the first commercial ADSL service by Telkom, but growth in 2005 was expected to be no greater, with broadband services resulting mostly in upgrades of current dial-up connected users rather than new users.

In addition to purchasing hardware, hardware must be configured and set up correctly, which requires some basic knowledge and training. A rudimentary knowledge of computers is required

before a user is able to connect to the Internet and browse this resource. According to a comparative study by the World Bank (2001), the average illiteracy rate in South Africa in 1999 was 15% of the total population. According to a study by Hodge and Miller (1996), South Africa has a computer literacy percentage of 7.7% of the population. While this may have changed to a degree, it serves to highlight the problem that the majority of South Africans are unable to participate in e-commerce because they do not possess sufficient skills to do so. The World Competitiveness Report (Institute for Management Development, 1993) also showed that South Africa rates behind India, Singapore and Chile. While this report may be subjective, it gives a fair reflection of South Africa's position in relation to the rest of the world. The comparison clearly demonstrates that access to the Internet in South Africa is further restricted because of the lack of basic computer literacy skills among its citizens.

Table 5.6

Comparison of computer literacy rating

Country	Rating
Singapore	7.6
Japan	7.3
Chile	5.9
USA	5.7
Malaysia	5.3
UK	4.9
India	3.4
South Africa	3.1
Brazil	3.1
Pakistan	2.1

Source: World Competitiveness Report (Institute for Management Development, 1993)

The combination of adult illiteracy and computer illiteracy significantly raises the barriers of entry to the Internet and excludes the majority of the South African population. The relatively high illiteracy level implies that a large portion of the population must first learn to read and write before attempting to become computer literate.

While training and literacy are important, language poses an equally high barrier to entry to the Internet. A widespread lack of English as a medium of communication prevents the majority of

the South African people from participating in the Internet. Even today, English dominates the world of computing and information technology. After all, most Web pages are written in English. Therefore, people who were unable to read, write or speak English are virtually excluded from communicating with this medium. In South Africa, the most commonly spoken language is Zulu, spoken by 22.4% of the population, followed by Xhosa, 17.5% ,then Afrikaans, 15.1% and finally English 9.1% (see table 5.7). While all schools in South Africa require English to be taught at least as a second language, Hodge and Miller (1996) maintain that this was insufficient to meet the demands placed on acquiring and using knowledge on the Internet. Clearly then, apartheid's separate development policies had left the majority of the population at a distinct disadvantage.

Table 5.7
Distribution of home languages in South Africa

Home language	Percentage
Afrikaans	15.1
English	9.1
Afrikaans/English	0.2
isiNdebele	1.5
Sepedi	9.8
Sesotho	6.9
siSwati	2.6
Xitsonga	4.2
Setswana	7.2
Tshivenda	1.7
isiXhosa	7.5
isiZulu	22.4
Other	1.8

Source: Central Statistical Service(2004)

Compounding these barriers were the slow and unreliable connections made to ISPs because of South Africa's poor infrastructure, particularly in rural areas. These factors have limited the entry into this market only to those who are able to afford it. Another barrier is that the speed at which South Africa connects to peering points on other continents is dictated by the poor infrastructure the monopoly provider has in place. The demand for international bandwidth is high, as most sites are hosted in the USA and Europe. The baud rate of analogue telephone lines determines the bandwidth that the majority of South African Internet home-users have. It is seldom more

than 56 kb/s and in reality is between 19.6 and 28.8 kb/s. This is caused by the poor quality of telephone lines and the high cost of ISDN. European and American users have a higher quality connection, because they have better-quality telephone lines. These users also have access to higher connection speeds at lower cost. ADSL and cable connections are the norm in Europe and America, while in South Africa analogue telephones are currently the primary means available to households to connect to the Internet.

In South Africa, Telkom began offering home users speeds of up to 128 kbs using ISDN lines and modems. The majority of South Africans cannot afford ISDN, as this is too expensive. Because the connection speed to an ISP is, on average, much slower in South Africa than in developed countries, the time expended in accessing resources on the World-Wide Web is therefore much higher in South Africa than in Europe or America.

Moreover, supporting the diffusion process and fostering growth of ICT requires a skilled ICT labour pool. This is especially relevant since, like many developing countries, South Africa suffers a brain drain, whereby several hundred ICT-skilled professionals are leaving the country every year. The inequities created in South Africa due to apartheid are also highly visible in the education system that is meant to supply these skills. The pass rate with university exemption fluctuated over the period between 1992 and 1996, and the 1997 pass rate of 12.4 % was actually lower than in 1993 (15.8%). Fewer than half of pupils (44.2%) who obtained a Senior Certificate passed with mathematics and physical science. A mathematics and physical science pass on higher grade are usually the minimum requirements for persons who want to obtain a university qualification in one of the key skill areas in IT. Technikons usually demand at least a mathematics pass on standard level for IT-related qualifications (HSRC Telecommunications Study, 1998:26). Therefore the HSRC survey concluded that supply will not be able to meet demand for computer science occupations and an undersupply of between 54% and 60% was estimated for the dotcom period between 1998 and 2003.

Given these barriers in ICT in South Africa and e-commerce in particular, the exclusion of poor communities by healthcare insurance institutions became a common phenomenon. At the same time, the urban elite or the more affluent and large businesses continued to dominate in their interactions with these institutions. Many healthcare insurance institutions were able to justify exclusive financial service delivery on the grounds that the current ICT infrastructure made it

costly to service the poor communities. While economically justified, the continued ‘financial services divide’ was becoming socially and politically unacceptable (Maumbe, 2006). In any event, the ultimate success of South Africa’s financial services sector may depend on how these institutions adapt ICT to penetrate previously neglected and untapped markets in poor communities, and markets created by the burgeoning new black middle class and elite black community.

5.4.6 Summary

To sum up, the Internet remains inaccessible to the majority of South Africans. Policies of the past with regards to the major elements of the country's ICT infrastructure and education have effectively excluded the majority of the population from the economic and social benefits promised by e-commerce. Furthermore the quality of the infrastructure and the costs prohibit even those elite users who are able to access the Internet. At the time, it looked unlikely that the South African health insurance sector could take advantage of e-commerce due to the low level of PC penetration, generally low Internet usage, and restricted broadband infrastructure. These observations had far-reaching consequences for healthcare insurance organisations hoping to take advantage of the opportunities presented by the Internet during the 2000–2005 period. In the next chapter, I will link the implications of these trends and challenges to our case study organisation.

5.5 Conclusion

In this chapter, I presented a brief background to global healthcare issues and healthcare issues in South Africa in particular, such as the pervasiveness of inequality in healthcare access and the challenges of poverty and HIV/Aids. I also described some of the major challenges facing healthcare insurance firms, especially an inflationary environment of ‘crisis’ proportions. These inflationary pressures have recently become a major catalyst for the development of innovative healthcare financing models. Particular attention was drawn to private sector organisations in the healthcare insurance industry, and the methods they are instituting in a turbulent regulatory environment. This led to the centrepiece for further discussion – a new healthcare funding model

being proposed under an umbrella concept – ‘consumer-driven healthcare’. The consumer-driven healthcare model was shown to rely intimately on information systems, particularly the Internet. Thus, the Internet, and the deployment of online self-service applications in particular, has been viewed by supporters of consumer-driven healthcare as an important ally to their success.

The chapter reviewed the status of the Internet in the light of social, political and infrastructure issues in South Africa during the period of the case study. It alluded briefly to some of the challenges facing healthcare insurance organisations wishing to deploy online self-service technologies, in what can be summed up as a context of startling paradoxes. Understanding at the broader social level has implicit or explicit bearing on developing a better understanding of IS implementation. Therefore the trends and developments described in this chapter have important implications for the implementation of the online self-service technology, at the time of the case study. The goal of the next chapter, chapter 6, is to provide a natural language description of the case study organisation and their SST implementation efforts, prior to a formal analysis in chapter 7 and chapter 8.

Chapter 6

Empirical Investigation into the Implementation of an Internet-Based Self-Service Technology at a Healthcare Insurance Firm

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6.1 Introduction

In chapter 5, I reviewed the broader social context that expressed the challenges of self-service technology implementation in the global and South African healthcare contexts. This chapter is devoted to describing the case study organisation in natural language,¹ prior to a formal analysis in chapter 7 and chapter 8. The narrative that follows was put together using primary and secondary textual material collected from unstructured interviews, newspaper and magazine reports, and various internal publications. My role of interpreter involved comparing, ordering, explaining and interpreting the material to convey the history of the implementation phenomenon.

The first part of this chapter is devoted to describing the organisational environment of the case, such as the complex regulatory environment; the formation of joint ventures (JVs) and internationalisation; competitive and innovative behaviour; important product design considerations; changing market conditions; and the evolving role of information and communication technology (ICT).

The second part of the chapter integrates the key features of the organisational environment context in discussing the implementation of an Internet-based self-service technology. The case spans from the early period of 1999 until 2005. This historical reconstruction tracks the evolution of the Internet-based self-service technology as it was implicated in various forms of organising from a static content-based website, to a newly established strategic business unit responsible for e-business during the dotcom era to a quickly restructured e-commerce department during the dotcom consolidation period, and – during the research fieldwork period – to a ‘streamlined’ decentralised project team responsible for overall front-end development work of organisation-wide applications. Against this backdrop of organisational change, the discussion traces the way in which users and designers responded to the implementation and use of the Internet-based channel, in the context of traditional channels and the growing array of alternative technology-based channels and communication media options.

¹ Walsham and Han (1993) advocate a ‘natural language’ description of a case prior to a formal analysis. A ‘natural language’ depiction of the case presents the author’s description and interpretation of events without the aid of the conceptual lenses. In the next chapter, the deeper and richer insight provided by using the key conceptual elements of the two theoretical frameworks will become self-evident to the reader. All participants’ responses have been captured verbatim.

6.2 United Assurance Group (UAG) and its context

6.2.1 Introduction

These contextual elements are crucial for understanding the SST implementation phenomenon. I begin this section by presenting the structure, mission and culture of the case organisation. I then present the major historical developments experienced by the organisation from 1999 to 2005, shaped largely by the trends alluded to in the previous chapter. This is followed by a brief discussion on the increasing role of ICT in the UAG business. In the next section, I focus briefly on the case study organisation, mission and culture.

6.2.2 Organisation structure, mission and culture

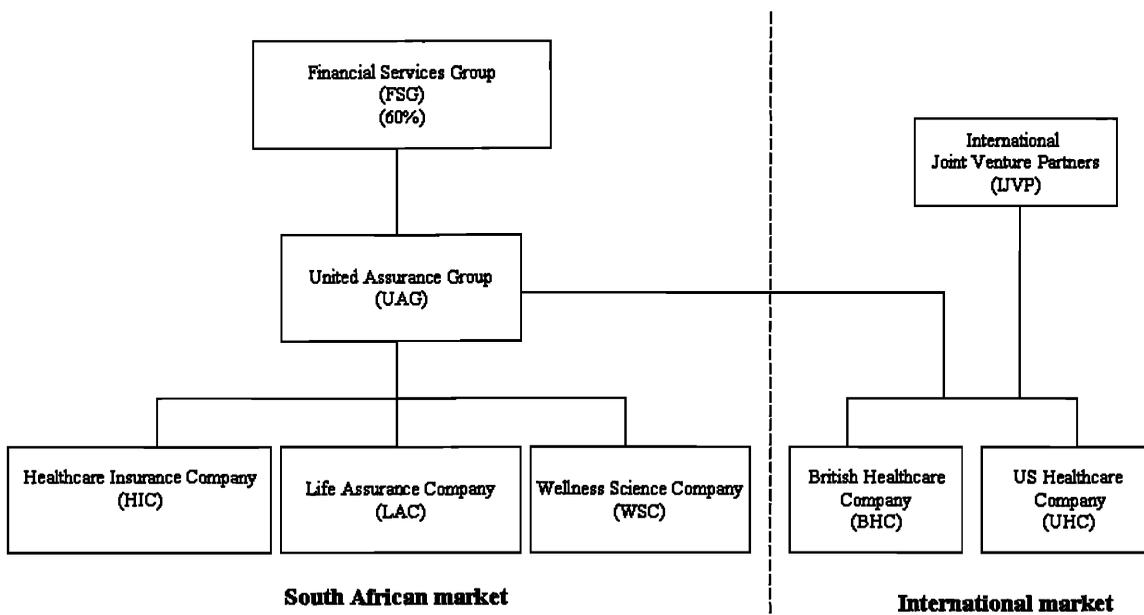


Figure 6.1 UAG's structure

Source: Derived from UAG's financial reports

United Assurance Group (UAG) is a subsidiary of Financial Services Group (FSG), one of South Africa's largest financial services companies (see figure 6.1). Listed on the Johannesburg Securities Exchange (JSE) and the Namibian Stock Exchange, FSG positions itself as an integrated financial services group, providing a comprehensive range of products and services to the South African market and niche products in certain international markets. It comprises a

number of leading brands in banking and assurance, UAG being one of them. The dominance and performance of FSG in the South African market is demonstrated by its market capitalisation of more than R77 billion in 2005.

HIC, UAG's initial subsidiary company, was founded in 1992. At the time, HIC's offering was a fundamental shift in funding healthcare in the South African healthcare industry. Driving HIC's growth was the medical savings account component of their product, which at the time was a major innovation in healthcare funding in South Africa.

Because of tremendous growth, by 2000 HIC had been incorporated into a holdings structure, reporting to a parent holding company. UAG, the parent company, was composed of five divisions: Healthcare Insurance Company (HIC), a healthcare finance company; Wellness Science Company (WSC), a company that provides wellness and loyalty programmes for customers and partners across the UAG group; Life Assurance Company (LAC), a life insurance company; United States Healthcare Company (UHC), a start-up healthcare company which UAG had launched in the US; and eHIC, the e-business arm of UAG.

By 2001, eHIC had been integrated back into the UAG business, and was no longer regarded as a separate strategic business unit. It was now operating under the banner of H-World, which was the individual brand name of the website, and was a department restructured into the information technology department, reporting to the CIO. By 2004, UAG had extended its operations in the international health and life assurance markets, with the establishment of the British Healthcare Company (BHC). BHC focused on offering 'consumer-engaged healthcare products' for the UK's private medical insurance market.

In 2000, UAG had more than 1 300 employees. By 2005, this number had more than doubled. More than 40% of the staff was composed of call-centre employees, IT made up 10% of the staff complement, while the rest of the staff was made up of administrative, actuarial and medical skills. The organisational make-up was complex in terms of diversity. There were differences in age groups, race, gender, social backgrounds, academic credentials, occupational disciplines and functional set-ups. These differences added to the interesting mix of social and political dimensions.

At the heart of the UAG business was HIC. HIC's health plans were positioned as combining 'consumer empowerment and healthcare management to ensure that their members enjoy sustained affordable access to high quality care based on their needs'. HIC was covering more than 1.8 million lives by the end of 2005. WSC forms the unique underpinning to each of the four businesses. The aim of WSC is to provide members with the tools to 'prevent disease and improve their wellbeing'. WSC was launched in 1997 in response to the growing trend towards a healthier, more active lifestyle, and based on the premise that healthier lifestyles could translate into long-term savings on healthcare costs. According to the firm, WSC's purpose was to enhance the health of its members significantly. However, the cynics, especially in the form of the regulator, viewed this as a mechanism to appeal to the young and healthy (thereby reducing the risk pool). In any event, the 'science of wellness', as it is called, had more than a million clients by 2005. At the time, UAG's Wellness program was also endorsed by the Sports Science Institute of South Africa. In the next section we will review many of the key events in which the firm was implicated.

6.2.3 Key strategic thrusts from 1999 to 2005

In 1999, UAG listed on the Johannesburg Stock Exchange (JSE). To ensure organic growth in the local market, HIC (UAG's flagship healthcare arm) had to be in a position to adapt itself appropriately to significant environmental changes prompted by the regulator. In 1999, HIC announced a premium rate increase of 13.8%. Yet rate rises announced by competing medical schemes ranged from 16 to 24%. These increases were attributed to medical inflation for the year, which was between 13% and 15%, and a stockmarket crash in 1998. Given the lack of regulation at the time, some of the competing schemes had invested in the market, and were reliant on income and profit from these investments. However, when the market collapsed, their reserves suffered, making it necessary to drive rates much higher than could be justified purely by reference to medical sector inflation.

During this period, HIC's new product development initiatives were being constrained by major regulatory changes. At the product launch at the end of 1999, a major row was sparked off between HIC, the Department of Health and the Medical Schemes Council. The Medical Schemes Council had requested that the 'demarcation debate' between medical scheme and insurance business had to be resolved, meaning that the newly developed health plans had to

abandon any form of reinsurance and individual risk rating. This necessitated a substantial change in the structure of the health plans, which required a massive organisational effort, despite a complete rethink of the actuarial basis of the plans, and major changes to the operational systems, which had already been reconfigured to deal with the new product launch.

From a servicing perspective, HIC was receiving more than 26 000 phone calls, faxes and e-mails from members each week. To boost efficiency levels against a backdrop of ever-increasing competition in the industry, HIC installed an additional hi-tech communications centre. The new communication centre used a Lucent Definity switch, and was geared to handle all forms of client-interaction, be they via phone, fax or e-mail. The purpose of the new 130-seat facility was to enable call-centre agents to respond quickly, accurately and professionally. Furthermore, it was intended to allow the firm to pinpoint trends among customers and service components, since calls and complaints could now be automatically logged.

Another key strategic thrust for the organisation at the turn of 2000 was to capitalise on joint ventures (JVs) and trends towards consumer-driven healthcare in the international market, particularly in the US. This was marked by the launch of UHC, which aimed to test the effectiveness of UAG's core strategies in other markets. At the same time, UAG was preparing for the launch of LAC, its life assurance initiative in the South African market. LAC's product range offered protection against death, disability and dreaded disease.

Meanwhile, by late 1999 only 19 000 customers were using UAG's online service, called H-Link. However, apart from some basic services, H-Link provided mostly standard marketing information. Given the perceived competitive threat of a 'pure-play' health insurer entering the market at the time, and the hype around the servicing and cost-saving potential of e-business, the insurer was prompted to radically improve its electronic services.

The following excerpt appeared in the *UAG Group Consolidated Financial Report* in June 2000:

eHIC will be launched to the market in October 2000. This will offer further value to our clients by providing access to the range of UAG's products and services in a fully interactive on-line environment and by offering new products and services in an exciting and creative way.

Meanwhile, another major retranslation in HIC's vision was taking place. This was from that of innovative financing of healthcare towards a far more profound one of 'making people healthier and enhancing their lifestyles'. HIC's products and services were reinvented to follow this vision. In particular, WSC made significant enhancement to its leisure suite of benefits and the implementation of outcome-based fitness measures and rewards. On the back of an aggressive marketing campaign and in collaboration with their brokerage distribution channel, WSC's business grew by a massive 64% in members to 469 904 members from 285 947 members. At the same time, HIC's health plan membership had grown rapidly by 38% to 701 395 lives from 509 858 lives² in the previous period.

By December 2001, on the back of the growing popularity of its Wellness product, HIC had grown rapidly to in excess of 1.1 million members covered by health plans offered within the HIC Medical Scheme. This size advantage provided the organisation with a more robust risk pool, and offered it a degree of stability in what was an increasingly volatile and complex risk management and regulatory environment. HIC's average annual contribution increase – despite being double digit – was again below the industry average, and the organisation reconfirmed the highest possible credit rating for claims-paying ability for an open medical scheme. In addition, service had remained a major focus at HIC. A total of 30 000 calls were taken per day, with 73% being answered within three rings, and 1 100 new member applications were received daily, with 98% being processed within 24 hours of receipt. As many as 1.4 million claims were being processed per month, and were being paid within 12 days of arriving at HIC. Furthermore, the amounts billed to its 125 000 corporate clients nearly doubled in this period. New business continued to grow, with over 40 000 people joining HIC's health plans in the month of December 2001 alone.³

One of the most pressing regulatory issues facing the medical schemes industry at the time was the capitalisation of medical schemes to meet statutory reserve requirements. The Registrar of Medical Schemes rejected one of HIC's proposals, which involved a complex insurance structure through its parent company, FSG. HIC maintained that it aimed to protect the interests of members who were already being subjected to substantial increases. The rejection by the council created an enormous amount of uncertainty in both the organisation and the medical schemes

² UAG's Consolidated Financial Report, 2000.

³ UAG's Consolidated Financial Report, 2001.

industry. Eventually an interim solution that satisfied the requirements of the Medical Schemes Act was tabled via an elaborately structured loan mechanism.

Meanwhile, LAC was starting to make significant progress barely one year after launch. It was primarily through UAC Consulting Services, a large broker house, that it had strengthened its national distribution footprint. During this period, four additional distribution outlets were established around the country, raising the number of outlets to 16. This move helped secure increased penetration in the independent intermediary market since LAC had access to over 2 800 financial advisors (brokers). In addition, a group life product was launched into this distribution environment that leveraged off HIC's existing client base. This cross-selling approach culminated in approximately 20% of all new business sold by independent intermediaries in the risk assurance market. Meanwhile, LAC, adopted a policy of operating autonomously with their IT systems.

Furthermore, WSC launched significant enhancements that offered their members benefits they could use more frequently. This supplemented their existing Wellness benefits that gave members access to flights and hotel accommodation that are used less frequently, but have a high value per transaction. Alternative benefits included the launch of discounted movie tickets at a popular cinema chain and discounts to leading lifestyle magazines. WSC was becoming more and more pivotal to HIC's value proposition to its clients, and was viewed as an indispensable mechanism for enhancing the group's ability to retain its customers and obtain access to valuable behavioural information. Furthermore, WSC was a key differentiator in the industry, and the brokers used this dimension to actively promote HIC's health and life products.

At the same time, the concept of consumer-driven healthcare appeared to be gaining momentum in the US healthcare market. The prospects for UHC were optimistic in the Chicago area, where it operated. At the time the estimates for the market size in Chicago alone were 8 million people, roughly the size of the entire South African healthcare market at the time. In addition, a wellness program was launched in the US in October 2001 to more than 550 intermediaries. Despite early operating losses, the results of these initiatives were viewed as encouraging. Over 150 companies were covered by UHC, delivering R119 million new business annualised premium income.



Photo 6.1 HIC located in a commercial high-rise city centre⁴

In articles in *USA Today* and the *New York Times*, HIC, a South African firm, was being mentioned as a pioneer in what was being called the new ‘consumer-driven health plans’. The Wellness program featured on the NBC television channel and in the *Chicago Tribune* as a unique ‘paying-for-wellness’ approach. UHC operated its own IT systems. A few of the South Africa-based employees were deployed to the US to develop these systems, which included an online component.



Photo 6.2 A sprawling township located less than 10 km from HIC’s offices⁵

⁴ The photograph is of the commercial centre close to HIC’s offices – not unlike the skyline of downtown Chicago. However, less than 10 km away people live in squalor in sprawling townships with low-cost housing and dilapidated shacks.

⁵ Contrasting scenes of poverty and affluence, a hallmark of South African cities, symbolise the persistence of apartheid structures and of wealth remaining in the hands of the ‘elite’.

Meanwhile, for a number of reasons (which I will explore in the next section), eHIC, the e-business arm, was no longer operating as a separate business unit. The ‘problem child’ was now operating as the e-commerce department within the information systems area.

In 2002, UAG announced an annual 14.8% increase to premiums in an environment where many other schemes still battled to keep their increases below 25%. Part of the reason for the high increase was to meet the regulator’s 25% reserve requirements. Despite regulatory pressures to manage its reserves, UAG Holdings reported a profit of R173 million.⁶ HIC contributed R179 million towards operating profit, while UHC, with just over 17 000 members, reported an operating loss of R91 million. HIC’s market share grew from 15.61% to 18.64%, equating to 1 384 953 insured lives. Annual lapse rate at the time was around 3.6%. At this time, UAG started to actively investigate the potential of medical aid products for the employed, but uninsured population in South Africa, which at a potential market size of 7 million presented a challenging but alluring opportunity.

In 2003, patients were spending on average between 14% and 18% more on their medical aid premiums. This was attributed to the knock-on effect of increased medicine prices by suppliers and hikes in day-to-day doctors’ fees. A majority of new clients started buying into plans at the bottom end of the scale. This, in addition to governments compelling the private sector to support low-income medical schemes (LIMS), prompted the company to intensify its efforts to develop a new low-cost plan, which was targeted to be launched in January 2004. Meanwhile, UAG’s competitors also raced to develop alternative options in 2003. From a contribution increase perspective, HIC increased its rates by 14.8% across its plans, while its largest competitor was increasing its rates by between 15% and 18%. At the time, the healthcare industry was characterised by issues such as imported inflation, over-servicing, fraud, high salary bills, kickbacks to providers, and the legal requirement to retain a proportion of contributions as cash reserves, which were all serving to drive healthcare costs upwards.

Despite showing relatively improving productivity performance over time, the Council for Medical Schemes continued to apply pressure on the level of fees charged by HIC and the other scheme administrators (see figure 6.2). At the same time, funders, administrators, and service providers, including doctors, hospitals, and the manufacturers of medical supplies, continued to

⁶ UAG’s Consolidated Financial Report, 2002.

accuse one another of pushing up prices by raking in unreasonable profits. Moreover, despite being on track, there was added pressure on UAG to meet the regulator’s 25% reserve requirements by 2004 (see figure 6.3).

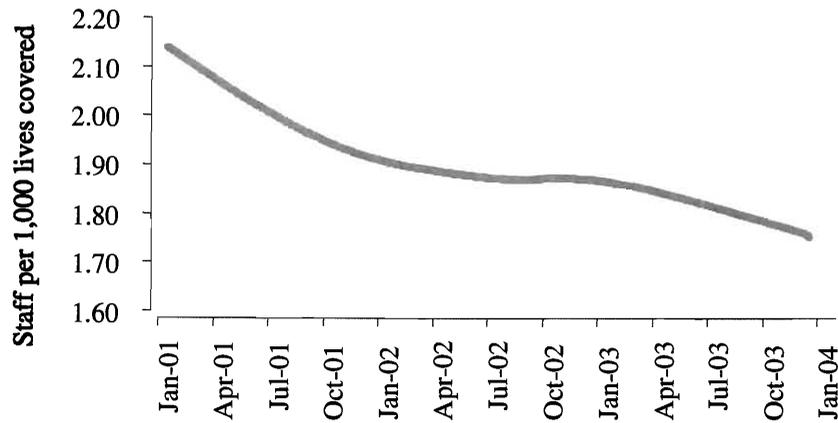


Figure 6.2 Staff productivity as indicator of administration efficiency

Source: HIC’s financial reports

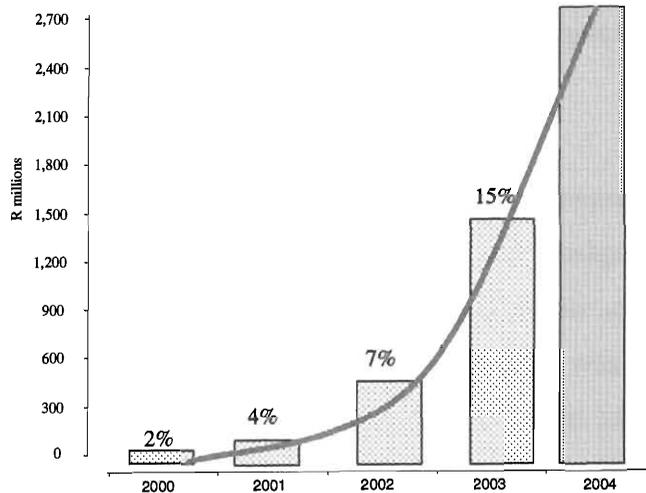


Figure 6.3 Growth in reserve requirements

Source: HIC’s financial reports

Note: 2004 was a forecast

Over time, the design of HIC’s products was accused of being too complex. On 14 January 2003, a story that appeared in the *Business Day* stated that:

... (The) principal officer of SA's largest medical scheme, HIC, readily acknowledges the complexity of the scheme's products, but says the firm makes every effort to simplify the information.

The evolving consumer-driven healthcare product was becoming laden with jargon. Apart from understanding the medical savings account (MSA) mechanism and how it works, members needed to understand a plethora of unfamiliar concepts related to the mechanics of the MSA, such as the self-payment gap (SPG) and above-threshold benefit (ATB). Members could not understand how the products worked. Brokers struggled to keep up with the changes, and were not very effective at equipping members with understanding. Consequently, call rates among new members were very high as they grappled with the product.

Meanwhile, brokers and members often accused HIC's call-centre consultants of offering inconsistent answers to product questions. However, the consultants did devise ingenious ways of explaining these questions through the use of analogies. For example, to explain the self-payment gap, the call-centre consultants often used the analogy of two buckets. The story goes: as one bucket gets empty, the other gets full. In other words, the self-payment gap is the difference between what you have and what you spent.⁷ Needless to say, the growing product complexity coincided with further administration complexity and therefore pressure on the IT staff and the systems already in place.

In the meantime, the National Health Department began its plan to implement two major reforms, including the risk-equalisation fund and changes in tax breaks for employers and workers on medical schemes. Medical schemes and their administrators were anxiously awaiting details of these reforms. The Health Department was hoping that these reforms would dramatically increase the number of people who could afford private health insurance. In the short term, the medical schemes and their administrators were mostly concerned about the impact of these reforms on their sustainability.

Despite the ongoing flux in the environment owing to regulatory changes, HIC results reflected strong organic growth. HIC and WSC continued to produce strong organic growth, and LAC was now a market leader in terms of risk-only life assurance. In the US, UHC had made great strides in its bid to break even by end 2003, and secured two important joint ventures. Locally, HIC

⁷ Call centre focus group session 1 (April 2002)

experienced a 26% rise in new business and a reduced lapse rate of 3.4%. The organisation attributed this success in part to the company's intensified focus on service, brought about by the re-engineering of HIC's service model into a series of small, cross-functional service teams. Another operational focus during this period was to reduce claims-processing turnaround times and provide faster payment to providers. Whereas payments were processed monthly, the payment cycles were increased to bi-monthly. These faster payment turnaround times were achieved via secure and electronic transmission of claims – and for manually submitted claims, via the use of optical character recognition (OCR) to scan invoices and routing using optimised workflow for adjudication and payment.

Meanwhile, total lives covered by HIC grew by 23% to just under 1.5 million, placing the HIC Medical Scheme at more than twice the size of its closest competitor. This rapid growth placed severe constraints on service delivery, specifically the turnaround times for underwriting and issuing new membership packs.

Nevertheless, UAG Holdings reported an operating profit of R315 million.⁸ HIC contributed R215 million towards this operating profit. UHC, with just over 28 449 members, up 67% from the previous period, reported a slight decline in operating losses at R79 million. HIC's overall market share grew from 18.64% to 21.91%, equating to 1 540 961 insured lives, and making it the leader in the marketplace. Annual lapse rate at the time was still reasonably sound at around 3.6%. Meanwhile, the LAC business reported a R105-million operating profit, which was substantial compared with R17 million in the previous year.

By 2004, HIC had announced its lowest-ever contribution increase of 5.4% in the last decade. Progress in meeting reserve levels meant that HIC and the HIC Medical Scheme were able to offer a marked reduction on the previous year's increase of 13.3%. The other dynamic enabling the company to hold down increases was government's moves to drive down drug prices, enforced by the Medicines and Related Substances Control Act. Estimated medical inflation was forecast only to be between 5.5% and 8% during this period. However, the firm attributed its ability to offer a low premium increase in line with CPI to its consumer-centred model, linked to its Wellness concept. Meanwhile, a huge amount of energy was being spent on the introduction of an integrated 'next generation credit card', designed to enhance and reward members of the

⁸ UAG's Consolidated Financial Report, 2003.

Wellness program. Rewards were to include discounts from a range of retail outlets and interest-free credit on medical bills.

UAG enjoyed a 102% growth in operating profit in 2004 on the back of strong results from all of its businesses.⁹ LAC increased profits by 138%. In addition, US-subsiary UHC achieved profitability in its Illinois business, and solid growth was achieved in the core HIC business. This was a major milestone, because the healthcare insurance subsidiary in the US turned a small profit for the first time since its launch in 2000. This performance was attributed to UHC's joint ventures with two credible US financial services firms. The goal of leveraging the distribution capability and scale of its joint venture partners to grow its membership base was starting to show signs of success.

Operating profit was largely attributed to the life business, which grew profits by 138% to R271 million compared with R114 million in 2003. The life business, which now constituted almost 40% of operating profits, had exceeded expectations since its launch less than four years previously. The company's market share of new business of the entire life assurance market, a very competitive arena, already exceeded 6.1%. It was largely product innovation and the integration of the offering with HIC and WSC that enabled LAC to remain highly competitive. Innovations in the year included the launch of the payback benefit. This feature allowed HIC members who were LAC policyholders to receive back a substantial percentage of their life assurance premiums, based on how they managed their health. By now, LAC had become the established leader in the life assurance market, a position reinforced by its rating in an independent industry survey conducted by PriceWaterhouseCoopers. The life business was also looking at the possibility of entering the investment products market. A range of products, including long-term savings, endowment funds, unit trusts and retirement funds, were in the process of being designed. Meanwhile, only nine months into its operation, the organisation had issued more than 200 000 UAG cards to Wellness members.

HIC continued to grow market share in the period under review, and membership stood in excess of 1.6 million members. This growth and improved administration efficiencies helped grow operating profits by 40% to R522 million. Meanwhile, HIC's LIMS (low-income medical scheme) product, which was aimed at employees earning less than R5 000 per month, continued

⁹ UAG's Consolidated Financial Report, 2004.

to grow in line with projections, having gained approximately 67 000 members. In the meantime, significant elements of the back-office functionality of UHC were being moved locally to achieve the benefits of scale and a lower-cost environment. An important by-product was the creation of job opportunities for South Africans. Around 100 jobs were to be established locally over a period of 12 months.

UAG was involved in another joint venture between BHC and the UK International Joint Venture Partner (IJVP) to penetrate the UK market. With an ageing population, and one in four UK citizens being obese, a tremendous burden was being placed on the National Health Service (NHS). The UK product range was being built on UAG's 'consumer-driven healthcare' experience, although it was not a full replacement scheme, as in South Africa. Similar to the strategy for UHC, the company's administrative and service support functions were to reside in South Africa. The launch was already ahead of schedule, with the infrastructure approaching operational readiness. Furthermore, the wellness product offering was largely completed, having secured deals with two leading UK gym networks. In addition, approval from the UK's Financial Services Authority (FSA) paved the way for the product launch.

The launch was very aggressive, backed by a massive advertising campaign. Coverage included Sky News, BBC's lunch-time news programmes, and a number of press releases. The head of the UK JV appeared on CNN to talk about the launch and the new products. BHC was also engaging with brokers to get them to support the product to the UK corporate market, while it aimed to market directly to consumers. One aspect of direct marketing was via the online channel. A considerable amount of energy was being spent on leveraging some of the successes of H-World. The goal of BHC was to sign more than 650 000 members, equating roughly to 10% of the 6.5 million UK citizens who use private healthcare. Early indications were that the UK was a difficult healthcare market to penetrate, as most of the population was already covered by the NHS, and therefore did not use private healthcare. In addition, it was emerging that the 6.5 million private medical scheme members in the UK were reluctant to switch from existing products. Another milestone for UAG in 2004 was its move into the JSE Alsi 40 (one of the top 40 shares), which helped to raise its profile on the JSE.

By 2005, HIC was consolidating its position as South Africa's leading private healthcare funder, because of its scale, perceived quality and ability to offer local consumers innovative solutions.

The company was by now the largest medical scheme administrator in South Africa, administering the medical scheme benefits of nearly 1.8 million members¹⁰ (see figure 6.4). New business growth continued to expand rampantly, while profits grew modestly during the year.

After a period of industry-wide uncertainty and volatility after the implementation of the Medical Schemes Act in 2000, HIC had managed over the past few years to achieve a position of stability. The focus shifted to sustainable healthcare cover in the long term for members, and solid and consistent financial performance for shareholders. Members' annual contribution increases were down to single-digit figures and lower-income health plans, which aimed to broaden access, were growing moderately.

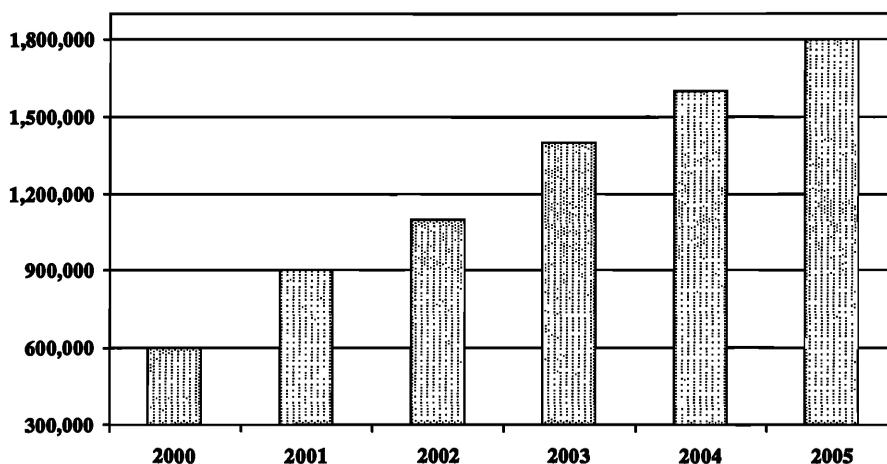


Figure 6.4 HIC's rapid health membership growth

Source: UAG's financial reports

Meanwhile, the international credit rating agency Global Credit Ratings (GCR) again upgraded HIC Medical Scheme's domestic claims-paying ability. The upgrade in the scheme's rating was based on the substantial net surpluses the firm had made in recent years, which significantly bolstered the scheme's reserves and solvency ratios.

HIC achieved another important milestone with its LIMS product. The 100 000th member made the LIMS product – launched in 2003 – the largest lower-income offering to address the needs of

¹⁰ UAG's Consolidated Financial Report, 2005.

the employed, but uninsured market. In less than two years the LIMS product grew into the largest offering in its environment, at least five times larger than its nearest competitor. The market potential of 7 million meant that more energy needed to be directed to this space. This performance was achieved largely through a joint venture with PFM Financial Services (PFM), a firm of black financial intermediaries.

UAG Holdings also announced the conclusion of a strategic black economic empowerment (BEE) transaction. In total, the new shareholders were to represent approximately 7% of UAG Holdings' equity. This brought UAG's total BEE shareholding, after accounting for the BEE shareholding in FSG, to just over 25%, which was in line with the requirements of the Financial Services Charter. At least 3% of UAG's shareholding would rest with WDB Investment Holdings (WDB), a group which focuses on the economic empowerment and upliftment of black rural-based women. The BEE deal also saw the formation of The UAG Foundation, which aims to invest in the education and training of black medical specialists in areas of need. Furthermore, UAG non-white employees were to receive an allotted amount of shares, depending on their level of seniority and contribution.

Meanwhile, the Wellness program was now covering more than 1.2 million lives, growing from 1 060 000 lives covered in 2003 (see figure 6.5). The Wellness product, which had placed huge emphasis on online services in the past, had recently formed the WSC Wellness Network, which was focused on providing members with access to a network of healthcare professionals to conduct health assessments and screenings. A shift in leadership in this area saw a move towards traditional approaches. It appeared now that traditional healthcare professionals – including dietitians, pharmacists and biokineticists – seemed to be better equipped to provide members with comprehensive, scientific feedback on their current health status, and on how best to use the Wellness program to achieve better health outcomes.

Meanwhile, UAG Health delivered another single-digit increase in medical scheme contributions to its 1.8-million members, with the announcement of a 6.9% average increase for 2006. The lower lapse rate, down to 3.4% from 3.8% in 2004, was attributed to the high service levels. In the past the firm had consistently demonstrated its ability to deliver and deploy new and innovative products within shorter time-to-market timeframes. To maintain high retention rates

or, in other words, low lapse rates, emphasis was now shifting strongly towards operational efficiency and service levels.

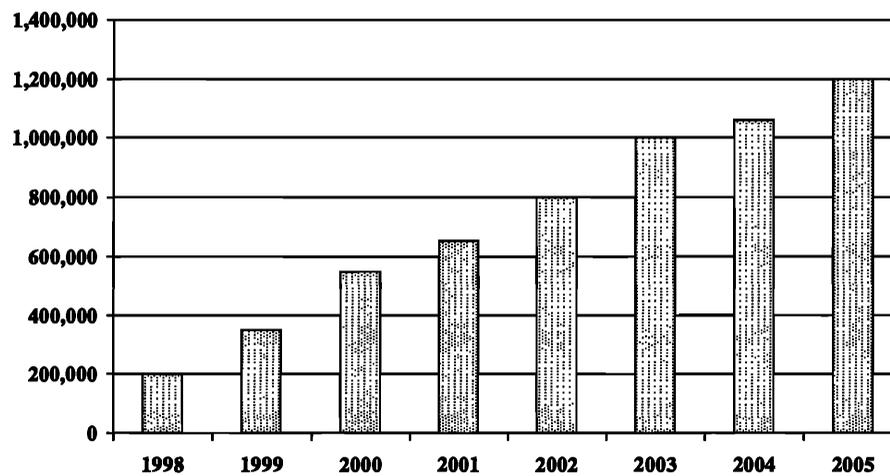


Figure 6.5 WSC's rapid Wellness program membership growth

Source: UAG's financial reports

According to the UAG managing director:

Over the past year, we have again focused intensively on streamlining the operational aspects of our business. Our strategy has been two-pronged – first, improving the technology and e-commerce capability and secondly, carefully measuring our people's performance and incentivising the right behaviour in every service interaction. This has led to a significant improvement in service levels, lower error rates and a reduction in the number of call centre calls thanks to increased first-time resolution of queries. (June 2005)

As a result of the rapid growth in the local market, the plethora of products to target specific market segments, expansion globally, and the increasing demands of its members, shareholders and the regulator, UAG began to review and optimise some of the key organisational work processes. Members were supported by a range of channels, in the so-called front-office functions, such as the call centre, intermediary, walk-in centres, and the Internet.

Providing this flexibility for its members meant that the organisation had to integrate these channels into the back-office organisation where the core production processes are managed. Furthermore, reliability of these channels was more crucial, given the size of the member base. A 1% error rate for almost 1.8 million members could potentially create a huge burden on the organisation's supporting services as well as the firm's reputation. The ability of the firm to

respond expediently to member queries and other service-related dimensions was becoming more critical, hence the continued focus on turnaround time and other service-level measures (see table 6.1). Therefore problems relating to front-office and back-office integration were high on the agenda. There was also a move to a cost-reduction strategy, which was compounded by the regulator's continual insistence that insurers reduce their high administration costs.

Table 6.1

Average service levels achieved in relation to client interactions

Channel	Volume	Service level
Service centre	35 000 calls per day	86% answered within 20 seconds 96% queries resolved during the call
Walk-in-centres	5 000 clients per month	Average waiting time: 2 minutes, 40 seconds
Correspondence (emails, faxes, letters received)	1 280 per day	Response within 8 hours
Interactive website	1.3 million logins per month	99.27% uptime
Queries channelled through employer or intermediary	5 000 per month	93% resolved in 24 hours

Source: UAG's Consolidated Financial Report, 2005

These developments and strategies had important implications for IT, the SST and its use.

6.2.4 Summary

To summarise, UAG operates in a complex environment. There are three dimensions that provided a formidable challenge to the organisation during the case study period. First, the UAG landscape was characterised by a regulatory environment in constant flux; a corporate shareholder demanding a return on investment; and members expecting financial security and affordable healthcare products in the context of rising medical inflation. Despite these odds, it appears that a shrewd marketing strategy, combined with an effective distribution strategy and innovation in product designs, contributed to the organisation's phenomenal growth and

earnings. The design of fairly complex products and core processes to support the firm's strategy could not have existed without the support of computerised systems. In the next section, I elucidate on the vital role of ICT in enabling the organisation.

6.3 An overview of information and communication technology at UAG

The review of the UAG context points out that the organisation was large and complex, and at the same time innovative. There was this continual focus on developing new products, entering new markets, and adapting and complying with new legislation. Indeed, there was a major focus on growth through diversification and internationalisation. Not surprisingly, this fast pace of change coincided with a challenging environment for the IT department. Being an information intensive firm, IT held the key in terms of faster product lifecycles and greater service capacity, as a result of a rapidly growing member base.

The history of information and communication technology (ICT) at UAG dates back to 1992, when the organisation was founded. In the beginning, UAG used an outsourced ICT system from another administrator, but soon found that this system did not meet its needs. The organisation decided to develop its own ICT systems and has for the most part adopted a policy of in-house system development. Since ICT was becoming more and more integral to the organisation, UAG decided that it did not want this crucial function to be performed by outsiders. Moreover, this was influenced by previous negative experiences of working with consulting organisations who seldom delivered to UAG's requirements.

By the latter part of the 1990s, UAG's ICT systems had been built predominantly using Magic, a fourth-generation rapid-application language that allowed applications to be developed quickly and easily. For years its database had run on CI-SAM, which was a flat file database, as opposed to conventional relational databases normally associated with mature IT organisations. By no means a leading-edge database technology, CI-SAM, however, was perceived by the firm as being reliable. It was only just before the inception of e-HIC and the LAC business, in 1999, that the group had converted to the Oracle relational database management platform. Systems developed using Magic formed the core of the claims processes, and contribution management processes, as well as call-centre management applications.

During the formative years, the IT department at UAG had earned the reputation of being a strong enabler of the overall success of the UAG organisation. The Magic developers in particular were known for delivering quickly and ensuring that the product development capability, which was viewed as a key competitive advantage of UAG, was appropriately supported by information technology. However, the rapid development of the systems using Magic meant that the architecture contained some notable flaws. The most significant among these were the flaws in the database design. Flat files were used to support parochial, application-specific logic, and as a result, disciplines such as entity-relationship modelling (ERM) were unfamiliar or dismissed.

In time, these flaws would create major challenges for diversifying to life products, building an online channel, and internationalisation. For instance, access control systems were based on internal user roles and credentials. For the website, identity and access control were more elaborate, because the site was accessible not just to the principal member of the scheme, but also to the spouse and children. The life policyholder and beneficiary make-up could also be complex. Roles management added complexity where the same health product member could own a life product and be a broker. Another example of a flaw pertains to JD Edwards (JDE); an enterprise resource planning (ERP) system module was being used for financial consolidations. It relied on flat file batch transfers for managing accounts receivable rather than seamless integration between the Magic-based systems. In fact, many of the core processes in the systems area were updated in batch mode. It would be a slow journey before the back-end systems would move to the real-time processing needed to support the front-end offering of an online channel. Furthermore, the somewhat proprietary nature of the system meant that it was not easily accessible to outside systems, such as the proposed new Internet-based self-service offering.

As alluded to in previous sections, one of the key challenges facing UAG's IT department was coping with the group's exponential membership growth. As the membership base expanded, so did the number of staff UAG needed to service these members. In turn, this meant that UAG's ICT systems became more complex, requiring more IT staff to service these systems and the growing community of internal users. By the end of 2000, UAG's internal IT department staff complement had risen to more than 120. Being an information-intensive industry, the UAG business began to rely more heavily on its ICT capability as the business continued to grow. During the period of the case study, estimates suggested that approximately 15% of the group's

operating costs (around 2.4% of revenue) were being allocated to IT spending. Not surprisingly, IT would eventually become a target for cost-cutting activities.

Meanwhile, since the growth in membership translated to greater service requirement, electronic services emerged as a possible solution to contain costs associated with growing service capacity. I review this initiative in the next section.

6.4 Case description: the implementation of an Internet-based self-service technology at UAG

6.4.1 Introduction

This section presents the empirical heart of the thesis. The data presented is drawn from the case study at UAG, which involved the implementation of an Internet-based self-service technology (SST). The data is presented in historical sequence. This starts with the demise of the information portal and the rise of the e-business. This is followed by a discussion on the integration of the e-business into the IT department, and the eventual disbanding of the e-business department by integrating it into the business and system functions, specifically the front-office applications. The reflections of the user community are interwoven into these discussions to describe the complex web of events. The section then closes with the current situation of the Internet-based self-service technology at UAG.

6.4.2 Phase 1: From information portal to e-business

In 1996, UAG began its innovative use of Internet technologies. The initial solution began with a hosted service delivering static content that was predominantly product focused. At the time, the portal team were mainly in collaboration with the brand managers from UAG's marketing services department. It soon emerged that the e-commerce channel could equally provide online services in the form of transactions to customers. A project was conceived in 1997 at a time that many other organisations began to explore the transactional potential of Internet technology. Called H-Link, the goal of the project was to provide real-time communication between its business partners, including intermediaries such as brokers and broker houses, employers,

healthcare service providers and members. The solution was put together by an e-commerce consulting house, an Internet service provider (ISP) company, and a handful of UAG's IT staff.

UAG was facing tremendous growth at the time, and the challenge was to overcome the intensifying issues relating to managing massive amounts of paperwork, fending off fraud, and coping with exponential growth in customer demands. The choice facing the group at the time was to decide what proportion to invest in bricks and mortar and human resources, and what proportion on this new virtual environment. An online system had the potential to allow members to keep their personal records up to date, submit their claims, and constantly keep members in the communication loop through direct access to their own medical insurance information. It was also envisaged that intermediaries would be able to conduct their business online, and healthcare providers would be able to ascertain whether a claim had been received, and if payment had been effected. Furthermore, employers could monitor movement into and out of their company-administered medical aid. However, the approach was somewhat cautious, and the focus at the time was primarily on servicing the broker community. Although there was a member section and a provider section, it offered limited functionality, but was perceived to be well received by its small user base.

The business solutions director of the consulting firm was quoted in a special report in *InformationWeek*, Southern Africa, as saying at the time:

In doing so (using Web technologies), the company is leading an industry trend in closing the gap between itself and its clients, service providers and intermediaries while at the same time reducing the cost of service. (*InformationWeek*, July 1998)

According to the general manager, finance of UAG:

Apart from savings this brings HIC in terms of the efficiency of its administrative process, members enjoy the benefits of being able to interact with the company at any time they choose. (*InformationWeek*, July 1998)

Despite these accolades, towards 1998 the team were facing all sorts of challenges in attracting customers to come online. For one, owing to internal system constraints brought about by a batch processing mode of operating, they were using a day-old database to expose client core data, so the information provided was not real-time. Furthermore, the national e-commerce sector was not carrying enough bandwidth. At the same time, some of the processes required manual steps. For example, the online claims submission process had to be vetted manually by claims assessor staff before the data could be transferred to the database. Another major issue was security. One

of the challenges was the type of security that was being used in South Africa. At the time, security aspects were rather primitive and, given the global threat on the open networks, moving over from 64-bit to 128-bit encryption was a critical requirement. H-Link used a digital certification system, with encryption and digital signatures. It also used a WebEDI solution developed by the consulting firm for the secure transfer of form-based confidential information over the Internet. Many users struggled to download this security software and to install it themselves. Over time, once 128-bit encryption became available as a standard offering in a browser, the uptake would improve rapidly.

The H-Link system was based completely on Microsoft technologies, and included IIS as the Web Server using Active Server Pages (ASP), which accessed a SQL server database of 13 GB, running on a multiprocessor machine. Meanwhile, the data between the Oracle database and SQL server database were kept in sync by a number of sync programs. By 1999, H-Link had 19 000 users, with approximately 18 000 members and around 1 000 brokers. Although small successes were acknowledged, given the extent of the problems they faced, H-Link was simply not making big enough inroads. With just over 5% of the member base having registered, H-Link was facing an uphill battle to justify commercial viability of the technology, never mind exposure. It occurred to some of the team members at the time that they had to come up with a proper strategy, and that this adaptive mode was clearly not working. Reflecting on this period, the operations manager made the following remark:

We hadn't had a deliberate corporate strategic intent to deliver e-commerce ... (Operations manager, interview 22, p 9)

The general optimism of the Internet at the time, and the competitive threat of a pure-play dotcom insurer usurping the healthcare insurance market, prompted the insurer to radically improve its online offerings. This was also done on the back of the relative success of the existing interactive H-Link site. To retain its first mover advantage in the industry UAG initiated the formation of eHIC, a pure-play dotcom.

The initial development of eHIC began in the latter part of 1999, when excitement about dotcoms was at its zenith. The conventional wisdom at the time was that every innovative company had to have a commercial operation on the Internet – that is a 'dotcom play'. In those days, the Internet held aloft the promise of the 'commercial revolution'. Proponents of the dotcom revolution – such as Debora Spar, an associate professor at Harvard Business School,

and Jeffrey Bussgang, a director of transaction products at Open Market – made the following prediction in *Harvard Business Review* in May 1996:

The promise of a new world of business – a friction free arena where millions of buyers and sellers complete their transactions cheaply, instantaneously and anonymously... Cut free from layers of middlemen, companies will be able to sell their products directly to customers ... By bringing companies and customers together, the Internet thus promises to widen markets, increase efficiencies, and lower costs. (*Harvard Business Review*, May 1996:125)

IT research group Gartner made the following comment about this period:

... technology stocks were the toast of Wall Street, and companies could not plan their initial public offerings (IPO) quickly enough. (Blackmore, 2001)

In November 1999, the NASDAQ had shown extraordinary growth of more than 80% in just over four months. In South Africa dotcom enthusiasm was just as intense. The number of people subscribing to the Internet, although relatively small at 1.2 million people, had doubled every year between 1994 and 1998, when the Internet became commercially available in South Africa. A well-known South African commentator on the Internet, Arthur Goldstuck, estimated that South Africans would spend R2 billion online in 1999, double that of the previous year.

Some of the key players on the H-Link project were able to convince the executive committee to put together a budget process to enable UAG's first true real-time transactional facility, a strategy which would allow them to develop an e-commerce play.

On 10 May 2000, UAG formally announced the formation of its e-commerce subsidiary, known as eHIC. eHIC was to operate as a separate entity within the UAG stable with the purpose of delivering the e-commerce needs of the UAG Group, thus allowing the company to 'deliver better solutions more efficiently to the client base'.

The newly appointed head of eHIC made the following comment in a local press release:

I have no doubt that eHIC is destined for great success. We have an experienced and competent team in place comprising highly skilled resources from H-Link as well as new recruits. In addition, eHIC is in the strong position of being able to leverage off the strong and well-respected UAG name. This will give eHIC a good head start and should assist in accelerating the growth of our client base. (Press release, 10 May 2000).

The head of the e-business, who had spent seven years as a consultant in IT projects at major South African firms, was also the head of the e-commerce division of one of South Africa's most

successful ISPs. During this time, he acted as a consultant to corporate clients, including UAG. He joined UAG in 1999 and engaged with selected staff members in the organisation for a period of three months to better understand the business processes and organisational environment. His main task was to formulate an e-commerce strategy. At the end of the process, he proposed to develop an Internet offering that would encompass two linked sites: a lifestyle portal and a UAG site that focused on particular communities or zones for members, employers, intermediaries and providers.

The lifestyle portal was conceptualised as a place where users could purchase UAG products as well as a range of sports, investment, travel, fitness and retail items. It would also offer directory services and insurance products. The lifestyle portal was justified on the basis that it would be self-sustainable via revenue streams earned by promoting and selling health and life insurance products, as well as from transaction fees for advertising and retail joint ventures.

In the same article, the CEO of UAG commented:

The key objective for the formation of eHIC is to dramatically improve efficiencies in the delivery of services and to continually increase levels of customer service which is in alignment with our overall strategy to effectively meet the ever increasing needs of our customers. (Press release, 10 May 2000)

eHIC was intended to offer full service over the Internet to better serve clients. Technology combined with specialist skills such as digital marketing, client relationship management and data analysis skills was to play a pivotal role in meeting the objectives of eHIC. He added:

The more we can enable our business to be electronic, the less the margin for error and the better we will be able to service our customer base. eHIC will have a key role to play in all aspects of our business. (Press release, 10 May 2000).

Towards this goal, the member zone was envisaged to present a wide range of services that were currently being offered via the call-centre channel. Some of the proposed features included online statements, travel bookings, product information, personal detail changes, hospital pre-authorization, and claims tracking. Features conceived for the employer zone included a customised view of product profiles, billing and bill reconciliation services, and updates to employee records. The eNtermediary (intermediary) zone would seek to provide a quoting system for the organisation's life and health products, allow brokers to submit new applications,

manage new leads, and track their commission. The newly appointed Head of eHIC concluded that:

We have been working on the business concept and on assembling the team for the last three months. The first major release of products and services will take place towards the end of the year. HIC was built through the efforts of entrepreneurial individuals over a short period of time. eHIC intends to follow this successful example and will implement the same core values integral to the success of HIC. We are confident that eHIC will be able to exploit the changes taking place in the corporate environment as a result of advance in electronic communication to the company's best advantage. (Press release, 10 May 2000)

The head of eHIC opted for an aggressive, big-bang approach, as opposed to a small iterative approach for the implementation strategy. He also proposed that the new venture be structured as a separate division that reported directly to the board. This was conventional wisdom at the time.

Clayton M Christensen (2000), Harvard Business School professor and author of *The Innovator's Dilemma*, offered the following advice to organisations:

As long as the Internet business unit is part of an existing organization – particularly if the Internet is disruptive to that organization's processes and values, the resulting Internet business will be a 'cram job'. Formation of a separate subsidiary to pursue an Internet venture often frees managers to maximize their use of the unique attributes of the Internet to capture business.

Similarly, the head of eHIC was concerned that if the new venture was to be housed within the IT department of a large organisation such as UAG, the e-commerce start-up would be restricted to a support role, instead of transforming the business. After all, this was something this new paradigm had promised. Apart from this, he wanted to attract and retain the best staff, and believed that the idea of joining a dotcom start-up with the prospect of share options was a more enticing proposition.

Reporting directly to the board would provide a rational basis for decision making. In addition, the start-up could be driven by profitability from the outset. His intention was for the venture to function in an entrepreneurial mode, without the bureaucracy of a large organisation, which he assumed would speed up delivery and at the same time drive down delivery costs. This sense is reflected by a comment made by one of the original members of the team:

He had a bold vision for the potential for UAG's Internet platform. In a year he wanted grow the team to 40 plus members. He wanted to create a silicon valley start-up environment with a chill-room, bar, pool table, flexi-hours ... to attract the best and brightest young IT minds in the industry. He wanted new technologies, a dedicated graphics team, news feeds from 3rd party providers ... in fact there was even talk about eHIC spinning off as an independent

subsidiary of UAG – generating its own revenues and profits!! (Senior business analyst, interview 51, p 1)

A number of executives expressed a level of apprehension about the merits of eHIC operating as a separate entity. First, there were those who were sceptical about whether eHIC could succeed without closer engagement with UAG's IT and business departments. Linked to this were specific concerns that incentives would be misaligned in the IT area if the dotcom start-up was conceived separately. In the second place, others in opposition did not believe that UAG's health and life products could be sold over the Internet. For these detractors, face-to-face contact via financial intermediaries had been the hallmark of UAG's success thus far, and was essential in selling financial products. Indeed, many at the time felt that the role of the Internet should be limited to services only.

Despite a certain amount of scepticism among the executive committee, the CEO was convinced both by the prevailing optimism for the Internet at the time and by the bold proposal delivered by the newly appointed head of e-commerce initiative.

After all, there was this potential to create a unique competitive advantage for the business through the Internet channel, which no one else had done in the health insurance industry. There was the enticement of offering full servicing through the Internet – linking up all aspects of the various communities into a single integrated platform. In addition, the self-servicing aspects had the potential to reduce call-centre servicing costs significantly. These were becoming more of an overhead as the membership base grew. And if things went really well, the firm could sell its products through the Internet and recover some of the brokerage costs (according to rumours, the talk behind closed doors, but never discussed openly, was the possibility of 'disintermediation', that is, 'cutting out the middle man'). There was also the threat of a competitor making this move first.

Meanwhile, there was an immediate drive to establish a team and find premises for the start-up. Key elements in the culture that the head of e-commerce wished to inculcate were innovation and entrepreneurship. Recruitment began at a tremendous pace and many people were drawn to the vision of 'building the best website in the country'. The software developers in particular were excited about working with the latest and most sophisticated technology. What started as a

staff complement of six in February 2000 grew in eight months to more than 50. All of them were young. The head of e-commerce at only 32 was among the oldest.

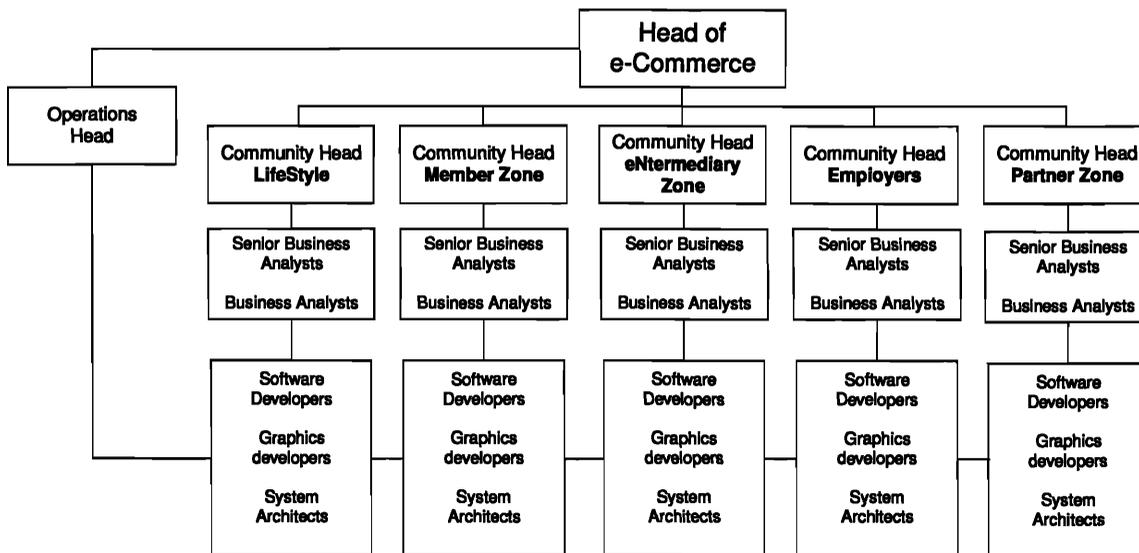


Figure 6.6 eHIC's organisational structure (2000)

The activities in the project team were structured according to the website, a Lifestyle portal community, an eNtermediary (for Intermediary) Zone, a Partner Zone, a Member Zone and an Employer Zone (see figure 6.6). There was also a special projects team that were responsible for larger site processes for all five zones, such as research and development, registration, search and document management. These teams, led by community heads, were composed of business analysts, architects and developers. Business analysts were responsible for establishing requirements from the business units and specified the system for the development team. The development team was headed up by an operations manager. By this time, the small development team responsible for H-Link had been seconded to eHIC. There was also a head architect, who was responsible for the overall technical design of the website and identification of the technologies to achieve the required functionality. Typically, business analysts would give their specifications to the architect, who was responsible for defining the system and assigning software, and HTML graphics developers to code the system. Early on, a distinction had been made between Java developers and graphics developers. Graphics developers had specific skills in HTML and Java Scripting to code the user interface logic, whereas Java developers coded the software application logic and the interfaces with the front-end and back-end systems.

The team had a 'just do it' philosophy, keener on getting results than following the processes defined by the parent organisation. The software development approach was one of fast iterative development. The mindset was to get the application out quickly and 'fix it later' if it was not perfect. The priority at the time was maintaining the confidence of the board by delivering promptly. The leadership team of the e-commerce initiative wanted to show that, with the right culture, it was possible to implement a groundbreaking system quickly.

Weekly meetings were chaired by the head of eHIC with the community heads and operations manager to monitor progress of the project, which had to be reported monthly to the UAG board. The weekly progress meetings were essential to the process of dealing with issues expediently. Moreover, a complex incentive scheme was developed in an attempt to award incentives objectively by linking them to elaborate performance criteria to drive delivery. Aside from financial rewards, high performers were offered weekends away as prizes for completing a milestone. A large space was set aside as a 'chill room', complete with pinball machine, pool table and coffee and cappuccino machines. At the same time, a significant investment was made on acquiring current best-of-breed Internet tools.

However, the initiative was hampered by difficulties from the outset. The first challenge was using a fairly novel Web application server technology, in the form of Dynamo. The team were attempting to develop the system on a technology that was not well understood locally, not even by the local system integrator, who had sold the product. To alleviate the problem, the head of operations decided to bypass the local vendor and set up a direct link with the international supplier, although this did not improve the situation much. Furthermore, it was becoming very difficult to find developers who were competent in Java. At the time Java was a fairly new software development language that many believed was the best software for Internet development, even though it was relatively new and untested. Meanwhile, very few people in South Africa had received Java training. Those who had were being lured away by countries that were able to remunerate them in a stronger foreign currency and could offer a more stable lifestyle. At the time, the South African rand was performing erratically, and many skilled South Africans were still uncertain about the outcomes of the new political dispensation. Similarly there was a lack of skills in applying Documentum, a document management system, and Verity, a search engine tool.

To add to this, the team had to endure many integration issues with the architecture built around the Magic development environment. Web technology was making significant demands on UAG's legacy systems. For example, the CORBA standard, which was not compatible with the Magic environment, made integration challenging. CORBA (Common Object Request Broker Architecture) is the middleware standard that was used to support interactions between the various systems via Enterprise Java Beans (EJB). Workarounds had to be written with the aid of Magic developers sourced from Israel to resolve the problem. However, these workarounds came with certain inefficiencies, which translated into poor site performance in an already poor connectivity context.

Furthermore, eHIC wanted to enable real-time, online functionality such as online travel booking, updating client details, claims submission and new-application submissions. Until then, the systems had been developed for batch-mode processes, and access to these systems was restricted to internal staff. The legacy systems were simply not designed to expose these applications to a host of external Web users. Their cause was not helped when the IT department took exception to the attitude displayed towards them by eHIC developers, who regarded Magic as 'antiquated technology'. The problem of working with the traditional systems department was articulated by a community head I had interviewed:

UAG was and always has been a mess of technology types, especially in the development environment. A lot of these were not industry standard type of products such as Magic and so had a very particular type of developer and mindset associated with it. With H-World we very much tried to follow the industry standards and use what at that stage would have been best of breed technology offerings which we did but not without huge and consistent resistance from other key players ... (Community head, interview 49, p 3)

There was clearly a feeling of tribalism based on which system one was affiliated to. Magic developers resented the attitude of the Java developers, particularly as the system they had developed was working fairly well within UAG. They saw eHIC staff as the interlopers, the 'favourite children' of the executive team, and were hostile to the view that eHIC had a 'monopoly on innovation'. In fact, the relationship between eHIC and UAG in general was troubled. There was this perception that eHIC's development approach was more informal, and this did not augur particularly well for the more structured LAC business unit at UAG. They were familiar with developers who used a more conventional systems development lifecycle and found the 'looser' approach frustrating. In fact, eHIC did not even attend the corporate functions hosted by the traditional systems team.

Meanwhile, there was reluctance on the part of business to change business practices to fit the demands of the new technology. eHIC challenged the traditional ways UAG had conducted business. For one, UAG's operations were divided functionally. For instance, the individuals and systems that dealt with new applications and commissions were different and did not regularly interface with each other. Furthermore, there were different call-centre numbers for the different communities and types of queries, which meant that call-centre staff specialised in a particular area of expertise. However, eHIC was appealing for a more integrated approach, where tracking of new applications and commissions were integrated and where one call-centre agent would be able to respond to any customer query. The 'integrated, online, real-time' concept to which eHIC wanted to operate was foreign to the staff at UAG. The way the online channel wanted to offer services to customers brought it into conflict with the way in which UAG had architected the same services for the other channels. Moreover, because each strategic business unit (SBU) had developed its systems in silos, it very often had different identifiers for the same customer, whereas eHIC was attempting to demonstrate 'a single view of the customer'. After all, it was possible that the same customer was tied to all the SBUs, and to the myriad of product offerings. Indeed, it was possible for a customer to be a broker and a healthcare provider.

It was also becoming apparent that although there was sufficient lobbying with the executive team, there was insufficient company-wide support across the organisational levels. Indeed, among many of the business staff there was a widely held view that those at eHIC were a bunch of 'arrogant upstarts', 'chasing an unworkable ideal' and placing 'unreasonable demands' on the business. In fact, there was a time that LAC complicated matters a bit by insisting on having autonomy over their own enterprise systems. They had even threatened to implement their own website. Furthermore, the marketing services team felt isolated from the development process and were uncertain as to how they fitted into the online environment. During H-Link, marketing services had worked directly with the contracting graphic designers; now they had to work with eHIC graphic designers. Furthermore they felt 'roped' into projects, as there was a lack of processes that defined the rules of engagement. In addition, there was generally a constant struggle for attention from the systems and business areas. After all, both business and systems were already constrained by a chaotic and an overextended operational environment brought about by a rapidly growing customer base and by new product development priorities.

All these issues culminated in the project progressing painfully more slowly than expectations. Although the planned launch of the eNtermediary zone was for October, it was launched only at the end of November 2000. To add to the growing consternation, it was slow and difficult to use. UAG staff and brokers were not impressed. The views of two users sum up the feelings of many of the users shortly after the launch:

Speed it up!!!!!!!!!!!!!! ... Check that all the links work. Hlink was great – this site has a long way to go in terms of ease of use and speed! (Online feedback, June 2001, line 89)

I am getting a lot of unavailable pages. I cannot get previous claim statements ... my registration crashed numerous times and I had to phone ... to activate. I get the sense this is a beta site? (Online feedback, June 2001, line 74)

To add to this, business connectivity levels were very poor and consumer broadband almost non-existent. For example, at the time 80% of the brokers did not even have dial-up facilities. Nevertheless, the mood among the team was vibrant: a lot of youngsters, a flat structure, and an attitude of getting the job done. But despite working hard to deliver with numerous late nights and great team spirit, it soon became clear that the rest of the site would not be ready by the end of December 2000. This created a huge amount of pressure, especially since commitments had already been made in press releases. Announcements were also made by the CEO to UAG's stakeholders at partner forums, and there was even mention of the planned eHIC launch in the annual report to the shareholders.

It would soon emerge that the online channel was more a channel for the UAG business, rather than a separate business that would service the same community in a radically different way.

6.4.3 Phase 2: From e-business to e-department

When dotcoms started to falter worldwide in the middle of 2000, it became increasingly difficult for eHIC to defend its position as the 'elite' business unit. In the face of increasing internal opposition, its position was made weaker because it had grossly underestimated the size and complexity of the initial project, both in terms of the depth and functionality required and the practicality of delivering it. At the executive committee meetings the head of eHIC was finding it very difficult to justify the R1 million rand budget per month he had been allocated. The following remark give a sense of the dissatisfaction directed at the e-commerce head at the time:

'You are mad' they would tell him when he asked for more time or more staff. 'You have got 60 people working for you! What do you do all day – play pool?' (Head of e-commerce, interview 36, p 7)

Upon reflection it was acknowledged by the executive committee that certain structural changes had to be made. There was still a belief that eHIC could provide the group with value adding functionality. The paper savings on the provision of electronic statements to members alone was sufficient to justify the existence of the e-business arm, although this project had not been initiated. Furthermore, there was significant value in the online services provided for brokers even if the site was poorly constructed and difficult to use. The executive committee also knew that the R12 million rand budget from the start – although a significant investment – was small in comparison with other e-commerce sites, such as those developed by one or two of the local banks at the time. They were rumoured to be spending as much as R80 million.

Nevertheless, eHIC did deliver on the eNtermediary Zone, despite brokers and internal staff members not fully approving of it. The challenge facing the executive team at the time was to ensure that there were tangible benefits for the business and to find resolution to the problems that had emerged during implementation. There had been high expectations of HIC when it started out, but 'the devil seemed to be in the implementation'. It was only seven months later, in June 2001, that the rest of the envisaged site offering – which included the other four zones – went live. Key members of the team were interviewed about the late delivery by the IT executive committee (exco), and the predominant view was that dependency on the internal systems had been severely underestimated.

Shortly after the launch of the MemberZone, the world was hit by the dotcom crash. Silicon Valley companies came crashing down around the globe. UAG senior management expediently absorbed eHIC back into the business. No more 'chill room', no more fringe benefits. The staff of eHIC were now working for a financial services company and were integrated into the IT department. This move contributed to a number of changes. Most importantly, the development team had to conform with some of the corporate systems standards. For example, they had to capture their time against each project. Furthermore, they had to subscribe to the project templates developed by the corporate environment.

eHIC was integrated into the business and was now operating as one of the several functional areas of the IT department. This relegation to an e-commerce department also meant a physical move from their address into the same premises as the rest of IT. However, the team members' reporting lines stayed the same and by occupying the same floor space, their identity – though under threat – was still intact to a degree. Furthermore, funding was fairly accessible, with the budget growing to over R20 million per annum. Meanwhile, instead of reporting to the board, eHIC reported to the IT exco for capital and funding requirements.



Photo 6.3 The office space structure at HIC¹¹

Despite moving closer to the traditional systems team, HIC was still treated as a foreigner. There was generally better cohesion and communication between marketing services and eHIC with more formal structures like formal bi-weekly meetings being established. But there were still inconsistencies in how communication prepared for other mediums or channels was to be tailored to the online world. In adapting content for the Web, marketing often accused eHIC of being too techno-centric, while eHIC viewed marketing services as being territorial about the company's brand. Many business staff felt that despite the change, eHIC still maintained a superior attitude and a dismissive and arrogant culture. Ever since losing its credibility, HIC had been fighting for its legitimacy.

¹¹ In some ways a modern day panopticon (all-seeing), the development teams were housed in a open-plan offices, separated by cubicles, while senior management were housed in individual offices with a solid wooden door and the rest of their office surrounded by transparent glass, normally overlooking their team's working area. Senior business analysts and architects had their own designated cubicles, while the 'junior' members of the development team shared a cubicle. The structure of the office arrangements signified the order of power relations among the team members.

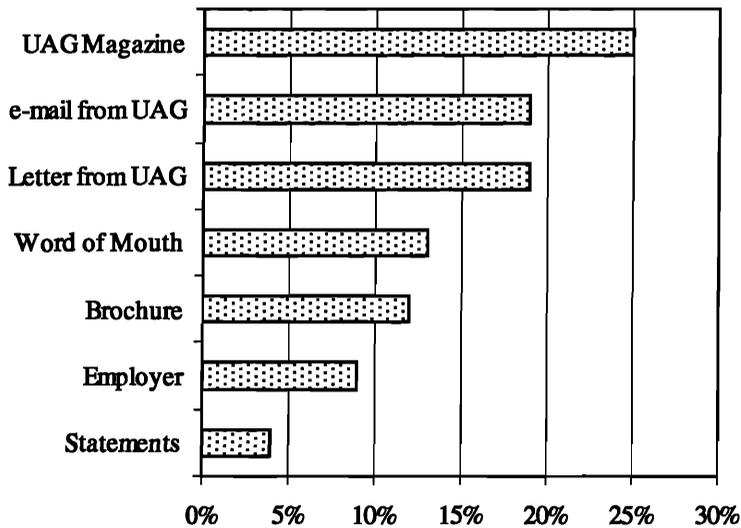


Figure 6.7 eHIC awareness levels by media type

Source: Markinor Research (n=307)

The launch of eHIC was followed by a very effective marketing campaign. The website was promoted in various mediums. It was endorsed in the HIC Fact File, which was a booklet that principal members received annually to explain how their health plan worked. It was also advertised in the UAG magazine. When compared with the various awareness mediums, the UAG magazine appeared to be the most effective in advertising the online channel (see figure 6.7). The magazine consistently featured articles explaining the benefits of the new website to the members. Paper statements also referred to the URL of the website. Other avenues for promoting the website were the employers, brokers and the call centre agents. During the build up to the launch, an email collection campaign also ensued. These emails were to become a vital component of the email promotion campaign and for subsequent online promotions.

Meanwhile, the central theme that was disseminated to attract members informed them that the website provided access to ‘reliable health and lifestyle information’ and enhanced the service they were receiving from UAG. The idea was to manifest the company’s vision of ‘improving people’s health and enhancing their lifestyles’ in an online environment. The benefits sold to potential users at the time included the convenience of the online service. The marketing messages at the time also compared the more traditional vehicles of communication with this new form of electronic communication which was ‘immediate and was not bound to office

hours'.¹² Furthermore, there was emphasis on how accessing personal data relating to plan benefits and general health and lifestyle information would enable members to make more informed choices about their health.

During this period, some of the key functionalities that were provided online included claims submissions, claims status tracking and viewing medical savings account balances to enable members to manage their health-plan finances. On the lifestyle segment, users were able to plan and book their hotel accommodation, flights and car hire online. Furthermore, there was specific information to help with pregnancy and access to health and medical information; and accredited information on a vast number of medical conditions and diseases. The site also offered a variety of useful tools and content for members to ensure that they stay healthy. One such tool was a health-risk appraisal which members could complete online. These tools were often complemented with advice from authorities. Apart from this, there was comprehensive information on all aspects of HIC's products. There was also a belief that H-World could act as a portal for its members. Hence, other features on the site included news feeds from third-party content providers, weather reports, and financial indicators and so on. There was even an initiative that offered cheap Internet connection and email boxes via the WSC offering, although this never really gained traction. Meanwhile, there was a deliberate strategy that brokers would be the preferred sales channel, so there were no attempts to sell health and life products online.

Despite bandwidth constraints, some of the avid users offered praises for the online service as the following extract indicates:

Try speeding things up, we use an ISDN line and sometimes it can be a bit slow, other than that it is the most brilliant website ever. Congratulations!!! ([Online feedback, June 2001, line 106])

Over a short period of time, H-World had a critical mass of functionality and a significant amount of users interacting online. Eventually, given the high occurrence of site-related queries, the eHIC management team recognised that the website needed the support of a dedicated call centre. The following user feedback captures the frustration with which some users experienced the support service in the early stages:

I think that one huge way to improve the site would be sticking to the promise that someone

¹² Advertising in the member magazine.

might actually call me within 24 hours would be a start. I registered on Thursday afternoon. Now Tuesday morning. Nothing heard from you guys yet ... (Online feedback, June 2001, line 84)

While the initial thoughts were that it would be a 'technical support' call centre only, over time it emerged that not only did it require that these call-centre consultants speak multiple languages, know the products well and understand technology, but they also had to be able to respond to written communication. The consultants supporting the online channel were 'super agents', compared with the agents supporting the other call centres. And of course, along with the call centre, came new access rights into the online system and an ability to 'see what the customer sees online'. Meanwhile, many 'teething' problems and bugs were associated with this embryonic service. A business analyst described the situation:

A lot of the time I was receiving queries from the call centre ... and it was a continual cycle of fix, redesign, develop, fix, redesign, develop, fix ... we had a lot of that going on. (Business analyst, interview 47, p 3)

Now and then a key functionality had to be removed from the website. One such example that created a lot of controversy was the online claim submissions feature. The claims submission application was very unstable. Apart from this, it was being abused by some users as a few incidents of fraudulent claims were being submitted. Furthermore, it was adding complexity to the claims adjudication process at the back-end for those claims which had to be manually vetted. Moreover, a number of users found it difficult to use. For instance, members frequently entered incorrect tariff codes and the front-end, which was disconnected from the complex back-end processing, was not designed to validate the entries processed. As alluded to earlier, these complex validation rules were the domain of the back-end systems to which no interface existed.

Your claims submission facility in particular is a disaster. Don't you have any professional internet application systems designers at HIC. Your whole website is too ambitious, too slow and riddled with errors. (Online feedback, August 2001, line 363)

Incorrect submissions had to be validated by the claims operations team manually. The claims team naturally showed great resistance, because they foresaw the online claim application creating more risk and a greater staff overhead. With the support of the auditors, the claims operations team demanded that the application be removed. Many users expressed great disappointment when the functionality was discontinued in early 2002.

I am extremely disappointed that you have discontinued your online claims submission. It would be easy to emphasise that people must find out codes before submitting a claim, if they are not on the invoice, and make that field compulsory. Come on, guys, surely there are better solutions than stopping a useful service! (Online feedback, March 2002, line 1215)

As opposed to health-plan-specific transactions, it was the innovation in the Wellness program that provided all sorts of opportunities to utilise the online medium. WSC provided members with access to selected health and fitness facilities, and created strong incentives to use them. Members were being persuaded to earn points to improve their wellness status. The greater the status, the more enhanced the access to benefits, such as discounted travel and leisure prices. Members could also earn points by interacting with the online channel. It was specifically the ability to reap rewards from certain behaviour, and going online to gather those rewards, such as flights online and so forth, that led to a significant increase in the number of online interactions that one would not associate with a typical medical aid company.

On the back of the WSC success in 2002, the channel grew very quickly to more than 105 000 registered users. One of the successes promoted internally at the time was the reduction to the number of support staff who were servicing flight bookings. Up to 40% of flight and hotel bookings were being done online, so there was the matter of perceived cost savings. These, among other savings, were reflected in eHIC's income statement and formed the basis for the team's incentives and how eHIC 'justified its existence'. Over time, there would be demand from the WSC business for 'softer' applications like the Nutrition Centre and the Interactive Stress Centre.

The Nutrition Centre was conceived in 2002. The objective was to provide an online mechanism that promoted healthy eating habits among WSC's members. The design process was managed by a wellness nutrition panel, which was composed of dieticians, clinicians and nutrition academics. There was a huge emphasis on designing the tool with a strong scientific basis. Despite this, there were different opinions among the panel members about certain aspects, such as the fibre content of a healthy diet, and so on. It occurred to the panel that providing a meal planner for a user was a complicated task. User inputs were required for gender, activity, height, weight, waist, and blood type, among other reasons. The tool also had to rely on the self-reported measurements of the user to establish the effectiveness of the proposed diet. The tool took longer to construct than anticipated. There was this constant 'fighting' for developer resources. The dietician driving the process at the time had to become familiar with the new terminology when

dealing with the development team. There was this unfamiliarity in being exposed to the requirements and the testing process, not to mention the maintenance process that would arise over time. To stimulate online behaviour, the tool was designed with wellness points-earning capacity. There appeared to be genuine interest for the application when it was released to the user community.

Despite enormous issues with site performance, some of it related to external reasons, the user base started to grow rapidly on the back of the exposure the site had received from the WSC promotions.

Meanwhile, as the site and the number of interactions grew, site maintenance became a major challenge. Business analysts, apart from working on projects, had to work with the call-centre agents to resolve queries. These events are reflected in concerns raised by a user as he or she struggled with using some of the online features:

... I tried to get on to the wellness statement, but it told me to log on first, I then tried to log on again, but it doesn't do anything. I don't know if what I'm using to log on is correct because when I tried to register, it told me I was already registered? Please advise. I also tried to do the online fitness assessment, but it wouldn't go through. It takes a rather long time to do. Is there another alternative, or is the site just temporarily down? (Online feedback, February 2002, line 792)

Eventually more than 75 staff members were working for the e-commerce department. Even with the increase in staff, the high maintenance levels persisted. Reasons included the duplication of rules and the use of store procedures to query databases. When changes were made by the back-end systems team without adequate communication, this often created queries in the online environment. The high maintenance levels were also attributed to lack of alignment between the online team and the systems team.

... in terms of maintenance, the back-end had become a problem. And we were already users of the back-end tables and whenever the back-end system changed without informing eHIC really, then things would break ... (Architect, interview 43, p 3)

Very often projects were prioritised differently and hence the misalignment. Furthermore, given the disparities between the online channel and the traditional systems environment, a number of processes still had manual steps. For example, when a member updated certain details online,

these had to be manually vetted by an administrator. Instead of streamlining processes, the online services had the effect of creating more work for the administrators.

Meanwhile, while huge progress was made in obtaining Java skills, the team were still getting to grips with Dynamo Application Server. More specifically, it was still battling to come to terms with more enhanced features of the Dynamo suite. Dynamo also consisted of Commerce Server, Scenario Server and Dynamo Personalisation Server. Instead of using features that were already available in this technology, the team normally developed workarounds to compensate for their lack of knowledge, to cope with the perceived bugs within the Dynamo application suite, but mainly to deliver quickly to market. Dynamo offered some very powerful personalisation features, one of the main selling points of the product and probably the clincher in the decision to acquire the technology. Unfortunately the team found that personalisation was extremely complex to implement. The vision of personalisation was to pre-empt what members could see on the website, based on certain events. The site could then respond intelligently according to whether the user was coming online because she for instance had just submitted a claim or had been attending a gym. Furthermore, personalisation could be used for cross-selling and up-selling by targeting certain products to the member, based on existing member and product profiles.

In 2003, there was a strong focus on emailing electronic statements. The collection of email via new business application forms over the years and a series of email collection campaigns had created the critical mass that easily justified the project. Furthermore, the pay-back was clear, at least on the face of it. Delivering electronic statements directly to members with no postage costs and at miniscule cost per statement, not to mention the benefit of being a more responsive communication mechanism compared with snail mail, made business sense. The project team at the time evaluated several bulk email providers who back then typically charged about 20c an email. But after a brisk evaluation, it was decided that it made more sense to develop the technology in-house. It took four months to develop the email notification engine which, apart from sending electronic statements, was to be an important mechanism to promote the company, the company's products, the website and even specific website features. Meanwhile, the cellphone industry in South Africa was growing rapidly and it soon emerged that HIC's members had a high incidence of cellphone numbers. Very soon, the electronic notification solution was

extended to offer integrated SMS delivery, where members received notifications of claims status to their cellphones. Predictably, members who used the electronic channel as a preferred communication mechanism for receiving statements and notifications were rewarded with wellness points. Members could also activate and manage their electronic subscriptions online.

With over 70% of members with email addresses, the offering would become an important component of the perceived cost-saving aspect. Combining the different service types, more than a million emails were being sent to members monthly. However, email bounce rates were very high, ranging between 15 and 20%. Most of these problems were linked to data integrity and system problems. It appeared that a significant number of errors in the capturing of emails occurred when brokers were completing the new business application forms on behalf of the member, and when the data was captured into the system. Another challenge was that a significant proportion of the new business applicants left the email address column vacant on the form. Furthermore, about 0.3% of replies were being received as a direct result of email correspondence. Despite the miniscule proportion of email replies to email sent, added pressure was exerted on the traditional call-centre channels. Furthermore, given the instantaneous effect of email compared with snail mail, the call intensity patterns increased substantially.

The political climate was no less intense. In the latest battle a debate ensued over where the electronic communications capability should lie. On reflecting on the political climate at the time, one of the management team members said:

... as would be expected a lot of politics driven mainly by individuals and personalities who felt threatened from marketing through to the traditional technology IT guys. This took a lot of work and effort to get them just to work with us. I don't think we ever got them to like us though! (Community head, interview 49, p 3)

Eventually, the 'notification team' had to report to the corporate systems environment, since it was believed by certain parties that communications should be a corporate systems responsibility rather than an e-commerce one.

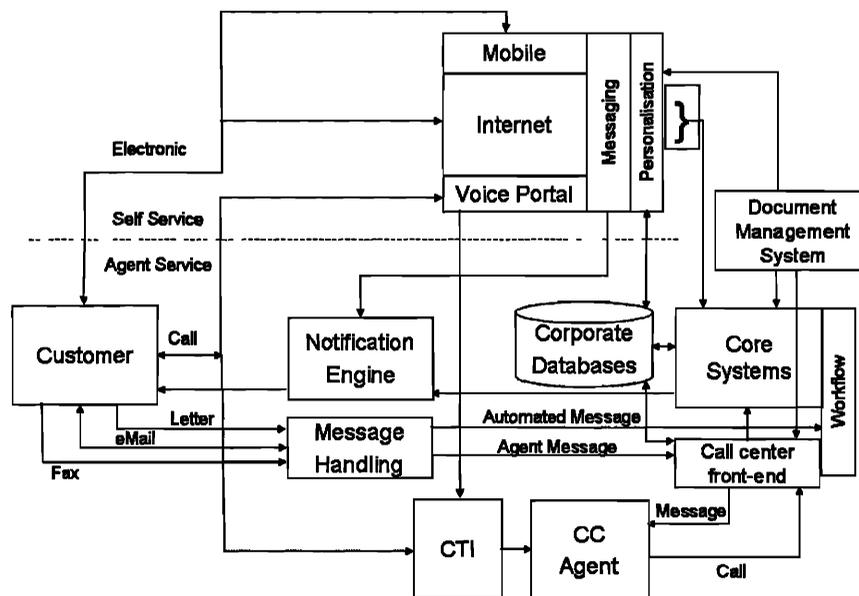


Figure 6.8 UAG's servicing architecture – An integrated channel perspective

Source: 2003 eHIC strategy presentation

Meanwhile, there was a review of the architecture to extend the self-servicing philosophy to include voice technologies (see figure 6.9). There was the school of thought that some of the less complex transactions were better suited to the cellphone, and that the organisation could leverage off its current ability to deliver personalised content to this channel. For example, a broker could now make a voice request to UAG to track his or her new business applications, or a member could use voice to set up a flight booking, using voice-driven predefined menus and options, without the assistant of a call-centre agent.

There were obviously many synergies between the envisaged voice portal, the Web portal and the mobile platform. The business case was justified on the grounds that more of UAG's customers had access to a cellphone than to email or the Internet. Additionally, the initiative had the potential to reduce calls to the call centre and therefore presented a cost-saving opportunity for UAG. Moreover, this new channel was aligned to the 'self-service mentality' of eHIC. It was believed that since Voice XML (VXML) relied on webpages, it could also leverage off current developments, and therefore offer very quick time to market. A team was formed to briefly assess the viability and acceptance of speech recognition technologies and voice Web software. After being given the blessing of the IT executive committee, a couple of projects were piloted. This software was based on the 'South African English language' and the text-to-speech vocaliser was based on the voice of a 'UK English male'.

There were a number of practical challenges facing the implementation of VXML that would soon emerge. Probably the main issue was around voice recognition. Many users experienced difficulty in engaging with a predefined dialogue which sounded impersonal. More importantly though, the VXML system itself battled to recognise the many English dialects spoken in the South African context, and many users were frustrated at having to repeat answers to this 'machine'. In the beginning, the measures of calls dropped, and call transfers to a call-centre agent for VXML-based services were very high. Many users opted to be transferred to a call centre instead of using the advanced speech recognition technology. However, the technology did show limited success for routine, mundane services such as reading out a user's MSA balance.

Over the six-year period, there were a number of attempts to improve the speed and navigation of the website. As the number of communities and services grew online, so did the complexity of accommodating the numerous pieces of functionality. An evaluation after the latest redesign found that the general feeling across users was that the site was often offline, 'unavailable' or 'very slow'. Users often complained about this, indicating that in most cases, it had been during peak hours and that at these times they had occasionally experienced trouble with logging on to the site. Incidences such as these led to users logging on to H-World in 'off peak' times, which they felt was eroding their leisure time. The feedback from this user sums up some of the concerns expressed by users:

... I find this site incredibly difficult to navigate. Even when I do eventually find the thing I'm looking for, I have to start from scratch next time because I've taken so many detours to get there. (Online feedback, January 2003, line 2575)

Similarly, several users mentioned that H-World was very slow in loading certain pages. Other users felt that it took too long to find the required information on H-World, either because they do not know where to look for this information, or because the process of finding the information required the user to navigate through too many pages and levels. Certain users stated that they frequently felt lost while navigating H-World. Perceptions at focus group workshops for example were that H-World was not 'user friendly' or intuitive partly influenced future redesign initiatives.¹³

¹³ User validation workshop findings for H-World (July/August 2003).

In the latter part of 2003, there was a major redesign attempt to improve the speed of the website, and to give certain key functionality more prominence. There was also a move towards enforcing page standards, so that future projects would ensure that site was less cluttered. In addition, there was a need to give the website a new fresh look to complement and align to the organisation's new branding. Commenting on the existing layout, a new member of the graphics team stated:

... like the navigation structure on the old Website. Everything on the left hand navigation they duplicated and put it into the same page. We had a page with a thousand links on it. Now, the more links the better, the bigger, the bolder, and everyone will pay attention. This breaks from my experience. It is just a recipe for disaster to keep the user confused ... (Graphics developer, interview 26, p 3)

During these periods, there was always tension between the marketing services department and the eHIC Team. Sometimes protecting the brand was at odds with designing the user interface to facilitate ease of use. Frustration was expressed by the eHIC team when new products were featured on the radio or TV advertisements without a reference to the website address. Some speculated that this constant tension found its origins during the initiation of the website, when there was this subtle threat that with the advent of the website, print marketing was to become non-existent.

Another major initiative during the redesign was the optimisation of the registration process. The registration process used to take three or four days, as it required internal validation before site access was granted. This posed a huge problem from a servicing perspective. By the time a user was registered, she or he would have obviously called the call centre about the servicing requirement that prompted the need to register, as articulated by this frustrated user.

Registration takes too much time!!!!!! I was sent an access code in November that had expired by the time I tried to use it. However the email containing the access code never mentioned this detail. Once I have the access code I register and fill in a form that asks a lot of unnecessary detail and then I get phoned to confirm within 24 Hours (I can fly to London and back in this time!) Now I may use the site and get Wellness Points, I would rather have a prostrate exam!! I can get on to my banking site with less hassles!!!!!! If I ran my sites like this I would be bankrupt!!! (Online feedback, October 2003, line 2653)

So the registration process was totally inefficient because it was constrained by internal auditing requirements to minimise the risk of fraud and misuse of identity. Related to this, the primary reason for calls to the eHIC call centre was 'forgotten password'. The same constraints were experienced by the many users who had forgotten their passwords.

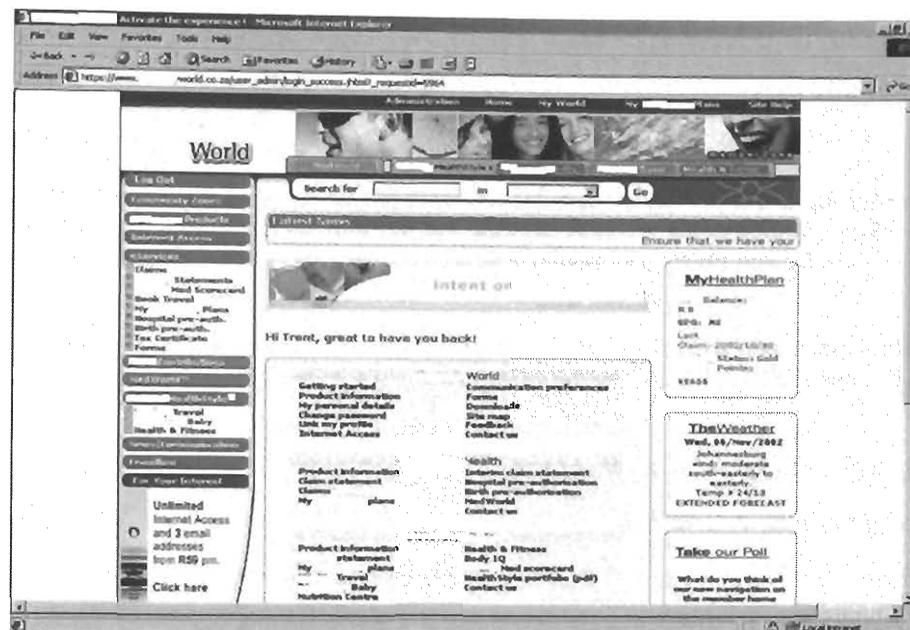


Figure 6.9 eHIC's landing page (2003 website redesign)

Source: eHIC¹⁴

However, the new registration process implemented during redesign meant that a user could get almost immediate access to the website. The new process relied on other identifiers of the user, such as an email address or cellphone number. Based on a validation rule of either the cellphone number or email address, the PIN details were sent via SMS or by email, and the user received almost instant access. These improvements were extended to users who forgot their passwords.

Almost 670 000 calls were made to the call centre in the month of October 2003 alone. This was accompanied by 202 600 logins to eHIC. This implies that more than 25% of all interactions with UAG were now through the online channel. The goal was to move the interactions to 51%, as this would imply in some circles that the Web was now the dominant channel. Despite this, only 26% of the membership base had registered. And even though there were major site redesigns as part of the valiant effort to move this ratio to 40%, the ratio of active registered members would hover around the 25% mark for the next two years. Further analysis revealed that many of the 25% had a higher servicing need.¹⁵ These users tended to be either high claimers or loyal followers of the Wellness programme. Nevertheless, although the loyal user

¹⁴ Because of the sensitive nature of the information, all names have been fictionalised or omitted.

¹⁵ Internal customer intelligence report (2004).

base – consisting of 25% – represented a minority of the member base, they continued to express positive views about the online service. Two of the users expressed their satisfaction with the website:

... You have included everything and more in your site, I enjoy visiting all the info you have especially the health articles. Keep up the fantastic work – I am definitely a proud member of your extremely well run company ... (Online feedback, July 2003, line 3574)

... Thanks for an excellent site! What a pleasure to browse the site. The content, the speed, the layout, etc. are well planned and executed. (Online feedback, July 2003, line 3747)

In 2004 significant energy was dedicated to enhancing WSC's scientific foundations and to making wellness even more accessible to their 1.2 million members. A number of new initiatives were to occur via the online channel. Based on the perceived success of the Nutrition Centre, a place for members to manage their diet online, an interactive Online Stress Centre was conceived, where members could determine and manage their stress levels. According to the promotion in the UAG Magazine:

... the centre will offer scientific information and an integrated holistic programme to help cope with the stresses of modern life ... (UAG Summer, 2004, p. 53)

The objective of this site was to provide the user with reports and feedback about his or her condition. Another objective was to reduce visits to primary healthcare facilities for those ailments that are stress related. Even further, there was the aim of reducing the long-term risk factors associated with chronic illnesses. Users were provided with tools and techniques to manage their stress levels and increase their sense of wellbeing.

Indeed, following both programmes would enable the user to earn wellness points. However, the usage for these features was relatively low. For example, the Nutrition Centre received fewer than 2 000 logins weekly, compared with travel availability checks, which were in the region of 10 000 logins per week. Furthermore, despite extensive promotions, less than 10% of the online user base opted to use these features. For those that logged in, there was growing evidence that the majority were 'points chasers' who were attempting to upgrade their Wellness status by exploiting the online channel, instead of making behavioural changes to their lifestyle. Over time the school of thought that would prevail was that healthcare issues such as stress and nutrition are personal and require a high degree of empathy from a person.

Despite targeting their products at predominantly the affluent market, Internet accessibility among UAG's clients was for most South African firms a major barrier. This Markinor study conducted in 2003 demonstrates that only 35% of the members in the sample (n=600) had access to the Internet at work, 12% at home, 21% both home and work, and a significant number (amounting to 32%) not having access to the Internet either at work or home (see figure 6.11).

Not surprisingly, the pie chart below demonstrates that the majority of those who did not have access to the Internet did not plan to get Internet, which confirms barriers such as poor connections, costs and computer literacy. Clearly, the implication is that for the growing low income medical scheme the Internet would not be a viable channel.

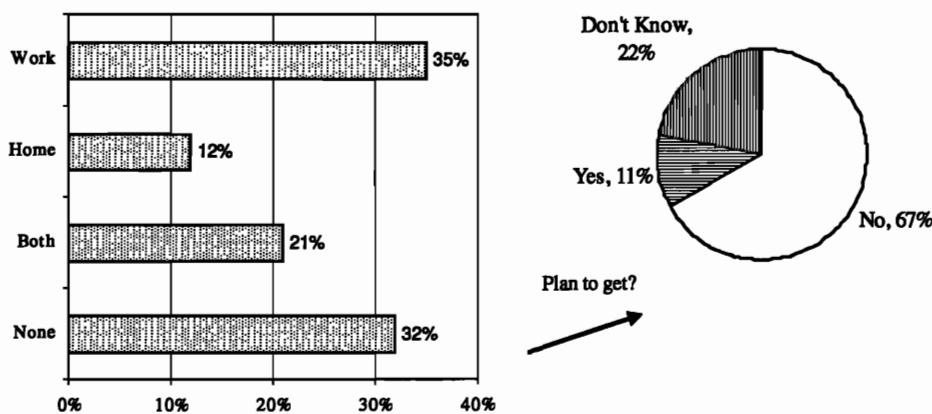


Figure 6.10 eHIC access at home and work

Source: Markinor Research (2003)

Note: n=600; Plan to get (n=192)

In 2005, the major trends from a technology dimension included the assimilation of Java throughout the systems area. More of the new systems or system components were being developed using Java. Magic began to play a diminishing role. Meanwhile, as opposed to EJB, the organisation was supporting the Java 2 Enterprise Edition (J2EE) middleware to reduce the maintenance and network overhead of an increasingly complex client-server environment. The Dynamo proprietary standard by ATG was no longer a viable option, given its slide in the marketplace and the lack of support by the other business units. Its role was reduced to enabling the customer relationship management (CRM) aspects of the website.

The 2005 site redesign and the migration to a J2E framework for the new web server environment was a massive project and required a freeze on other initiatives. After go-live, system stability was threatened. The web server went down frequently and affected user experience. A user described his experience:

... Ever since the site was upgraded it has become very slow. Most of the time I am unable to access information because I am kicked out of the site or the site is unavailable ... (Online feedback, July 2005, line 6184)

Contradictory perceptions about the site's performance continued. Yet during this same period a number of users expressed satisfaction with the new look and feel of the site, as well as the site performance.

... The site is very user friendly and easily navigatable! Well done!! (Online feedback, July, 2005, line 6191)

Another major trend was the use of packaged applications like business rules engines to centrally store rules. Furthermore, there was a major focus on automating the development processes. For instance, the use of stylesheets, a form of template for the site redesign, meant easy maintenance and the need for fewer human resources in the future. A team reviewing automated test tool was prompted by a visit to the joint venture partner's sites. The number of problems with testing during the server conversion gave added impetus to this project.

Meanwhile, during the redesign, eHIC's identity was changed from H-World.co.za. A new identity for the website was formed, and the new name was now H.co.za. As a graphics developer explained:

... we have business brands ... They (referring to marketing) did not see the website as a brand ... (Graphics developer, interview 26, p 3)

The website branding and the e-commerce department had shared the same name for five years. Suddenly the name just 'disappeared' and left the e-commerce team without a label, without an identity. No negative impact was expressed by the users, though. From a business perspective, a number of new initiatives were initiated to support the international market. As a result, staff employed by the e-commerce department grew to almost 100 people. The principles for operating in the UK and US markets were fundamentally different. In the international markets

the emphasis was on obtaining customers, while in South Africa there was a need to retain customers. A lot of the selling in the international markets was being done over the phone and on the Internet. There was increasing frustration among the development team representing the international clients over the logic of basing the new website on an older website that focused primarily on servicing existing members. One of the unhappy business analysts commented:

... First of all, you can't just plug and play it from one country to the next ... And also, what one marketing team wanted differed from the other. So, it started off saying, oh, yes, we are going to use this concept, and the more and more you delve into it, the more and more it moved away. So, a specific example was the Wellness Risk Assessment. We were going to now do this for both. And we started off together and ended up, as I can see, very far apart ...
(Business analyst, interview 47, p 7)

Meanwhile, internal research suggested that electronic communication intended to proactively address members' concerns was generating calls instead. It also emerged from similar research that the call rate increased significantly in the proximity of an eHIC site visit.¹⁶ eHIC's income statement was being challenged. The e-department, now without an identity, was entering an episode of further scrutiny.

6.4.4 Phase 3: From e-department to front-end development team

There were a number of further changes within the group in 2005. Operational efficiency was becoming an important driver of cost savings and profitability for the firm. There was an intensive focus on streamlining the operational aspects of the business, specifically in the service and operational infrastructure arena. The aim was to create a platform for ongoing efficiencies and more specifically to provide a framework for BHC's and UHC Health's back-office operations. Back-office support for the two joint international ventures was to operate from South Africa. Similarly, the call-centre service and Web development projects were to operate

¹⁶ The UAG Holdings executive committee requested an extensive study into the reasons that members might display any negative sentiment towards HIC. The final report of the study was requested to identify in order of influence the principal causes of negative member sentiment, and highlight the actions that would alter that sentiment. The methodology of the study used a number of diagnostic tools to determine the reasons for dissatisfaction, including previous service studies, telephonic member surveys, face-to-face surveys, HIC data that describes member experience, historic escalations data and data sourced from external parties. The final 'Buzz' report was released in April 2004.

from South Africa. Therefore there was a huge drive to restructure the existing IT infrastructure so that it could support the globalisation initiatives.

In the meantime, there was a general feeling that the Web would play a more prominent role in the UK and the US than it had done in South Africa. A remark by a senior manager indicates some of the barriers to user adoption in the local context, and captures the healthier outlook for the self-service technology in the UK and the US:

[On South Africa] So, I still think there is a big resistance from a lot of people in terms of using online functionalities. And I think some of that is driven by acceptability and costs, and I think some of it is also driven by the fact that the momentum hasn't grown yet, particularly in terms of things like online retail shopping, etc. So, online shopping is quite inculcated in the States. It hasn't here ... I mean, it is quite interesting. We are starting to see some feedback now in terms of the differences between the conversion rates in the UK environment, to the people that visit more than one channel and they've got higher conversion rates. The ability to be able to research, doesn't necessarily lead to online sales, but it certainly supports the sales process. And that also, I think, can definitely translate into servicing as well. But it has almost become something that people need to have now ... It is not optional in the long run ... (New H-World head, interview 34, p 6)

Furthermore, the local firm was seeking to re-engineer the systems environments so that it could deliver closer to their expectations from a time-to-market perspective. At the same time there was further scrutiny on the value that eHIC was adding from a cost-benefit perspective. By this time the staff component for H-World had grown to around 120 people. Including H-World, the systems team for HIC and WSC combined had grown to more than 400 people. Given the increasing pressures to reduce administration costs, a number of questions were being raised about the size of eHIC and the related value it was realising:

In the eHIC's space there was a lot of attention to, like, what value do we believe we are adding? What deliverables have we participated in? What, the main objectives which we had been able to achieve? And then also because we have always sold ourselves as a cost saver to the business ... So, what the true sort of cost saving has basically been. Like, where, you know, how have we saved costs? Like our old income statement approach, is for saying that we go along with that but, for example, a lot of what the value is the question. So, like your rand value per hit was something that came ... And I think that was part of business saying, how can you say you are saving us X-million when we don't believe that possibly? So, I think, that was the start of the thing ... (Program manager, interview 42, pp 2-3)

Over the years, eHIC's growth was rapid. Whereas H-Link had only 19 000 users registered, H-World's registered user base by 2005 exceeded 430 000 (see figure 6.11). However, the size of the registered user base, while important, was not the crucial measure to judge the performance of the online channel. The crucial basis for eHIC's performance measurement was the savings on calls. Since the inception of H-World, there had been evidence of a steady decline in overall call

patterns to the call centres. This decline was attributed to the online channel. However, closer analysis revealed that eHIC users called the call centre more than non -eHIC users. Other theories around average call rates dropping were attributed to the ‘learning effect’. That is, as members became more experienced with the product, they called less.

In addition, as HIC improved its operations, this translated into more expedient and reliable service, translating into fewer calls. In contrast, it started to become apparent that those clients with a high servicing need often used the website channel regularly and called the call centre as well. Furthermore, the Wellness program was closely correlated with higher servicing demands. Internal reports indicated that avid members of the Wellness program called the call centre more than non-members. Since more than 90% of eHIC’s members were affiliated to the Wellness program (see table 6.2), it is not surprising that their call rates were higher. In addition, most of the active users on H-World had high claim and call patterns, suggesting that the site was also particularly appealing to those who were prone to illness and thus needed more effective management of their funds.

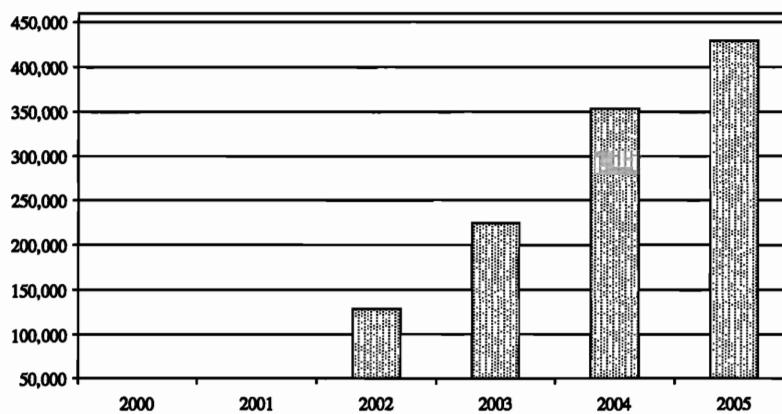


Figure 6.11 eHIC’s online user registration growth ¹⁷

Source: eHIC’s management reports

(Totals are as at financial year-end (June) and not calendar year)

2000* represent the H-Link numbers, 2005 shows almost 430 000 users.

¹⁷ The rapid growth in the firm’s membership base was followed by equally strong growth of registered users. However, closer inspection revealed that over this period only 25% of registered users were active members of the website. A great majority of the users belonging to the remaining 75% discontinued the service over time, never to return.

Furthermore, it appeared that the Wellness program appealed mostly to a younger online audience, as supported by the age group demographic splits supplied in table 6.2. This could be attributed to the effect of brokers ‘raiding’ younger members from restricted schemes and enrolling them into an open scheme such as the HIC medical scheme. In other words, the profile of the HIC scheme members was generally younger. This in turn influenced the profile of the online users.

Meanwhile, although it is well known that a larger proportion of UAG’s clients are from the younger, more affluent Afrikaans community, only 44% of those who prefer the Afrikaans language as a method of communication had registered to use the online channel.

Table 6.2

Summary of key user characteristics

Subject	Measures
<i>Registration based on gender</i>	
Male	53.37%
Female	46.63%
<i>Active use based on gender</i>	
Male	48%
Female	52%
<i>Registered user age group</i>	
20–25	21.91%
26–30	32.02%
31–35	23.60%
36–40	6.74%
40–45	8.43%
Greater than 45	7.30%
<i>Preferred language of registered users</i>	
English	56%
Afrikaans	44%
<i>Wellness</i>	
Scheme members on Wellness program	70%
Wellness members as part of online registered user base	92%

Source: Internal Management Report (2004)

The majority of the users appear to be younger and affiliated to the Wellness program.

The measure of active use is based on logins per month

Over the years, a number of Afrikaans clients expressed their dissatisfaction on the online channel not supporting the Afrikaans language, such as this user:

Geen Afrikaans? Hoe dan nou mense? Of is ek blind? Ek is seker amper die helfte van julle kliente praat Afrikaans ...

Retranslated: No Afrikaans, How come now people? Am I blind? I am sure that half of your clients speak Afrikaans(Online feedback, July, 2001, line 60)

This user was unhappy that Afrikaans was not a language supported in the online environment, especially since he believed at least half of HIC’s clients were Afrikaans speaking. The next point is that South Africa’s patriarchal culture may explain why the active use of the website is slightly higher among females, although more males had registered to use the site. It is also clear that only a minority of the older members showed any interest in the online channel.

Despite the younger user profile, retention rates for the online channel continued to be low. It appeared that after the novelty effect of active participation in the Wellness program subsided, so did the user’s participation online. Over time, as much as 60% of the users who registered never returned to the website (see figure 6.12). This is in stark contrast to the health member base churn or lapse rate of 3–4 %. In fact, only 25% of the registered users continued to remain loyal and habitual users of the online channel. Another segment of the user base showed sporadic use. On the other hand, the use of the call centre remained relatively high, with repeat calls accounting for a significant component of the call volume. Internal statistics showed that 40% of members were phoning more than once a month.

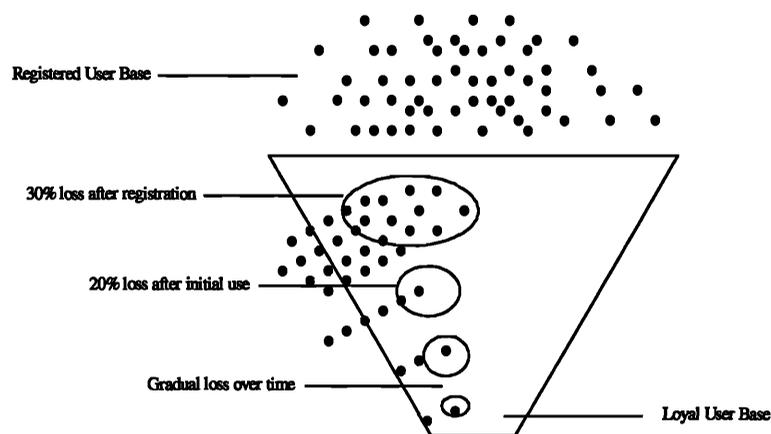


Figure 6.12 Leaky bucket syndrome – losing users over time

Source: Internal Report: Statistical analysis of retention (2004)

Although site interaction was high, these interactions were made by a minority of members. There were general concerns that the critical mass needed to impact on call reductions was not being achieved. One of the senior managers explained the lack of focus on lost users in the past as a matter of shifting priorities:

So again, it is all about a shift in focus, stability is far more of an issue now than it was two years ago. Retaining the users is far more important today than two years ago. So the dynamics shifted. There's always theoretical views of the world that say, well, you should have from the start get things solved, then you would never have had the problem. I am not sure of that because in building some of that rigour and stability, you forgo the opportunity to get things out fast. And by foregoing the opportunity to get things out fast, you forgo growing your client base. And then you never get to be a big organisation, so stability never becomes a problem. (CIO Health Systems, interview 36, p 15).

A number of research initiatives were launched to understand tapering usage, particularly among sporadic and lapsed users. However, these retention initiatives had a usability bias, focusing on layout and visual appeal of the site, the ease of navigation, content appeal and the site's core functions. Meanwhile, future staff incentives and bonuses were to be linked to a user satisfaction index.

Instead of emphasising the cost-saving aspects, soon the basis for justifying the website was on the premise that every major medical aid company must have a website presence. Other bases for justification included intangible benefits such as supporting the HIC brand and the Wellness program. From being positioned initially as the 'preferred channel' or the 'channel of choice', the online channel was now being touted as a 'complementary channel' to the call centre, brokerage firms and other alternatives.

Meanwhile, from a globalisation perspective, there was this sense that a lot of the local Web system components were reusable, and the firm could achieve economies of scale, whether in the form of hardware or software applications. There was also a much bigger team locally with a much more diverse set of skills.

There is this whole globalisation thing. And there has been a realisation that the systems needed to be a little more generic and a lot more flexible, scalable ... Basically, the way the set-up for each area can, kind of, look after their own stuff. There was a lot of interaction but, obviously, not quite enough ... There was the collaboration, it was on key projects. So, when it came down to operations, the day-to-day stuff, the collaboration wasn't there. So, in order to get some initiatives off the ground, there is this need to combine, take what is good from all environments, putting them together, getting rid of all the old stuff, almost reinventing the systems, so to speak, to cater for this broader, yet specific environment, if it makes sense ... (Business analysts, interview 41, pp 2-3)

Another major shift was that instead of developing channels that competed with each other, the focus was now on integrating with other channels. There was a major drive to ‘merge all channels’. The firm was attempting to integrate these channels in the back-office organisation where the core production processes were being managed. Problems relating to front-office and back-office integration were high on the agenda. There was also talk of refocusing eHIC’s capabilities and competencies related to this.

One of the aspects that eHIC had executed particularly well on over the years was the ‘softer’ elements of the channel. These included how to position, how to message, and how to design a user interface. There was an increasing need for these skills throughout the group, including within the traditional systems environment, which used to build ‘unfriendly’ user interfaces for the call-centre users. As part of improving IT’s overall performance, there was this notion of separating back-end and front-end development. The IT leadership team viewed this as an avenue to avoid duplication of effort and to facilitate greater alignment and matching of team priorities. They hoped that this design would alleviate the maintenance load issue and create more efficiencies and thus resource capacity for project work. One of the managers expressed the benefits of the change:

We [eHIC] at the front-end, don't build, we don't build business rules. We don't store the pricing. We don't store the component which told me about the Wellness member itself. The only application into which all those information is being pulled is in order to display the details of the member. So if the alignment is out, you will see ... You could miss the go-live ... So, the alignment is crucial and we are starting to talk now of taking that alignment and making it bigger. Where instead of having two teams, if you make one team with the right skills ... because, at the moment we have got a lot of duplication. The one developer on this team, on the backend and the front-end. We have got one BA on the backend and the front-end ... I mean, you will get a lot more delivery, because you won't have as many developers for one project. (Community head, interview 54, pp 5–6)

Another reason that validated this move was the increasing difficulty business representatives found when communicating to the different system areas driving the different channels. There was often confusion over ownership and more specifically which team drove the technical aspects of the project.

There were two schools of thought driven by the opposing SBU CIOs on how the systems development organisational structure should be designed to support this goal. The two models are illustrated in figure 6.13. In model A, which describes a vertical approach, the development team apply their skills to both the front-end and back-end developments for a specific business

area, whereas the idea with the horizontal approach or model B is that teams specialise either with front-end or back-end development.

In terms of model B, it was assumed that because the development staff would specialise, the quality of the end-product would be better. The systems would be better architected naturally, and because business concepts are separated, the systems that were developed were expected to be more agile. It was believed that model B forces the team to architect services in a ‘service-oriented’ manner. However, with model A, an application would be written as ‘one large monolithic application’, combining facets of both back-end and front-end work. This model assumes that there is no need to create a separate component or service, since the other areas are unlikely to consume that service. The difficulty with model A is that if another area wanted to reuse a service and not the whole application, the teams would have to refactor the code.

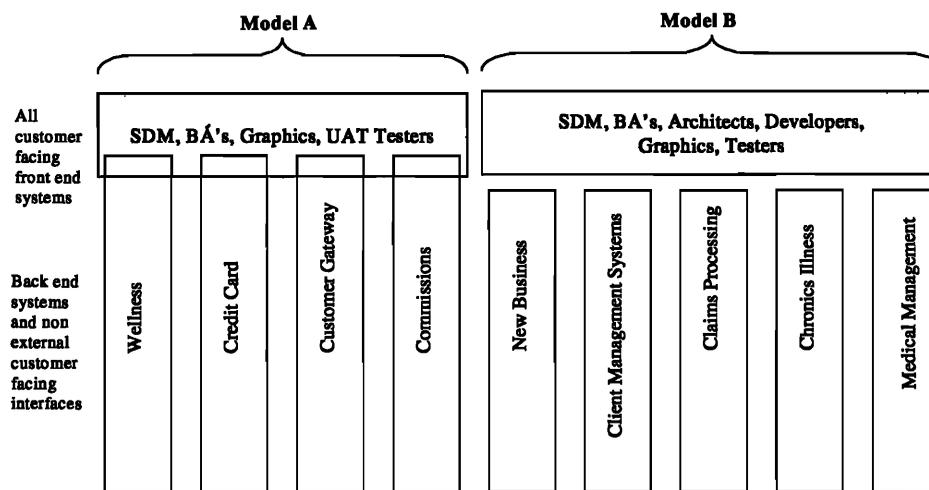


Figure 6.13 Proposed systems organisation restructure

Source: (Adapted) Internal change presentation (2005)

Over the next six months, model A and model B would co-exist, with some areas opting for model A and others for model B. Meanwhile, those development staff members with back-end process competency were moved into the back-end. And the staff that had apparently developed competencies in front-end and usability were moved into the front-end or ‘customer experience team’.

At the same time there were a number of key changes to the firm's senior management structure. The most important for the fate of the e-commerce department was the appointment of the new CEO of WSC. The new CEO was very sceptical about the online environment and favoured a more 'human' approach. One of the key moves by the new CEO was to ration the points for 'click' behaviour and increase the points for 'feet' behaviour. There was clearly an element of 'points chasing', where members of WSC registered online merely so that they could receive points, as they did not appear to extend their interactions any further. This behaviour artificially inflated the online registration number, as well the hits on the website. Given the intimate interplay between eHIC and WSC, the change in leadership started to shift the emphasis of wellness from the online world to the 'physical' world. And as a manager remarked, there was a switch towards WSC's 'real world' network of partners:

And WSC is kind of moving away from just the Web, you know. I think we have been fairly Web centric. Now they have said ... no, for nutrition, you have got to go and see a nutritionist, which I agree with. There are certain things that we are not very good at, for the Web. You are not going to go to the gym on the web. You are going to go to the gym near you, physically, you know, physical ... (System architect, interview 43, pp 37–38)

Another critically important change was the appointment of the new head of eHIC. The previous head had been tasked with running the newly formed card business and was to become chief operations officer (COO) of all local functions that supported UAG's international operations in the US and the UK. The move of the previous head appeared to be a major loss for the eHIC team. Apparently, while the previous head had protected eHIC staff, the new head did not have the style to cope with senior management and seemed to be 'caving in' to their requests. Moreover, the new head's style was perceived to be a more formal, 'colder' and clinical style of management. Many of the staff members believed that formality had emerged so that management could allocate blame and were cynical about the changes. And many eHIC staff also believed that with the previous leader moving out, it made it easier for detractors to become more vocal about the arguments against the online channel.

At the same time there was a clear shift in that the IT organisation became bureaucratic. The 'family feel' of eHIC was being replaced by this 'corporate feel'. For instance, the new go-live process was much more formal, even requiring approval sign-off by senior management. Testing, which was once the domain of the same business analyst (BA) who had captured the requirements, was now the responsibility of an independent team of specialists. Furthermore, changes to the databases required a formal paper process and no longer relied on personal

relationships with the database administrators alone. Many forums were emerging within the IT department where approvals took place, such as the developer and architect's forum. There was also a shift from in-house development to buying package applications and customising them for the organisation's needs. Moreover, representatives from business were being invited to attend the weekly operations meeting, which was once the exclusive domain of the eHIC management team. Business inputs were sought into areas such as responding to the site feedback queries and enhancing the user experience in general.

Meanwhile, there was this growing opinion among eHIC and some of the traditional systems staff that the organisation was 'putting a squeeze' over them. Although the organisation was not using the word 'retrenchment', a lot of the staff began to feel insecure and started to leave. A lot of ill feeling was expressed over the new head of e-commerce, whose leadership style did not lend itself well to 'old guns' who had worked under the previous, more charismatic leader. Meanwhile, the actual allocation of staff to front-end and back-end teams meant that many eHIC staff had to leave their current e-department and move into an unfamiliar systems area. For instance, 80% of the members of the Wellness team moved to perform back-end responsibilities. Indeed, the number of front-end analysts left in the Wellness team was one. As a result, there was a massive exodus of both the traditional systems and eHIC staff, and as much as 40% of the eHIC team resigned and left the organisation. One of the business analysts who did not leave highlighted the dissatisfaction experienced by the eHIC staff and provided his perspective over the mass departure of staff members:

I think they believe they have been sold out. The move itself wasn't very well thought-out and the processes ... I think the emphasis of the thinking was more of how it was going to work for business, as opposed to how it would be perceived by the individuals that were involved. But the general feeling was that there wasn't enough thought put into this, for the restructure. The general feeling is that we have been sold out ... What, the reasons for the change that you have been sold, didn't match up to how management has been restructured as well. There were some questions why management were still structured in a similar as the previous one ...? (Business analysts, interview 41, pp 4–5)

6.4.5 Future situation

From an IT perspective, there was a greater focus on engaging with outsource partners. A number of local independent contractors were being hired, as well as developers from India, leading to its own set of challenges. Meanwhile, the desktop and desktop-support environment was also completely outsourced. The paradigm supporting build-versus-buy decisions, typically dominated by in-house developments efforts, was shifting in a new direction, towards the greater use of packaged applications.

Despite the internal rollout of wireless application protocol (WAP) infrastructure in 2004, it was only after 2005 that the WAP capability was rolled out to the user community. By this time 3G capabilities, which translated into better broadband access, were being offered by the three cellular network providers. This feature allowed interaction from cellphone or personal digital assistant (PDA) and enabled wireless contact with UAG. This initial focus was on intermediaries, since they generally had higher frequency of interaction with UAG via other channels, and this user segment was more likely to be using cellular phones and PDAs. The general focus also shifted to the B2B components of the site such as the employer, intermediary, and provider zones. There was growing support among these business areas to sustain the online channel for their communities, which had generally been lacking in the past. This was helped by the declining emphasis on the wellness aspects of the site.

Moreover, there was greater emphasis on understanding online behaviour. There was an initiative to establish a data warehouse capability within the organisation's nascent Oracle data warehouse platform to enable this process. Furthermore, the firm purchased Webtrends, a reporting tool for measuring and analysing online statistics. However, integration into the existing J2EE architecture proved challenging. Moreover, there were issues around definitions of rules such as what amounts to a 'page impression' or 'unique session', as defined in the package, as opposed to what the business required. Alternative research approaches included greater engagement with external research houses to research how to 'drive behaviour' of users.

Meanwhile, a lot more effort was being expended on the international initiatives. Indeed, apart from maintenance and product changes, the local website was managed on an ad hoc basis. The only major initiative on the local website was the addition of online services to support the new

credit card initiative. H-World no longer existed. The Web technology itself had become completely immersed in the fabric of the organisation, and the website was simply one of many channels to engage or interact with stakeholders. The transition of eHIC from what was envisaged at its birth to what transpired had clearly moved in another unintended direction. Its latest mutation compared with how it was conceived in 1999 departed in yet another interesting way.

6.4.6 Lessons Learnt

At this point it may be fitting to provide certain general principles that organisations wishing to pursue similar implementation initiatives can draw on. First, despite the hype associated with certain IS innovations, firms should pay attention to issues specific to their context and assess the business value of the innovation before proceeding to commit resources. Second, the firm's should assess its own readiness from a cultural perspective and the maturity of complementary systems in the larger IT community. Since SSTs deal with external users who have more discretion over which channels they can use, the firm should consider the context of the user within the larger social environment and the enablers and barriers to SST use. Firms should not underestimate the 'stickiness' of traditional channels.

6.4.7 Summary of the case study

Since 1999, eHIC had undergone many transitions to eventually manifest itself in its existing organisational form. An overview of relevant events is presented in a timeline in figure 6.13. Many external and internal trends were interacting to influence the trajectory of e-commerce in the organisation.

When the promise of the dotcom paradigm to streamline and revolutionise the firm did not materialise, there was this ongoing debate on the viability of the online channel compared with the traditional channels. There were two opposing views in the organisation: the transactional view vs the relational view. The intended role (and in hindsight the idealistic goal) of replacing traditional administrative processes, replacing the call centre, and bringing to an end print-based marketing to alleviate increasing cost pressures created a legacy of resentment among targeted

functional areas. There was also the challenge of being isolated from the traditional systems environment and issues with priority setting, with favour given to the traditional channels as opposed to the online channel. The various macro contextual dynamics related to connectivity also hampered progress.

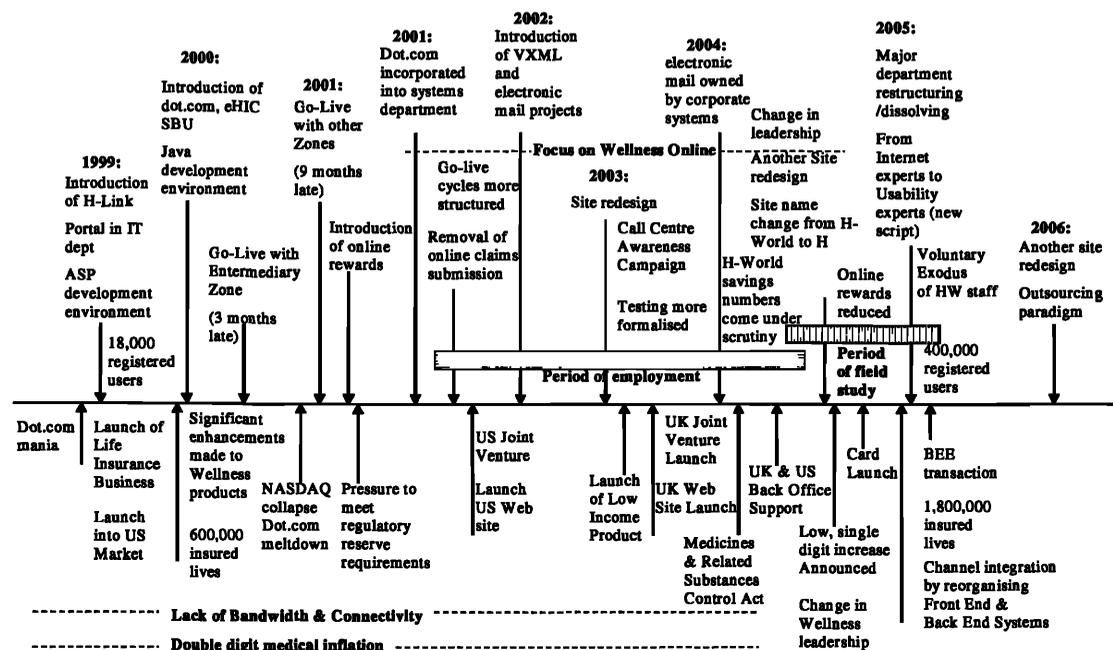


Figure 6.14 Series of key events in the evolution of eHIC

Source: Extracted from documentation and interviews

Despite major structural changes over the years, the status of the online channel was always fragile. On the upside there were elements of success with the B2B channels, specifically with brokers and employers, and on the B2C side among those members that were devotedly affiliated to the Wellness program and those who had a high servicing need from a medical funding perspective. However, when compared with the traditional channels, the online channel seems to demonstrate only pockets of success for both B2C and B2B relationships. The sporadic and tapering use among the majority of users and the high lapse rate were of increasing concern. Furthermore, a large proportion of the member base remained non-adopters of the online service.

But self-servicing appears to be playing a valuable role for at least a minority of those habitual users and creates important capabilities such as internationalisation and usability competencies

for the healthcare insurance organisation. However, these events appear to be somewhat emergent, rather than deliberate. It is clear from this historical review that the implementation of self-service technologies, while based on rational and economic ideals, was more fluid, transitory and unpredictable than fixed, measurable and determinable.

6.5 Conclusion

Understanding those elements that are crucial to the implementation of information systems is difficult to assess in isolation, since they represent complex interactions that can only be understood over time. In this chapter, I presented the case study's organisational context and history. The chapter described how the firm had to apply innovative risk management expertise to develop its products, while complying with the changing regulatory environment. At the same time it had to maintain affordability and quality of care for its members and profits for its shareholders. It also showed how the historical context, characterised by major regulatory changes and events such as the period of dotcom hysteria, together with the changing regulatory and organisational context and drive towards domestic growth and internationalisation, influenced the shaping of the online self-service technology throughout its implementation. Furthermore, it demonstrated how these events were intertwined with the external user's experience in the context of traditional channels as well as the growing array of alternative technology-based channels and communication media options. Most of the major events that occurred during the span of the case study have been revealed in sufficient detail. In the next two chapters, I provide a formal analysis of the case, using both structurational theory and ANT respectively, as the basis for developing our understanding.

Chapter 7

Interpretation of Case Study: A Structural Perspective

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7.1 Introduction

In the previous two chapters, I provided a backdrop for the interpretation of the case study analysis, by describing broader social issues in chapter 5 and specific events at HIC in chapter 6. In this chapter and the chapter that follows, I will apply the theoretical insights outlined in chapter 3 and chapter 4, and present a formal analysis of the SST implementation process at HIC. The case at HIC is analysed using two theoretical perspectives, actor-network theory (ANT) and structuration theory (ST), in an attempt to gain a better understanding of the implementation of self-service technologies (SSTs) in the social context. As explained earlier, structuration theory has been generally applied to IS research that had process and context issues as a central concern. Therefore, it seems justifiable to first use this theory to assess how much understanding can be gained in analysing the case study. Although many limitations with regard to structuration theory have been pointed out in chapter 4, I will employ it here to analyse the case and see where it leaves questions unanswered in understanding the HIC case.

In chapter 8, I will demonstrate how actor-network theory in this particular study can either complement the structuration theory findings or provide a somewhat different understanding. In applying these theories, it is not my intention to describe the implementation of H-World at HIC as an exceptional failure or as an exceptional success. Instead, I would rather argue that the implementation process mixes up success and failure and other such dichotomies is a messy way, and one should direct one's attention to understanding this intertwining. Together, I expect these theories to provide a richer and deeper understanding of these entanglements.

In chapter 9, I focus on the primary aim of this thesis, which is to develop a conceptual framework for understanding the social context of SST implementation and to offer an extension to a more general IS implementation theory.

7.2 The shifting enactments of self-service technology-in-practice

7.2.1 Introduction

In the first analysis, I will use structuration theory to understand the case study. In applying the theoretical framework, I follow a common thread in my analysis, according to multiple stages of enactment. Using Weick's (1995) formulation, I propose that sense making triggered by a SST's

introduction sets the stage for structuration in an organisation. Weick (1995) describes the process through which humans shape and structure their reality as a process of enactment. This concept assumes that designers of SSTs take a proactive role in bringing forth their realities through their interpretive schemes, despite the reality of ‘the way things are’. In other words, SSTs are in essence socially constructed realities that are as much in the minds of the designers as they are material structures (Morgan, 1986). While most research on IS implementation has focused on the processes that enable or constrain the use of technology, I will argue that sense making lays the groundwork for later structuration (Siino and Hinds, 2004). In other words, agents are both constrained and enabled in their sense making by existing structures in the social setting. As will be observed, the subjective nature of SST in this particular case gave the designers room to invoke three particular cognitive frames, from that of a channel of choice, to a channel that dazzles, to a complementary channel.

This series of three major enactments of the SST will be used as scaffolding for the analysis. Furthermore, I study other concepts of structuration theory explored in chapter 4, such as facilities, norms and interpretive schemes, systems of signification, domination and legitimation, routinisation, enabling and constraining features, and intended and unintended consequences. I also augment the structural conceptual model established in chapter 4 with key concepts from Giddens’ (2003) later works on the consequences of modernity. Jointly, these concepts will serve to uncover important implications for organisations implementing SSTs.

According to Orlikowski and Iacono (2001), any analysis of the IT artefact must acknowledge:

- That the IT artefact is shaped by the interests, values and assumptions of designers and users
- That the IT artefact is embedded in a historical context, and therefore consideration must be given to the cultural aspects of the implementation journey
- That the IT artefact is composed of a multiplicity of fragile and fragmentary components
- That the IT artefact emerges from ongoing social, political and economic practices

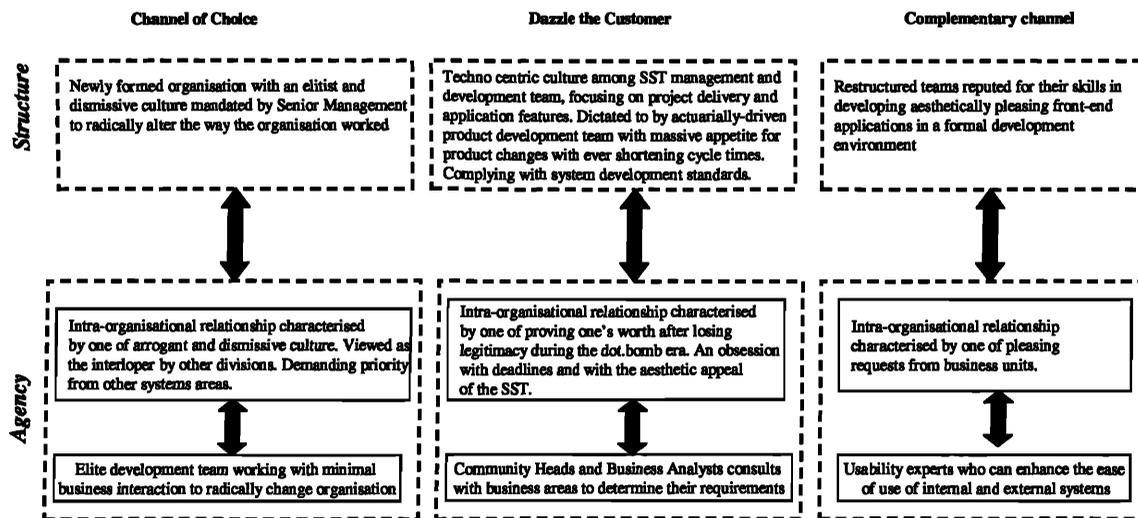


Figure 7.1 Self-service technology in practice – shifting enactments by designers

Source: Adapted from Orlikowski (2000)

In heeding Orlikowski and Iacono's (2001) call to engage more explicitly with the way in which the IT artefact should be conceived, the figure above demonstrates how the structure and functionality of SST constitute a reflection of the shifting interests and values displayed by human agents over time. As a pure-play strategic business unit (SBU), the SST's purpose was to replace or substitute the traditional channels. As a business unit integrated into the IT department, its role was relegated to supporting the brand and the Wellness program. In its most recent mutation as a complementary channel, it became a stock of usability experts that could deliver front-end development expertise for the rest of the organisation, including all systems and channels. Eventually the online channel itself was fully integrated in the firm's business functions. During these episodes, the SST faced an incessant challenge of legitimacy. Consequently, eHIC continually reformulated its purpose to maintain its legitimacy. As will be observed, owing to the contradictory logics, interests and values at work in the eHIC context, the dynamics of legitimacy were crucial in the implementation of the SST.

7.2.2 The channel of choice

Traditionally healthcare insurance products operated in the name of its pool of members, rather than individual members. This meant that the risk of having to pay for healthcare was borne by

all the members of the pool, and not by each contributor individually. The consumer-driven healthcare model shifts the responsibility to the individual to make more prudent decisions about his or her healthcare. The assumption inherent in this model is that individuals make tactless decisions about their healthcare, and will only act prudently when their own money is at stake. The consumer-driven healthcare approach transforms the identity of the patient into a consumer and imposes the belief that consumers are capable of making decisions about their healthcare if they have the relevant and appropriate information. Traditional healthcare financial models have also been associated with promoting a ‘moral hazard’, with private healthcare providers manipulating market forces towards their own interests, thus rapidly increasing the cost of healthcare. Advocates of consumer-driven healthcare are convinced these new products will change member behaviour, which will in turn force pharmaceutical companies, hospitals and physicians to compete more aggressively on quality and cost.

Traditionally, the healthcare providers have had immense powers, claiming the right to make decisions on behalf of the patient, based on their professional expertise and own codes of conduct. This prevailing attitude reflects the current structures of signification, legitimation and domination before these looming reforms in healthcare insurance products (see table 7.1). At an institutional level, the intention behind consumer driven-healthcare products is to empower the patient in the decision-making process when engaging with the healthcare provider.

From a broader social structure perspective, the product served to perpetuate the conception that South Africa has an exclusionary healthcare society, with these products being a luxury of the ‘haves’. The modality of private sector organisations reinforces a ‘financially dominated’ access to quality healthcare, with a contemporary emphasis on the importance of individual effort in generating the economic resources that underlie their own care (see table 7.1). This language of individual ownership obviously weakens society’s sense of collective responsibility for its most vulnerable members. Indeed, one can argue that HIC’s products flourished because of South Africa’s legacy of societal-behaviour patterns deeply rooted in apartheid. In fact, the product design shifted the locus of rights and responsibilities for financing healthcare expenses from the government and employers toward individual consumers. For employers in particular, the rapidly increasing costs as a result of the staggering Aids epidemic, poor public service infrastructure, and mounting double-digit inflation of medical aid motivated them to shift the responsibility for healthcare expenses to the employee. The high costs faced by employers in subsidising medical

scheme membership for their employees has also encouraged the creation of cash (or cost-to-company) packages that further transfer the burden of healthcare spending onto the individual employee. In fact, fewer South African employers are now willing to offer new employees medical scheme cover that extends beyond the pensionable age (Doherty and McLeod, 2002). In a sense, employees are trapped because contributions to a medical scheme are enforced by the employer, are tax-deductible and are sometimes co-paid by the employer. Since profit making is the dominant value of actuaries working in private healthcare organisations, they are blind to these effects, because they are traditionally not concerned about the social costs of economic activity resulting from their models (see table 7.1).

The triumph of consumer-driven healthcare in South Africa then was by no means preordained. During the past decade, rhetoric about the ‘free market’ and the ‘empowered consumer’ has cloaked changes in the South African healthcare insurance context that bear little relation to ‘healthy competition’ and ‘consumer choice’. During the consolidation period, many healthcare insurers were eliminated or absorbed by their larger competitors. Healthcare insurers and employers who were seeking to absolve themselves of the burden of healthcare costs are subsidised heavily by the government, in the form of substantial tax breaks given to predominantly wealthy South African employees. Consumer-driven healthcare firms have persevered to intentionally exclude ‘risky’ members from their schemes by pricing and mechanisms like the medical savings accounts (MSAs), which have merely shifted more risk onto the consumer. As already alluded to in chapter 5, MSAs tend to benefit more affluent consumers, not only because they are complex to understand and manage, but also because the amount of savings is worked out as percentage of total contributions – that is, the higher the contribution, the more savings a member has. Brokers driven by commission fees have also applied their cunning to increase their market share and achieve growth targets by shifting willing employers and trapped employees from closed to open schemes. Indeed, the new government has been unassertive when facing resistance from the powerful financial services sector. The authority and legitimisation of the National Health Department in particular have been increasingly called into question. For better or worse then, legislation before and post-apartheid passed by healthcare regulators has played a more important role in the shaping of consumer-driven healthcare than free market forces.

Following Giddens, the middle row in table 7.1 below is labelled ‘modality’, in other words, the interpretive scheme through which people in their everyday activities draw on the structures of signification. Such structures of signification did not go unchallenged. Regulator reforms were often accused by private healthcare firms of having a ‘socialistic agenda’. Likewise, the regulator was consistently accusing the private sector of ‘plumping up the pockets of shareholders’. Different interpretations were prevalent. Wealthier consumers were able to draw on their structures of signification and observe that the public sector was beleaguered by run-down infrastructure, lack of basic medicine and dire shortage of staff, while the private system offered excellent world-class health services. This interpretation served to strengthen the unequal representation between private and public, and the grave disparity between the two.

Table 7.1

Contrasting structures of signification

	Private healthcare providers	Private health insurer (HIC)	National health sector
Structure	Successful, private-for-profit driven industry	Successful, innovative financial services firm maximising profits and shareholder value	Beleaguered provider of public healthcare services and facilities
Modality	Professionalism and expert medical knowledge	Actuarial science (risk), science of preventative healthcare and clinical value of prevention, finance, marketing, and interactive use of Web technology	Regulator and public service provider
Interaction	Accountability in diagnosis and treatment of patient (mainly the wealthy)	Accountability in funding and administering patient’s treatment (mainly the wealthy)	Accountability for redressing legacy issues mainly as a result of apartheid by regulating industry and providing funding and equitable healthcare access to all patients (mainly the poor)

The process of engaging their members in managing costs is central to the philosophy of HIC's consumer-driven healthcare product. Internet-based self-service technologies are one of the key ways in which the insurer is seeking to 'empower' its consumers with the knowledge and tools to make decisions relating to financing their healthcare. In the same way, the firm was attempting to shift the identity of its members from healthcare patients to 'empowered consumers' whose concern would include both directing their health and healthcare finances and the managing information related to their health and healthcare finances. In this way, the Internet has become a key mechanism for promoting and managing a healthier lifestyle through the use of online tools for self-care and personal health appraisal. At the same time, it has become a mechanism for reducing administration costs by an anticipated reduction in call volumes. The irony of self-service is that the very industry that revolutionised the concept – the fast food industry and more specifically McDonald's with its Speedee Service System – has similarly inspired healthcare insurers to adopt this self-serve approach. In the same way that the fast food industry effectively eliminated the needs for skilled and short-order cooks, carhops, waitresses, and dishwashers, health insurers are now seeking to eliminate call-centre consultants and wellness practitioners. The irony is that the fast food industry that has 'infiltrated every nook and cranny' of modern society is largely answerable for wellness problems (Schlosser, 2002).

Meanwhile, driven by commercial imperatives, private sector entrepreneurs and Internet service providers (ISPs) that established South Africa as early pioneers of the Internet would contribute favourably towards enabling its use. However, the late entry of Telkom into the market would signify the onset of a bitter conflict between the monopoly and existing ISP rivals. As already alluded to in chapter 5, the government (the major shareholder) gave the monopoly a licence that granted exclusivity over the provision of telecommunications services. Consequently, the cost of access (South Africa was at the time regarded as having one of the most expensive international bandwidth prices in the world) would remain one of the key constraints on the use of the Internet and information and communication technology (ICT) development as a whole. Apart from costs, the speed of access owing to low-quality bandwidth infrastructure would serve to constrain the use of the Internet and the development of the country's ICT. Nevertheless, the rhetoric of the free market and the New Economy, with the Internet at the heart of it, was beginning to shape self-service in the health insurance context. Would this be the beginning of the 'industrialisation' of healthcare?

In South Africa itself the Internet and the whole dotcom thing was very new and very unknown so any idea almost would fly if you had the right backing. (Community head, interview 49, p 2)

As articulated by structuration theory, power is pervasive, and conversations as generators of meanings can never be held outside of power (Giddens, 1984). Any attempt to separate power and knowledge is futile, since the production of knowledge is political (Giddens, 1984). Power therefore acts as a regime of truth, producing and co-constituted by knowledge. As indicated in the excerpt above, this implies that the SST too was enframed by the prevailing regimes of truth. In 1999, the first regime of truth was that the Web would become the ‘channel of choice’ or ‘preferred channel’, and the aim was therefore to replace existing channels. An organising vision emerging from a heterogeneous collective – consisting of the academic world, media, consultant, software vendors, and dotcom start-ups – bestowed a lot of appeal upon this ‘substitution claim’ and other ‘efficiency’ inscriptions.

As already alluded to, the two major exogenous shocks to the structures of HIC at the time were owing to the rapid acquisition of new health members and the advent of Internet as a potential low-cost servicing channel (Barley, 1986). As depicted in figure 7.2, eHIC was aimed as an alternative service channel for the rapidly growing member base to self-service.

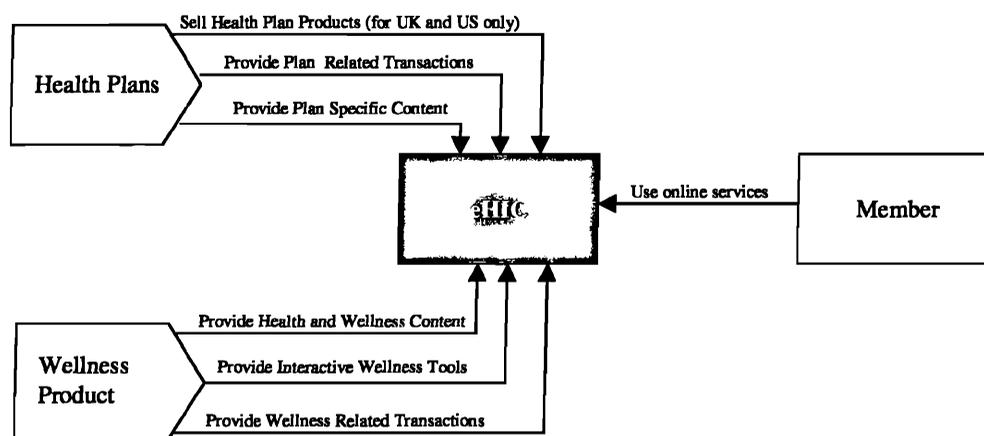


Figure 7.2 eHIC’s e-service model for members

Consequently, eHIC was initially configured as a Greenfield operation with an autonomous structure under an independent umbrella relating to mission, governance mechanisms and

budget. This structure served to give strategic impetus to the implementation of the SST and increased the visibility of the executive committee’s commitment to the efforts with e-commerce. Using Giddens’ key structuration concepts again, it can be seen that the member self-service website attempted to take on the role and identity of traditional channels like the call centre agent, the broker and paper-based marketing. The perception prevalent during the period of dotcom hype was that traditional channels would be replaced, and therefore these practices would become extinct. There was a widely held belief that the Web would create disintermediation in the marketplace. HIC’s administration costs and costs associating with servicing healthcare were growing rapidly at the time. A rapidly rising member base for HIC meant that associated costs in servicing were also escalating. An online self-service channel at the time had the potential to make HIC’s operations more scalable and more cost-effective. The prevailing rhetoric suggested that members could service themselves over the Web without the need for a call-centre consultant, human resources administrator or a broker (see figure 7.3). Since the capital and labour costs of the call-centre environment are among the most significant costs for a health insurer, and given the firm’s profit motive, the Web, if it became the dominant channel, would obviously be a ‘channel of choice’ for the firm.

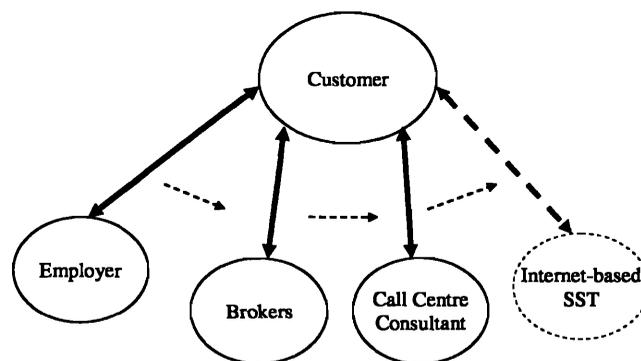


Figure 7.3 Consumer driven healthcare – shifting rhetoric of customer relations and interactions

As discussed in chapter 4, two kinds of resources are distinguished in structuration theory: allocative resources used to generate power over objects; and authoritative resources used to generate power over persons (Giddens, 2003). Giddens reduces technology to an allocative resource, thus approving of its role in generating power and control over materials (Orlikowski, 2000). However, this notion implies that technology does not feature prominently in wielding power over actors. But, as will be seen, technologies and particularly SSTs are intimately implicated in the structuring of certain user practices of interacting with their health insurer,

through the provision of information. Sharing the view of Orlikowski (2000), I shall treat SSTs in the rest of this analysis as a resource with both allocative and authoritative aspects, and capable of significantly influencing social practices.

As already alluded to, one common category of cognitive frames that was employed during the inception of the project was that of the Internet-based self-service technology as ‘the channel of choice’. The cognitive frame of the SST as the channel of choice seemed to invoke excitement and pride among workers employing such a frame. Walsham (1998) also believes it is important to trace the shifts in professional identity in the ICT context. This will help elucidate how groups, and individuals within those groups, view and depict themselves in relation to their work and the work of others. In this case the positive framing bolstered the team’s own identity, since they could then view themselves as the ‘type’ of individuals who work with a leading-edge technology that was to alter the way the business serviced its clients and partners. Reinforcing the ideology of ‘elitism’ is the notion that eHIC employees are special. There was a widespread belief among eHIC staff and managers that they were handpicked from among the top candidates in the country to work for eHIC. This is reflected in and sustained by eHIC technologies that were ‘best of breed’ too. This self-image of eHIC was a critical element of its culture and was reinforced constantly, through meetings, documentation, relationships with peers, superiors, rival system departments and internal clients.

However, early attempts to introduce eHIC had been effectively resisted. Successful e-commerce applications depend on an integrated view of real-time information and interoperability with legacy systems. The organisation was neither culturally nor organisationally ready for such a large computer-based integrated system. Furthermore, claims were being made that the Internet could replace traditional channels. This obviously created resistance by the managers and staff that were responsible for traditional channels and their system colleagues. The interpretive modality, the language and symbols of eHIC, such as ‘eliminate calls’, and ‘online claims servicing’, did not correspond with the dominant organisational paradigm and interpretive scheme which related to ‘human contact’ in servicing members. The goals and technology assumptions of eHIC were more akin to plant automation than to a healthcare insurance firm.

The SST implemented at HIC during this period embodied a specific social rule: ‘to replace people-driven support with automated support’. The systems were sanctioned by the ‘powers to

be' on the basis of efficient cost control and efficiency norms. The use of SST implied a new set of rules for coordinating and controlling the way services were to be provided to customers. The SST, with its new interpretive scheme, was introducing an alternative view of efficient and effective member service practices.

However, management failed to recognise the conflicts that were created between the traditional systems and e-commerce environment. The new information technology needed direct access to system components and databases. Furthermore, it required an integrated perspective of the member, and not a policy view of members, from these systems. No such infrastructure was available. These interfaces also required the commitment of the traditional systems environment. There was antagonism between the Java developers of eHIC and developers from the traditional systems environment over what were perceived to be 'badly designed Magic systems' which were deemed inadequate and illegitimate, although the Magic system was at the heart of the organisation's successful operations for years. eHIC staff struggled to obtain commitment from the traditional systems staff.

The traditional systems staff attempted to draw on their structures of domination, arising from their powerful position within the firm (as described in table 7.2) and their key role in enabling the firm's operations and product development initiatives. The traditional systems environment was reticent about participating willingly in developing the e-commerce capability. They did not share the same structure of signification of the autonomous control over e-commerce projects being driven by eHIC. Indeed, these structural contradictions led to further conflict as struggles between individuals and groups with different interests ensued. However, the power of the e-commerce venture was enhanced by its structure as a separate SBU which received direct support from the 'very top' with the CEO, COO and MD of HIC sitting on eHIC's exco. Despite the support of the exco, functioning as a separate SBU provided an inadequate interpretive scheme to draw on in communication with the traditional systems environment regarding development activities. Furthermore, the traditional systems department was able to resist, because the eHIC staff lacked the understanding of the traditional systems environment.

Table 7.2

Structures rules and resources that influenced or were influenced by the implementation

Broader environment	Organisational environment	IT Context	SST Context
Apartheid government deliberately encourages the growth of the private health sector at the expense of the public sector. Wealthier population shift to medical schemes to finance healthcare	Supported by large parent company, a pioneer in the innovation of HSA plans which passes the accountability of day-to-day medical expenses from employers to employees	Rapid application development to support product innovation, short time-to-market cycles, and increasing customer service need via traditional channels	Externally sourced elitist team employed to use the web channel to radically alter the manner in which clients are serviced
Double digit medical inflation in post apartheid era largely attributed to currency depreciation and profit focus of world-class private healthcare groups	Risk-oriented, profit-driven firm led by professional actuaries in product design	Functional perspective and stovepiping mentality to accommodate specific business requirements of functional areas	A strategic business unit responsible for replacing traditional channels thus reducing administration costs
Further degradation of overburdened public health sector as a result of AIDS epidemic and staff crisis	Leverage of existing broker distribution channel owned by parent company to promote new product and grow business	Chaotic environment influences the persistent use of unconventional technologies like Magic and CI-SAM	Interactive tool to enhance the Wellness product
Dramatic rise in open schemes and a decline in closed schemes that were accountable to employers	Respond to regulator's risk-rating prohibitions and increasing competition by developing Wellness concept to appeal to a younger, healthier audience	Lack of application of formal techniques	Enterprise and process perspective servicing multiple communities
Brokers encouraged by profit incentives and 'willing employers' to move employees to open schemes	Promote new Wellness concept by savvy packaging and effective use of mass media and broker distribution channel	Operates in batch mode to accommodate current architecture, to handover data to other functional areas and to reduce overhead on existing networks and systems	Mainstream technologies like Java, CORBA and Dynamo Web Server, Documentum, and Verity Search Engine
Regulator introduces a range of reforms to improve access of healthcare to all citizens leads to consolidation in the medical schemes industry	Expand operations to the US on the back of local success	Focus on supporting internal users	Lack of resources with formal technical skills and experience
Poor national ICT infrastructure characterised by poor connectivity, low bandwidth, and high costs advanced by predominantly state-owned and protected monopoly	Diversifies to life assurer to cross-sell and up-sell to growing customer base		Needs to operate in real-time mode to offer reliable and responsive service
Euphoria over the Internet's potential to create a 'commercial revolution', a party line of steering mechanisms which included academics and software vendors	From channel experimentation to radical shift in exploiting e-commerce: to combat threat of 'pure play' health insurer; reduce growing administration costs; and improve service levels for increasingly demanding members		Focus on building registered base of external users

The inadequacy of the interpretive scheme provided by eHIC applied not only to the traditional systems environment, but also within the business areas supporting the traditional channels. With regards to routinisation, the activities of the traditional systems areas and business departments were significantly disrupted as a result of eHIC. Apart from dealing with operational concerns and projects spawned by new product development initiatives, these areas had to now accommodate the eHIC initiative. Nevertheless, the seeds of change to the internal structures began here, since the eHIC staff were beginning to form and communicate a new interpretive scheme that emphasised a changed orientation from islands of disparate systems, designed to support specific functional areas, towards an integrated, process perspective of the business. Nevertheless, the cross-cultural differences between these teams adversely affected the software development process. Rather than address conflict and work out issues between system departments, the eHIC team created technical workarounds to overcome hurdles. This situation would eventually leave an ugly legacy with regards to maintenance.

At the time, the environment was very demanding. There was no time for formal reviews as such. Everyone rushed to complete tasks with the minimal documentation possible, so that they could meet their deadlines and move on to the next project. Given the time pressure to deliver, certain significant tradeoffs become apparent. On reflecting on the way the team had operated in the past, the head of H-World attempted to rationalise why some of these tradeoffs had transpired:

I think we have gone through an evolution. And if you, if you look at the different stages of H-World, when we started off, the rules were about getting stuff out the door. Quality probably was not one of the most important things, customer focus while considered was not the be all and end all. I think, the reason things change is because the evolution of the business changes. When you have got no users than keeping the users happy is not as important as getting users. And when you have got users then you need to keep those users happy and keeping them and retaining them becomes more important than growing your customer base. So, the why now is because your achievements change over a period of time and therefore your focus has to change over a period of time. (CIO Health Systems, interview 36, p 13).

Designers typically draw on structures of signification, through their interpretive schemes, which allow them to understand what 'quality', 'increase user base', 'reduce costs', 'increase revenues', and 'offer 24/7 service' mean, not just as words in themselves, but in relation to the social whole in which they have their meaning (table 7.3). In the context of a private sector organisation that is profit driven, increase in income and reductions in costs are desirable. Budget and time

constraints (deadlines) lead to certain tradeoffs. Thus signification is intertwined with legitimation, as there are organisational norms that also enable dissidents to use the relationships between income streams and costs to challenge the value of the new system. As was the case with eHIC, tradeoffs had to be made by either growing the user base or retaining the user base.

To be operational and available '24/7' is construed as necessary in this context, and here again the structures of domination intertwine with the structures of meaning and legitimation. As I will show later, SSTs have a strong tendency to promote systems integration via mechanisms such as time-space distancing and routinisation. The designers of eHIC were in effect attempting to routinise the SST into the lives of the user. For most interactions designed into the SST, time-space distancing is propagated, enabling the transactions to take place anywhere at any time (24/7).

Table 7.3

Designers technology-in-practice

Facilities	Norms	Interpretive scheme
Development environment	Deadline driven	Drive registration
Java	Go-live procedure	Drive usage
Dynamo Web Application		
Server	Testing eg browser versions	Meet deadlines
Oracle Database	Management reports	Dazzle the customer
HTML/XML/Java Scripting	Income statement	Reduce calls to call centre
	Minimalist development	
Chill room	methodology	Reduce administrative costs
Separate premises	Call statistics	Empower customer
'Best of breed' technologies	Staff Incentives	Make customer healthy
	Strategic presentations	Offer 24/7 real-time service
	Autonomy on development	Educate customers
	practices	
	Project reviews	Generate revenues
	English language	Offer convenience
	Product jargon	
	Business requirements	
	Specification	
	Graphics brief	

After all, the call-centre consultants, one of the key actors representing the firm that are traditionally involved in these interactions, are not co-present from a face-to-face perspective. Furthermore, call centres operate only during office hours and, except for emergency services, are not widely available on weekends. These norms do not programme designers' conduct, but are 'contingent claims' which have to be sustained and made to 'count' through the effective mobilisation of sanctions. The ability to mobilise sanctions depends upon access to allocative or authoritative resources.

Despite access to these resources, many of the user interactions that took place generally failed to correspond with the designer's intentions. Unlike the work context, the social practice of external users is composed of a varied number of routinised actions. The self-service technology was designed with a particular set of interactions in mind. These transactions represent the designer's intentions that the users' interactions with the SST should create. Embedded in the design was the notion to 'empower the customer' and therefore reduce calls and effectively replace the call-centre consultant with the Web browser. Norms refer to the selected mechanisms, techniques and sanctions through which the truth is produced and confirmed as such (table 7.3). These norms determined how the designers should act. In their design practices the development team did not consult with the users directly, but drew on call-centre statistics to prioritise the development of online services. This practice was aligned with the firm's objectives of reducing administrative costs, and reinforced cooperation with the e-business and the traditional firm. These savings were reported in an 'income statement' to sanction or legitimate their actions as being appropriate. For instance, the majority of member calls were claims related, and naturally these services were prioritised for development (figure D2). In contrast, the behaviour of only a minority of the users matched the intentions of the designers. Users who did not favour making a call to the call centre were particularly pleased with the new channel, as illustrated by the following excerpt:

I am so excited about the fact that I can actually keep track of my claims online, that I just had to tell you how great this is!!!!!!! I hate to use the phone, but love to go online!!! Thank you for a great opportunity that you give to your members!! (Online feedback, October 2001, line 478)

SSTs provided an interpretive scheme to designers that convenience and 24/7 availability would attract users to the channel. They assumed that the SST was a facility which users would prefer

to use rather than traditional channels. However, they were communicating a set of values and norms, such as call reduction, that were of more interest to the firm than to the user. As a result, in this particular context, for the majority of users the use of traditional structures and practices exhibited elements of persistence. One of the main contributors to this phenomenon was the poor ICT infrastructure. In particular, bandwidth issues, intertwining with the poor design approaches adopted internally, severely constrained the use of the website over the years.

... the site looks great but is painfully slow to use – especially having to enter invoices line by line and having to wait for a graphics intensive screen to load for each and every line. And having to wait for the bank details and conditions of use pages after every single claim! Surely this could be made much more efficient. (Online feedback, June 2001, line 188)

I have tried 4 times to register my claim, and obtain errors constantly. As I am an IT consultant involved in e-business design, I recognise when a company is trying, but rule number 1 is: make it work the first time, or don't take it live at all. The registration process was frustrating as I had to interact telephonically to be confirmed, then when I could register a claim it works poorly. Good intentions, poor execution. (Online feedback, October 2001, line 483)

I am very appalled by the speed or response time from the H-World web site, how can one gain access to all the info and receive reward points when one cannot even access the site properly. I currently have a corporate T1 Line so it is not my line speed; all other websites fly except this one. (Online feedback, June 2003, line 3162)

Queries seem to be slow - can the database engine be improved (or is it bandwidth related - I log in on a company network with massive bandwidth, but the gateway to the .co.za net seems congested from time to time. (Online feedback, August 2003, line 4385)

Defects in the design of the SST reinforce the notion that SSTs do not exist in a private world. They exist in a world of shared practices. The traditional systems environment was primarily concerned with serving the traditional channels and existing functional areas. There were clearly contrasting structures of signification between the two systems areas. The predominantly conservative culture in the traditional systems environment legitimated existing work practices which were less 'glamorous', and viewed the SST as an unwelcome overhead. The SST brought with it a challenge to existing structures and created a 'system contradiction'. Thus relationships between the two system areas were poor, and as a result interfaces were clumsily designed. This had an immediate effect on the user's experience as it translated into technology, process and design failures (as illustrated in the excerpts above).

Ironically, most employers who had offered their employees consumer-driven healthcare products were drawing on their modality of protecting corporate information assets as a priority,

thereby restricting Internet access to employees at the workplace to alleviate security concerns. In this instance, I will show how employers drew on values and norms biased towards interests of productivity that direct and enforce how 'working time' should be utilised.

For the poor and marginalised groups, they were by implication already excluded from these innovative services. As Castells (1998:74) reminds us:

Areas that are non-valuable from the perspective of informational capitalism, and that do not have significant political interests for the powers that be, are bypassed by the flows of wealth and information, and ultimately deprived of basic technological infrastructure that allows us to communicate, produce, innovate, consume and even live, in today's world.

Next, the decision not to provide online sales capabilities for the local market highlights the contested power relations and negotiations between the new channel and traditional broker channel. This is reflected in a comment by one of the senior managers:

The Intermediary channel of UAG has been one of the success aspects, and not one that we would got to be messing around with. So, the advent of a direct to consumer channel would probably cause some kind of dissent amongst our diehard intermediaries. (Operations manager, interview 22, p 20)

Professional networks played a dominant role in the firm's economic interests. In the healthcare market these are shaped by social and kinship obligations or as embeddedness (Granovetter, 1992; Schultze and Orlikowski, 2004). The threat of e-commerce to destabilise these relationships could impact and heighten the levels of distrust between the intermediaries and the firm. Therefore the marketing director and CEO of the life business voiced their reluctance over the potential use of the Internet channel to sell products directly to the market. However, as with the UK and US venture (below), these social networks were interpreted differently. Nevertheless, the prevailing social networks served to constrain the implementation of the self-service technology as a direct to consumer sales channel. The next two excerpts describe the users' inability to evaluate HIC's different plans to make a purchase decision and demonstrate the effects of omitting the role of the sales channel from the design of the SST:

One wonders: what is the point of having to register to use your site!!!! After completing the registration procedure, I can still NOT get any detailed information on your HIC Health plans - which is ALL I really wanted ... I personally don't see why I have to register at all, in order to obtain product info. I understand registering to use on-line services, but requiring people to register (and disclose personal particulars) simply in order to obtain the information required to potential invest in your products is unfathomable. I was clearly

under the mistaken impression that you were in the business of selling medical aid plans. If this is the state of your website, I wonder what sort of hoops I would be expected to jump through to obtain such a plan, and whether I would be similarly dissatisfied. (Online Feedback, March 2001, line 304)

I want to investigate the various medical aid options that HIC has, as I am considering leaving my current medical aid and joining HIC. I cannot however get this information from your website which is really frustrating. I registered myself as a guest yesterday as I am not a member and I logged in under my guest login, but I am not allowed to see the things I want to see because it says I must log in to view the product option, in other words be a member. I presume to be able to click the links on the RHS [right hand side] of the screen. (Online feedback, October 2001, line 487)

Clearly sales of insurance products by intermediaries are implicated in operations of power. Intermediaries can be viewed as authoritative resources of the firm that control and coordinate sales activities in the South African market. Being an authoritative resource that has access to sales resources, any attempt to bypass intermediaries could potentially damage the growth aspirations of the firm.

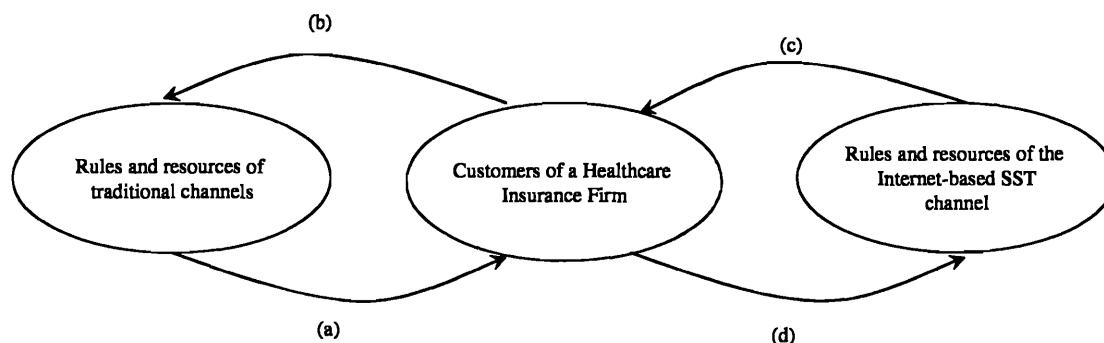


Figure 7.4 Linkages with customers in the context of traditional and novel channels

Source: Adapted from Orlikowski (2004)

But for most of the members at the time, speaking to a call-centre agent when engaging with their health insurer was well routinised in their lives. Figure 7.4 illustrates how this shift to self-service had implications for members whose identity the designers of the SST were attempting to reconstruct. A number of reasons made it a routinised practice for members to speak to call-centre agents.

First, the Web was entrenched in new norms. For instance, one needed to ‘register’ to use the online service, and one had to determine one’s user name and password and remember them. But to interact with the call-centre agent, one had only to use a phone number and have access to

one's membership number and ID number as part of the member's identification verification process. In contrast the traditional practices were well institutionalised.

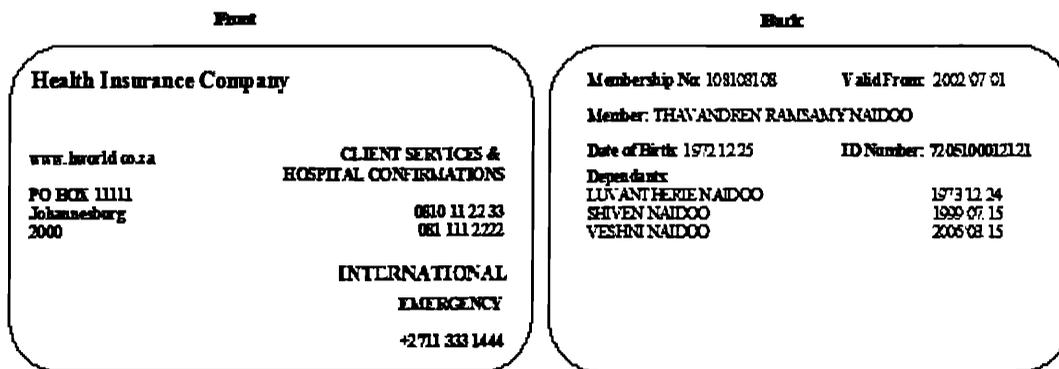


Figure 7.5 Sample membership card

Consequently, security concerns were constraining the use of the SST, whereas the conventional channel, in the form of the telephone, is accessed using a telephone number. As illustrated in figure 7.5 the telephone number is inscribed in the membership card. The membership number is provided to a call-centre agent, who is then able to facilitate the discussion with the member. One of the users expressed her satisfaction with engaging with the call centre in following manner:

... dealing with your Call Centre guys is JUST GREAT ... once you give them the membership number they have the information on their fingertips. Also the folks just seem to be enjoying what they're doing ..a pleasure to deal with ... (Online feedback, June 2001, line 218)

The extent of this problem is reflected in concerns raised by users as they grappled with the complex registration process:

Your registration process fails dismally! Having received access codes by e-mail for both my wife and I, in both instances reverted to a notification method despite confirming things like bank account no. with the call centre. I was also supposed to get priority registration! I'm still waiting 24hrs later! (Online feedback, July 2001, line 278)

I find it difficult to believe that before full access to the member site is granted I must receive a phone call from 'SOMEONE' that identifies themselves as working for your company and then requests me to supply information such as my ID number and address over a cellular phone. This compromises any concept of security that you may be attempting to enforce. Surely verification by electronic means serves to be more secure. How am I to know that it was in fact a representative from UAG contacting me. In the wonderful world of digital certificates and 128 bit encryption, surely it does not require too much to verify my

credentials by some means other than a telephone call. (Online feedback, August, line 577)

Apart from the greater cognitive effort required, the problem of forgetting passwords is probably greater for services such as healthcare insurance where for most individuals it is a low involvement product, unlike banking – and hence online banking – which is already more routinised in the lives of Internet users. In other words, using an online banking site monthly means that you are less likely to forget your password, compared with healthcare insurance, where events to prompt the general user to use the online facility are infrequent. With health insurance firms, unless one is prone to sickness, one has a mostly hands-off relationship with the provider. These remarks by a few senior managers allude to some of the differences between online banking and e-health services:

... I think the, the nature of our business, unlike banking, where you are required to interact on your account... So, it is a dynamic that we have given a lot of thought to, and we continue to juggle with over the challenge into how we exactly get people to come back to the site. (Operations manager, interview 22, p 11)

I think banking is relatively simple in comparison to us. Money going in and money going out. I mean, our product is more complicated,. (Community head, interview 55, p 23)

But I also think the nature of the product. Because the cheque account doesn't really change. You know what I mean? You understand how it works. So, where we introduce different things along the way, the product rules changes, limits changes, legislation changes. So there is always, you know, your family changes, you have different claim requirements, your needs. The way the doctors behave different, differ over time. So, the doctor might be inconsistent in the way he handles the claims, and sometimes the treatment . . . There's many unknowns. Many changes. (Programme manager, interview 42, p 35)

If I think of a banking transaction, it is a payment, or it is a transfer, order a checkbook, or it could be the derivative of a payment, like a recurring payment or many payments. But so it might be payment for a timeframe. From a medical aid point of view, there is probably a number of different kinds of transactions that you can do online today. You can do a pre-authorisation, you can do your claims, you can do in the UAG space all the Wellness checking. So I think there is more opportunity for providing online capabilities for a wider range of transaction types in this situation.. (Project manager, interview 33, pp 12–13)

Whereas banking transactions are frequent and the 'language' of banking is standard across banking institutions, the complexity of the health insurance product and its associated jargon were serving to constrain the use of the online channel. Embedded in the products is jargon like medical savings account, self-payment gaps, above-threshold balance, cryptic and abbreviated claims reason codes, all of which are beyond the understanding of the average user. A remark by

a user demonstrates the frustration that is felt because of the product complexity and its associated language:

... could you please dilute your language ... not every member is highly educated to can understand your oxford english. the purpose here is to transmitt info and not to impress via language protocol or style ... (Online feedback, July 2003, line 2648)

However, banking terms such as withdrawals, transfers, borrowing rates, lending rate, deposits and overdraft are well accepted and are part of the individual's practical consciousness. On the other hand, consumer-driven health insurance concepts are unique terms and for most members are not institutionalised in their social practice. In reviewing the medical savings account concept, while it sounds as if it should work like a bank account, it is subject to limits such as the tariff rate that the provider charges, the condition or procedure one is being treated for, or the health plan one has chosen. In addition, these products contain a host of other actuarial, clinical and commercially loaded language. For example, above-threshold balance, self-payment gap, medical aid rates, and private rates introduce a new language. Furthermore, while bank products remain fairly stable, health plans are subject to significant changes in terms of benefits structures and so on. While a call-centre consultant has the ability to retranslate these terminologies based on the impression he or she formulates of the client – that is, he or she has the 'interpretive flexibility' to retranslate consumer-driven healthcare terminology to facilitate client understanding – this capacity of the human agent is beyond that of a resource such as an SST.

It is not surprising that many members often face difficulties when they use their health insurance. During focus group sessions with call-centre staff it was not uncommon to hear that members often thought they were covered by their health plan and later discovered that their bills had not been paid. According to call-centre statistics, most queries by members are related to claims and product information (see figure D2 in appendix D). Therefore the jargon of consumer-driven healthcare products is often an administrative nightmare for members and healthcare providers, and equally for the healthcare insurer. Members do not appear to understand their benefit structures and providers are also overwhelmed by the different options. The unintended consequence of consumer-driven healthcare products is that their complexity introduces an administrative servicing challenge for the firm. While the profits of these firms are apparently associated with their product's ability to 'empower clients', ironically the cost burden

appears to be inherent in the way it imposes its own complexity on the consumer. Indeed, the notion of customer empowerment is restricted by the norms of the product itself.

Still related to language, another restriction imposed on the SST was that all content was to be presented in the English language. Post-apartheid, the Afrikaans community have been confronted with the down-scaling of their language in academic institutions, the public sector and the private sector. Furthermore, given South Africa's diversity, 11 official languages were promulgated by the state. HIC had opted to have only the English language sanctioned as its corporate standard for political correctness and efficiency. After all, offering services in some of the other 11 official languages would simply result in added costs to the organisation and create controversy among social groups associated with languages that were excluded. Language is central to the way in which people draw on social structures to engage in their daily practices. These remarks by users indicate that as a result of the product jargon, not having the SST in their own language was exacerbating existing barriers to adopting the self-service technology:

Wat van ons Afrikaanse mense?? Gebriuk meer verstaanbare taal ...
(Retranslated: What about us Afrikaans people?? Use more understandable language ...)
(Online feedback, January 2002, line 917)

Geen Afrikaans? Hoe dan nou mense? Of is ek blind? Ek is seker amper die helfte van julle kliente praat Afrikaans.. (Roughly retranslated: No Afrikaans? How come people? I must be blind? I am sure at least half of your client base speaks Afrikaans ...)
(Online feedback, January 2003, line 2555)

It would be nice if we had the information in another African language (eg Zulu or Shangaan). It's not easy for me to find what we are looking for in this somewhat difficult language. (Online feedback, April 2003, line 4004)

Corporate policy to standardise language usage further constrained the use of SST. Although the SST was restricted to one language, most of the call-centre consultants were bilingual (English and Afrikaans). The language barrier therefore contributed to the poor use of the SST and persistent use of the call-centre channel. By excluding other languages, for certain major user groups the firm had in effect curtailed the social structures of communication that enabled the interaction and reproduction of interactions with the SST.

Elements of sexist structures that persist in South Africa today are symptoms of an enduring patriarchal society. These structures, which stretch into broader society, also influence the design

of SSTs. For instance, the current identities based on the roles contained in the health insurance policy were insufficient for the user requirements of the SST.

I have sent four requests for help with accessing the site, to no avail. I completed the new registration process and although it was confirmed with my husband, the main member, I am still unable to gain access. I have also reported this difficulty to [HIC] customer services. Needless to say, I am not amused. (Online feedback, July 2001, line 331)

My husband is the main member. He does not do the internet thing ... he does not do the computer thing because he works and does not have the time for nitty gritty things. I have to do it. I am his spouse and you are just wasting time trying to contact him to register. Why on earth can I not do the registering? I don't know why you even waste your time to have a website. This is a shocking service you have. (Online feedback, April 2003, line 4022)

I have been an avid fan of the [HIC] site over the last year, but I am disappointed to find that 2003 does not give me access to the nutrition centre – as a spouse dependent. Although my husband is the principal member, I am the one checking on statements and making use of facilities such as HIC baby ... why the access denials? (Online feedback, April 2003, line 2475)

It appears that in a patriarchal society many women play a lead role in managing the day-to-day medical aid practices of the household. Apart from issues with the registration process and passwords, social roles present further challenges for the SST designers with regards to identity management and access control. In this instance, the designers had to inscribe extended roles to spouses, typically the female member of the family, so that they could access and perform the same operations as the main member, typically the male member of the family. As the excerpts above also demonstrate, the mandatory confirmation by the main member, the authoritative source, was required by H-World before such access permissions could be granted by the firm. This policy and its related processes were viewed as a constraint by many users. This created frustrations among the users who by virtue of the health insurance policy were spouses. In contrast, because of their role in their social world, wives often practised the lead role in managing healthcare issues. Therefore the designers had to realign roles based on the policy level more closely with the social practices of the members. More importantly, this observation contradicts gender difference studies that claim that usage of the Internet is lower among females (Elliott and Hall, 2005). This study illustrates the limitations of gender studies on SST use if they do not seek to understand its social context.

Giddens (1990) suggests that many of our modern abstract systems are prone to *design faults*. While ideally design faults should be totally eradicated, this is more complicated and difficult to achieve in social systems. The lack of skills of the designers, the inability to re-use existing system components, lack of organisational readiness, the time pressure to deliver, the persistent use of traditional channels and so on created a number of contradictory outcomes that had not been intended by the designers. The view of this user (below) is evidence of how greater trust for call centres was reinforced by design faults inherent in the SST.

You will not have happy clients if, after taking the time on the very slowwww system to update their details, clients find that they cannot save the information ... e-HIC still has a way to go but the service from the call centre is excellent. Hope you fix this soon. (Online feedback, October 2001, line 512)

Giddens (1990) also refers to a second factor, namely *operator failure*. Operator failure of an abstract system such as an SST results largely because those who operate it make mistakes. While Giddens (1990) acknowledges that good design can lower the possibility of operator failure, he asserts that the risk of operator failure is always likely when human beings are involved. In the SST context, operator failures apply equally to those who design the system and those who use it.

The truism that familiarity leads to predisposition was certainly evident in the manner in which users persisted with the use of the call-centre channel. A general attitude was evident that there was a need for interaction with service contact, as opposed to avoiding service personnel. Certainly users were making cognitive evaluations of their channel preferences in their practice of using the alternative channels. Therefore, the more the unfamiliarity with the channel, the greater the cognitive evaluation of the time it takes to use, the effort required, the complexity of the process, and the reliability and accuracy of the outcome. The users must also feel a degree of control over the process. In other words, all these facets described above must be more effective online than in the use of the call centre or any other alternative channel. Even elements of operator or user-driven failure – such as ‘I forgot my password and was unable to view my claims’ – often lead to dissatisfaction with the channel and thus a tapering of users.

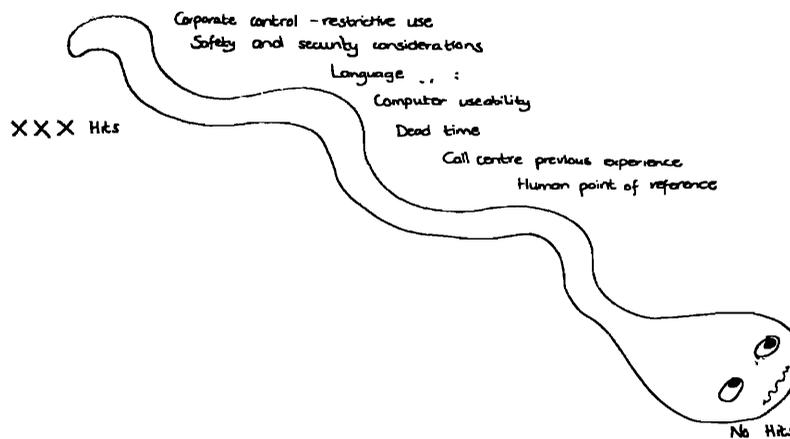


Photo 7.1 Some reasons for tapering usage at a user workshop

Source: Bataleur, H-World Customer Satisfaction Survey, September 2004

Nevertheless, over this period, the marketing of the self-service in UAG's magazines and via the call centre had resulted in a significant growth in the registered user base. Despite this, there was a fairly abrupt transition from a strategic business unit to a mere e-commerce department. This resulted largely because of the spate of dotcom failures and the inability to deliver the initial projects on time. On reflection, there was also greater circumspection about the practical realities of achieving the 'revolutionary' rhetoric associated with the new channel. Furthermore, with the previous technocentric structure, 'the technology tail was driving the business dog' (Wilcocks *et al*, 2000). To improve relationships between the IT departments, the e-commerce venture was integrated into the IT division of the parent firm. Business units were also to play a more prominent role in directing the implementation of the SST.

Unfortunately after the dot bomb the board was very hesitant to release any further funding ... I think it was a saving grace in that they pulled us back into alignment with the organisational objectives and rather than we becoming a profit centre we became a cost centre. And it gave us a little more flexibility to have funds channelled to us to deliver the functionality and facilitate the objectives of the organisation. (Operations manager, interview 22, pp 4-5)

Meanwhile administrative costs continued to rise as elaborate changes to health plans that rationed care shifted more and more of the costs to members. Consequently, the limiting of care resulted in many more finance-related queries being serviced. The irony is that the most popular queries serviced online and offline were related to claims settlement issues. As the insurer began

to limit services and restrict access to treatments, it became increasingly important for consumers to monitor service failures. In other words, customers were being empowered to manage the growing complexity of the health plans they purchased.

There was this realisation that the SST was not having a dramatic effect on administrative costs as anticipated. As the firm experimented with the SST, the way in which the technology was being used began to shift. Given the commercial success of WSC in helping HIC differentiate itself and attract a healthy member base, the SST was to play a major role in enhancing the value proposition of the Wellness program. During this period the firm was aggressively engaging in product development for the wellness space. Part of the demonstration of value of the wellness product was through the interactive use of the online channel, which I will discuss next.

7.2.3 The channel that dazzles

During the ‘dazzle era’ there were certainly further clashes between the insurer’s interpretive scheme and the regulator. In this era, the regulator showed particular resistance towards risk-rating, where, on actuarially and financially sound principles, healthcare insurers increased the contribution costs of vulnerable groups, mainly the sick and elderly. While the language of finance and economics was the concern of the insurer, the language of equity and access guided the regulator. Partly to overcome the specific reform over risk rating without violating the rules of the regulator, HIC developed the wellness concept, which by design was aimed to appeal to the young and healthy market, thereby calculatingly reducing the overall risk pool of the insurer. This excerpt supports this notion:

At the time Wellness was becoming increasing popular. It was a rewards programme although they always called it a healthstyle programme that incentivised people to live healthy and in return they would get reduced prices on a number of things from airline flights, to gym contracts. The Wellness benefits were very good deals. And although the actuaries may tell you that it has enhanced the health of its members significantly, I think the biggest benefit to the company was the appeal of the Wellness programme to the young and healthy thereby reducing our risk pool. (Senior business analyst, interview 51, p 2)

The organisation positioned wellness as an attempt to curb healthcare costs by focusing on wellness rather than on illness. Inscribed in the design of their products was the basis that ‘prevention is better than cure’. Whereas health plan components such as the MSA were developed to make consumers accountable for the financial consequences of their decisions, the

wellness component aimed to reward appropriate behaviours. As opposed to gaining market share by drawing attention to health plan coverage, the wellness component was marketed on the premise that healthier lifestyles could translate into long-term savings on healthcare costs for the employer and the individual. During this time there was increasing consolidation in the healthcare insurance market, with the major insurers competing fiercely to sign up members. The wellness concept played a significant role in differentiating the HIC product in the marketplace and therefore attracted the attention of brokers and employers, and subsequently led to significant growth being achieved by the firm.

The website provides the space where every member can maintain their health or improve their health and their status, you know, the higher the status is, they will be rewarded for their healthy behaviour. Wellness' goal is to educate members on how to look after their health, and awarding points to drive that type of behaviour. (Community head, interview 26, p 11)

In supporting the wellness business during this period, 'dazzle the customer' was the most frequent cognitive frame employed by the e-commerce department. Despite the reshuffle from a SBU to a department, sense making around the SST in this vein reaffirmed the e-commerce department of their identity. After all, the SST was to play a significant role in the innovative Wellness program, using state-of-the art technology.

The most experienced team of developers and business analysts were seconded to support this initiative. Meanwhile, as a department within the IT division, there was now more emphasis on the project review process during this phase. Although there was slightly more discipline in the development practices, again minimal standards were complied with, such as the completion of the business requirements statement and project plan. This excerpt describes the ethos of low level ceremony that surrounded some of the projects:

If there is a business request he (referring to the business analyst) will come and discuss it with me briefly. He draws up the spec which includes the screen flows, use cases depending on whether we need use cases or not, the business has to sign off on the screens and basically the spec comes back to me and I look at it and depending on the complexity... so I will discuss it with the developer who's going to work on it. Its also time dependent, so if there is a short deadline there is no time for formal design and all that. So whiteboards become very useful. (Developer, interview 016, pp 6-7)

The online nutrition and stress centres were the two major projects implemented in this period. Both these projects were attempting to replace wellness practitioners, which included the dietician as well as the stress therapist. Giddens (2004) refers to this 'lifting out' of social

relations from local contexts of interactions and their restructuring across indefinite spans of time and space as *disembedding*. Following Giddens (2004), the SST can be regarded as a disembedding mechanism. More specifically, the SST exemplifies a type of disembedding mechanism referred to as an 'expert system'. An expert system in this instance is unrelated to the computer science conceptualisation. Instead, it refers to technical accomplishments and professional expertise that organise substantial areas of the material and social environments in which we carry out our day-to-day practices (Giddens, 2004).

Agents typically place 'faith' and trust in the competence of expert systems, such as those represented in the form of a call-centre consultant, broker or wellness practitioner. The agent accepts the risk when relying on the expertise of these expert systems. In other words, expert systems provide 'guarantees' of expectations across distanced time-space. For example, the agent relies on the accreditation process which evaluates the broker's competencies as a financial advisor, although agents are far removed from the accreditation process itself. In the same way, SSTs act as expert systems of behalf of the firm that remove social relations from the immediacies of context, that is, they reorganise social relations across large time-space distances (Giddens, 2004). The potential advantages of time-space distancing presented by the SST, both for the firm and for a wellness practitioner, are reflected in the following comment by a stress expert:

I mean, you know, it is much better reaching 50 000 people, than having a personal interaction with a 100. So, my philosophy again is, I am basically a communicator and then a teacher and then a healer. It is using all of those to teach people ways of taking control over their health. As I have said, you know, it is much better, even if you just create a sense of awareness amongst 50 000 than a 100. So, you get the message out there to a lot more people than you would in any other medium. And, I mean, that is the way that the whole world is moving. It is Internet ... you can actually speak to people in Australia who are living there but who are still on HIC, or who are touring in Europe. I mean, and they are on Wellness and they go to an Internet café. So, you are not limited to any certain space and time. You can really, you know, go out there and send your message all over. And of course then, what also happens is that any one person who accesses the Stress Centre can tell you many other people about it, and say, go and do it. So, the whole the dissemination where as you as an individual would never be able to reach so many people. (Stress expert, interview 35, p 13)

As the above excerpt demonstrates, the aim of the firm is to enable universalisation and mass production (Sahay, 2003) of the wellness practice. The SST initiative can be seen to be largely technocentric, interlinked with commercial rhetoric. Whereas traditional wellness encounters between patient and practitioner control space, thereby restricting the possible number of

interactions, with SSTs, through their control of time and absence of the wellness expert, the opposite occurs. SSTs produce ‘action at a distance’. Therefore in the altering of space, absence predominates over presence (Sahay, 1998), thereby increasing potential interactions. When using the online nutrition centre at a coffee shop, the user remotely operates her nutrition self-assessment form so that the system can provide her with a meal plan recommendation. In this process, the user captures a range of inputs related to her current weight, age, height, and waist measurements into the system. Thus, the SST enables the user’s control over time by performing action at a distance. There is no need to schedule an appointment with her dietician. SST technologies thus reflect inscribed assumptions of autonomy for the user and reach for the firm. However, these inscribed assumptions make their application problematic in the context of wellness. Traditionally, wellness practitioners depend a lot on information that cannot be transmitted easily online. Part of the problem with ‘remote’ weight loss or stress tools is their lack of surveillance when compared with peer-based programmes or face-to-face encounters.

... The advantages of going to a dietician, you go into a professional environment, you are having that contact with the dietician who can read you and build a relationship with you and become a partner in this process ... I think at the end of the day it (the online tool) is no substitute for that human contact ... What I mean is that the body language and the personality and you get to know the person, and you get to understand them and understand their lifestyles. (Nutrition expert, interview 46, p 15)

The ‘motivation’ role that a traditional wellness practitioner plays in her face-to-face encounter with the patient is also missing in the inscriptions of the SST, as this excerpt points out:

... I think motivation is a huge issue. I think because a lot of people associate eating with pleasure and not really with health-giving properties, I mean I am really generalizing now because there are people out there who do eat for health, but food is always around in the social environment while we are being entertained at parties, at social functions, and I think one of the challenges a dietician faces is that she is almost seen as the prophet of doom. You know normally dieticians are always seen as giving the bad news, ‘what you can’t have, what you shouldn’t eat, what you must avoid’ and these things are always there so that is a significant challenge because to get somebody motivated to override sensory pleasure for long term health is not a easy task. It’s the same challenge that a biokineticist will face for encouraging someone to exercise. So the motivation to actually follow the plan is extremely difficult in many cases and linked to that is that your success is completely dependent on the how closely the person is following your advice and once they leave your room you have absolutely no control over them. So a frustration that many dieticians experience is that they spend a lot of time and put a lot of effort working out individualized meal plans and recipes etc for the person and they may follow it for a few days and then the novelty starts to wear out if they are not losing weight fast enough ... (Nutrition expert, interview 46, p 14)

Following Giddens, it is apparent that the SST separates wellness practitioners and the patient in time and space, breaking the interpersonal connection between them which the practitioner

normally uses to apprehend the *condition* of the patient. Shared physical presence allows for continuous inter-subjective orientations between the practitioner and the patient, and facilitates multiple role-playing. SSTs alter the context in which relationships take place and the traditional manner in which the practitioner develops and maintains relationships with the patient through physical contact. This distorts the role of the traditional wellness practitioner.

The following excerpt suggests that there are broader structures in place that constrain the services offered by the online and traditional wellness practice environments.

... there is just so much competition from products out there on the market and quick fixes, Everybody has a solution to permanent weight loss without hunger or exercise and dieticians are constantly trying to bring people back to basics, help them through these advertising campaigns and marketing messages that are out there cos' they confuse people. Magazines are telling them different things, and of course even dieticians might disagree like two doctors who may prescribe different antibiotics. It just the way they practice. Dieticians may also prescribe different eating plans or have different opinions on things which are also difficult because the public is confused. So these are some of the challenges. (Nutrition expert, interview 46, p 14)

Other market mechanisms outside the health insurance firm are vying for the consumer's attention. The content delivered by the media plays a central role in how consumers construct their values and rules of behaviour. In an economic system that focuses on the narrow dictates of profitability, obesity has become big business for the very system that influenced it. Indeed, consumers are overwhelmed by the variety of diet schemes and weight-loss advice and products that are available in the marketplace. Even the dietetic practice itself is subjective, with different schools of thought making dissimilar claims about the best approach to weight loss. For instance, some focus on calorie reduction; others focus on the types of food groups (protein, carbohydrate, fat) such as low GI (glycaemic) index, and the use of supplements and so on, all serving to confuse the consumer.

Furthermore, food is an important actor in our day-to-day social practices. The Internet highway as a stop for online wellness tools is now competing with the more resilient structure of our road networks. Ever since the growth of car sales and the subsequent growth of suburbs – growth which road networks had encouraged – fast food organisations have grown into sprawling multinationals by exploiting prime locations within these highway networks. Even in developing countries like South Africa and in fact in many other countries around the globe, corporations like McDonald's have exported the values and tastes of their local culture. With this

homogenisation of international fast food culture, countries have not only lost their identity in terms of how, where and what they eat, but they have also exposed themselves to major health risks (Schlosser, 2002).

In most modern societies the traditional role of housekeeping has been displaced because lower-income ratios force both parents in lower- and middle-class families to work. Therefore for many households, fast foods and convenience foods have replaced the traditional home-made meal. In addition, despite the recent introduction of health warning labels, tobacco and alcohol companies continue to invest significantly in advertising at sports and cultural events, thus relaying the association of healthy and pleasurable activities with their products to a broad base of society. Furthermore, rising multinationals have changed food processing and production for commercial gains. For instance, meat produced by these industries contains alarming amounts of growth hormones, antibiotics and pesticides to increase productivity at the cost of potential safety and health hazards. Modern farming methods for fruits and vegetables that rely heavily on artificial fertilisers and pesticides have led to tradeoffs such as reduced nutrition. Furthermore, in most food manufacturing processes of staple items, such as flour, rice, and sugar foods, chemicals are used in the refining processes to increase productivity and the shelf life of these items at the cost of decreasing their nutritional value.

At the same time, changes in living and working patterns have resulted in a reduction in physical activity. To exacerbate the lack of physical activity problem the television and ironically the computer have also contributed to the relatively inactive lifestyles of people. Consequently, the consumption of tobacco, alcohol, processed, 'fast' and convenience foods are corresponding easily into the day-to-day practices of most people (WHO, 2002).

In this instance, we saw how broader social practices which have become persistent over the years are implicated in constraining the use of the SST as a tool that enables behavioural changes related to wellness. As a result of the pervasiveness of these broader social structures in modern society, behavioural changes are difficult to make, even with the guidance of a practitioner, let alone via a self-service technology. An excerpt by a wellness practitioner describes the challenge:

Behaviour change is an extremely complicated thing. It is. I mean, everybody who has been on a weight loss program knows that you can be as disciplined and, you know, with exercise as well for two or three weeks and if you skip the week, you have to start from scratch. I mean, people go into the behaviour change for six months, and they leave and then they have got to start, and then they have lost all that motivation. So, if people lose interest, the thing is, if they, if they had learned what they wanted to here, they would actually come back to keep on motivating. Because we need to sustain that devotion. If they have lost interest, they are a loss to the cause; they are back to old behaviour. That, that is what I have learned, you know, through experience. (Stress expert, interview 35, p 33)

Furthermore, the degree to which SSTs reflect the same attitude of trust and reliability which is so essential for expert systems is contentious. The following excerpt demonstrates how trust can go astray as a result of design faults.

... the nutrition centre still needs a lot of work – I have tried to do the meal plan thing and can't make it work and there is no understandable HELP section to help me. I have addressed questions a few times and received no answers at all. (Online feedback, October 2002, line 2440)

So how did the users feel about using these wellness tools online? For one, SSTs are subject to greater interpretive flexibility than systems designed for internal users. The registered user base continued to fluctuate around 20–26% of the member population.¹ Nevertheless, the focus on wellness contributed significantly to the growth of the registered user base. Ninety per cent of all users registered on the SST were also members of the Wellness program. The following excerpt by one of the senior managers discusses the ability of the Wellness program to attract users.

And, I think, thankfully for programs such as Wellness, the attention factor and the ability to reap rewards from certain behaviour, and going online to gather those rewards, such as flights online and so forth, have added greatly to the number of interactions one would require to have than with your typical medical aid society. So, no longer is it, did I have claims paid? It is also now to get my rewards, how many points have I got right now, what kind of rewards are due to me, and where can I go spend it or purchase cheap value added things from the various partners? (Operations manager, interview 22, p 11)

While the wellness tools did attract most of the users, they were not as popular as the applications that were concerned with the members' health plans. The monthly management report indicated that applications related to health plan issues, such as the online claims applications, were used as much as five times for every single use of the nutrition centre. Furthermore, only 10% of the registered user base had registered to use the nutrition centre. And given the tapering use among the majority of the users who signed on to join the nutrition centre, there was this impression that many users were joining merely to obtain Wellness points. The

¹ This figure must be understood in the context of children or other dependants who are included in the calculation of the member population.

Wellness program became an enabler of SST use with several unintended consequences, one of which (as the excerpt below suggests) was to earn points easily. After all, unlike other avenues for points, which required behavioural change like gym visits, quitting smoking, and losing weight, users merely had to login to earn points.

Well, one of the reasons why we gave people points was to attract people to come on the website. But these people were coming onto the website purely to chase points, and to move up statuses ... because motivation in terms of things like online travel bookings, which has, incidentally, come down since we have taken the points the way. (Systems architect, interview 43, pp 6–8)

I find the service from the website unacceptable. My husband purchased a large Life Policy through [LIC], he got 2 500 Wellness points, but not the 5 000 points for purchasing the policy. I reached zone 6 on Weigh Less, but have not had the points for this either ... I frequently read self help articles, but do not seem to receive the points for doing this. (Online feedback, August 2003, line 4453)

As the excerpt above serves to illustrate, one of the unintended consequences of supporting the loyalty program online then was that it created easy access for point chasers who were not genuine users of the website or converts to the Wellness program. Meanwhile, only a minority of users achieved gold status on the Wellness programme. The reality was that when the program was followed by a member, it did show benefits in terms of his or her health and subsequently his or her claims ratio, but only a few members instituted the programme religiously in their day-to-day practices. The Wellness program was functioning more effectively as a sales mechanism than a lifestyle-changing programme, as this excerpt suggests.

Well, a lot of people will say the reason they stayed this long on HIC is Wellness. The weird thing is even if they don't use the benefits, they still believe that. And I think that what actually is interesting is a lot of these medical aids companies, their service in terms of payments, is becoming fairly similar. You know, everyone will now say, we have got one day turnaround ... the servicing of clients is not as big an issue as in the past. Whereas, in the past if, it was very common, 'you guys did not pay my claim!'. And I think most of the medical aids have got servicing right in terms of payment processing. All electronic, it can't really go wrong. So, the primary incentive for members to move ... are moving to HIC, probably because of Wellness. You know, 'I am going to be part of your home loans, I am going to pay your groceries, I am going to do this, I am going to do that'. (Systems architect, interview 43, pp 6–8)

There are ethical dimensions to consider in the use of rewards schemes in the healthcare insurance environment. However, government seem unable to control by political means the use of marketing and psychology techniques to entrench consumerism in the healthcare space. Increased regulations are obviously not welcomed by the financial services business

'libertarians'. Meanwhile, reward schemes are becoming more pervasive. Many other firms and websites that can be more competitive with the pricing of their core products and services have begun to offer travel, holiday and other leisure discounts.

In summary, structures such as television, alcohol, tobacco and fast foods that support poor health are well entrenched in modern society. These structures enable the general apathy in healthcare to facilitate the re-enactment of poor habits as opposed to wellness programs. Furthermore, arms-length relationships do not work in the wellness context because the tacit knowledge of wellness experts cannot be easily inscribed into the SST (Pan, Newell, Huang and Galliers, 2007). In addition, the focus of the wellness applications on preventative care specific to nutrition and stress was too narrow. Here again they exclude the integration of these components into more serious medical conditions. By their design then, the applications were more suited to younger and healthier members than members with chronic illnesses.

For instance, in transferring best practices and procedures such as wellness programmes between contexts and countries, critical health issues facing a particular context are completely ignored, dismissed or forgotten. For example, in the previous chapter we explored how the Aids issue has reached pandemic proportions in the South African context. The incidence of Aids in South Africa is not limited to the poor, but has also affected the affluent part of the population, which is largely HIC's member base. While the healthcare insurer impressed the importance of wellness, it failed to tackle the specific wellness aspect with regards to Aids and therefore did not drive the informational aspects of HIV/Aids on the SST. Some HIV/Aids users felt extremely frustrated at being excluded from the Wellness programme:

For the moment I have only one thing to ask and that is why as a person with HIV, I should not be registered as part of the Wellness Med program. I must have missed it somewhere, but I didn't find anything conducive to make me join, as HIV is according to HIC a Chronic Illness. Surely, it should also be part of the program???? (Online feedback, January 2002, line 788)

Given the high prevalence of HIV/Aids in South Africa, and the increasing enrolment of low-income members into the scheme, the SST could have been used to provide education on anti-retroviral (ARV) drug treatment, as well as more specific nutrition information for HIV/Aids sufferers. Apart from the absence of such a feature being an example of commercial interests superseding social interests, SSTs are not 'normally' used for HIV education by healthcare

insurers in the US and the UK, who indirectly set the standards for the design of new SST features and functionality. After all, this would not be suggested in a Gartner Survey, Forrester Report, or one of the many healthcare information management and related journals. Neither would this be a priority for leaders in consumer-driven healthcare like Aetna in the US, such that one would want to naturally emulate this as a ‘best practice’. It is interesting to observe how global best-practice standards in SST implementation sometimes serve to advance the trajectory of the technology in directions that are at odds with local needs.

Even if it did address these local needs, it is unlikely that a SST can be an effective mechanism for the ongoing management of a serious medical condition like HIV/Aids. SSTs can influence the healthcare system, but not, it appears, by attempting to become a wellness or medical expert and not by micro managing the care of the SST. Nevertheless, the SST could have played a useful role in empowering persecuted Aids sufferers with information.

Furthermore, while consumers have become more informed with the arrival of SSTs, this does not necessarily translate to any radical transformation in healthcare service delivery. For real transformation, changes must be implemented in broader social structures in combination with key actors in the health structures.



Photo 7.2 The many faces of the H-World user²

Source: Bataleur, H-World Customer Satisfaction Survey, September 2004

² An external research company engaged with a cross-section of H-World users, segmented by SST use profile to develop a customer satisfaction instrument.

Another issue was one of scalability. This analysis reveals the complexities involved in rolling out technologies to a broad audience via the online channel:

Probably one of the biggest challenges is communication to a large base. How do you get the communication to be effective? How you take it to a large number of people and how you change their behaviour and the message to be very strong to achieve that? And equally you have to listen to that base and see where you are now achieving the line of clear communications. You are not talking to people. You are talking to a mass, an enormous mass, hundreds of thousands of individuals that ultimately form an opinion. And understanding that I think is quite a challenge. (CIO Health Systems, interview 36, pp. 11-12)

In designing Web applications to enable a broad reach, one of the challenges is managing the trade-off between the practical goals of the user and satisfying the user's experience. However, within this mix, corporate goals cannot be dismissed. In addition, the role of traditional channels influences the behavioural range of the user and must be considered. As has been demonstrated thus far, the firm has paid little attention to the structure of routines embedded in traditional channels and in particular their complexity and its effects on the SST use.

As part of understanding this challenge, a number of internal ad hoc studies were demonstrating that while the registered user base was growing, users were not using the channel as intended by the designers. These studies revealed that the structures of interactions that were defined by the designers of the SST were not appropriated by the users as designed. In many cases, users appropriated the channels to suit their own purpose. The major constraint for the SST appears to be other methods of interactions that have already been routinised into social practice. Indeed the SST did not significantly change the use of the phone. In addition, the SST structure appeared to be the most malleable. In other words, what Orlikowski calls 'interpretive flexibility' is noticeably heightened in the use of the SST. Although SST technology is a strong propagator of time-space distanciation, alternative channels have already been routinised for several years. While it is a given that social practice is not static, but evolving, according to structuration theory, practice must replicate, even to remain to stay the same.

In August 2004, the manager of the customer intelligence department and I attempted to profile the H-World user base according to the frequency of interactions with the call centre and online channel (see figure D3). Structuration theory proposes three modalities by which social context influences interaction: interpretive schemes for meaningful communication; facilities for the application of power; and normative schemes for the legitimisation of action (Poole *et al*, 1985).

Therefore, interaction cannot be studied without also considering the norms of structures within which it is situated and how those influences have shaped the structuring of interaction itself (Barley, 1986).

Lamb and Kling (2003) have argued that the current concept of the user is socially thin and needs to incorporate multiple channels, contexts and roles to enhance our understanding of the adoption and use of information systems. Based on their social actor concept, we made the an assessment of the user base. Many user social groups emerged, based on their differing interpretations, varied access to channel resources, and norms that legitimated different ‘orders’ of use:

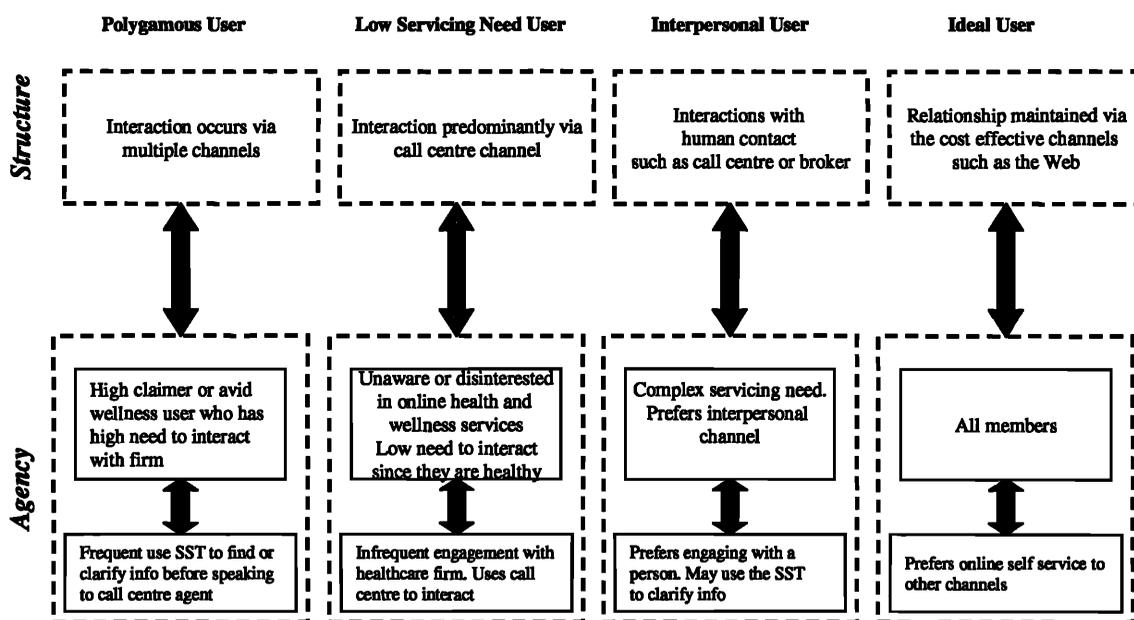


Figure 7.6 Self-service technology in practice – enactments by users as social actors

Source: Adapted from Orlikowski (2000) and Lamb and Kling (2003)

The analysis attempted to understand social practices by these four user segments, specifically polygamous user; low servicing need user; interpersonal user; and the ideal user type (see figure 7.6). Low servicing need users require fewer claims servicing and are typically not active wellness participants. They are nevertheless relatively healthy members who have a low claims ratio and a low need to interact with their healthcare insurer. Polygamous members are characterised by a high servicing need through multiple channels. They contact the call centre

and use the website frequently. They are more demanding, and typically have a high propensity to interact with their health insurer, as they experience problems more frequently with financially related matters such as unpaid claims. It is difficult to implement mechanisms to influence this category of user to switch to the online channel exclusively, since their behaviour reflects that they have certain needs that are unmet on the online channel. On the other hand, interpersonal users have high servicing needs. Their predominant mode of interaction is via the traditional call-centre channel and they prefer interpersonal contact. They may be unaware of the SST or, if they are aware, they have chosen not to register. They may be part of the population that simply does not have access to the SST. It is not improbable, given design defects and operator failure, that they represent a portion of members who are dissatisfied discontinuers of the SST. For these types of users, the firm could drive targeted registration, recovery and awareness campaigns. However, the difficulty lies in attempting to change their interpersonal preference. The ideal user type (for the firm) segment is composed of loyal SST users who exhibit a low propensity to call the call centre. Irrespective of their servicing need, they prefer self-service to call-centre interactions.

Other unintended consequences of the SST are worth noting at this point. Instead of reducing calls, the SST was correlated to customers who call more on average. Although the SST was not necessarily the cause of these calls, this behaviour was associated with the higher service demanding client. Furthermore, instead of achieving loyalty from a majority of the member base, the SST appeared to serve a minority of clients, made up of those who were had high claim propensity and those who were 'loyal' to the Wellness program. The differing social roles of the users emerged as they drew on their patterns of signification, domination, and legitimation to interpret the role of the SST in their environment. This ideal user type represented a minority of the SST users, and therefore challenged the notion that the SST had a critical mass of users that could justify its existence. By not serving the interests of the majority of users and interest groups within the firm as envisaged, the stability and the sustainability of the technology as a channel that could 'dazzle the customer' were also threatened. A new ideological constellation emerged that aimed to reconfigure the SST to reflect 'the way things are' (Berger and Luckman, 1967). Thus, the SST as defined by behaviour of the majority of users as a 'complementary channel' emerged to rescue the technology that had been thrown into crisis yet again.

It was increasing pressure from government and regulators that pressurised HIC to become more creative and innovative in their product offerings. The Wellness program was viewed by some as an artificial way of introducing risk rating without upsetting the regulator's moral framework. After all, movies and gyms are facilities that would have a general appeal for a younger client base, and for employers who generally have younger people on their staff. Now that this approach had emerged and shown great success in growing UAG's customer base, it became the focal point in the ploy to capture customers in markets abroad. Meanwhile, the newly appointed head of the Wellness program valued the role of social relations which wellness practitioners enacted as a central feature of their work, and was opposed to the disembedded nature of social relations over the Web, which was both remote and more impersonal.

... he doesn't use the website, he doesn't not like the Web. So there is obviously a natural move away from, from the Web. (Systems architect, interview 43, pp 6–8)

At the same time, the real value add of the SST was being scrutinised by different factions within the organisation, as articulated by this excerpt.

I think overall, to me, the company is at the point where, from a company perspective, they are trying to save costs. I think, if it was my organisation, I would have realised some time back that you cannot keep growing the staff numbers like we have been over the past years, since I have actually been around. So, somewhere it has got to stop. And to achieve that, you have got to have, you know achieve economies of scale ... So addressing, getting the systems delivery better, was one of the solutions. (Business analyst, interview 41, pp 7–8)

Furthermore, the regulator was applying pressure on healthcare insurers to reduce their administration costs. Despite achieving a high concentration of market share, HIC was not showing real advantages in economies of scale with regards to administration costs. The Wellness program, which was a successful mechanism for attracting healthy and lower-cost customers was also creating additional costs in administration. By making wellness their primary focus, the firm had to develop the supporting structure to sustain this subsidiary. Apart from using the SST, the firm had to employ additional staff, set up a call centre, design software systems to support the complex incentive-based programme, integrate with partners such as the airline industry, gymnasium firms and health and lifestyle magazine publishing firms, and so on. While this practice perpetuated the perception that HIC was a 'better' health insurer, improved care was being compromised by increasingly complex health plan designs, which further restricted choices of physicians and limited services to patients. Both the wellness and the health plan were beginning to increase bureaucracy and administrative costs.

It was also becoming apparent among some members of the leadership team that it was impractical to require consumers to become wellness experts and manage their own care. Accordingly there was a shift in the cognitive frame from that of a tool that would ‘dazzle the customer’ to that of a ‘complementary channel’.

7.2.4 The complementary channel

In this episode changes in internal practices associated with using the online channel were conveyed by influential individuals. In the context of the Wellness program, the CEO had recruited a new practitioner to manage the division. An actuary by profession, the new head made an immediate decision to sanction the points allocation for the use of the online channel. There was a shift from ‘click and point’ towards more points for using a network of practitioners. At the same time, a new discourse about the role of the SST began to emerge. The SST was once again legitimised by the swift modifying of its purpose to ward off the challenge by dissenting groups within the organisation, as described below.

..., I think, if we look today at where we have come, our initial objective was to convert a channel (call centre) into another channel [online self-service]. And lessons are learnt, that you know, this is a social environment, okay. There is no dominant channel. It's apparent to me that the channels are interlinked, merged, and one will use whatever is closest in proximity. (Operations manager, interview 22, pp 7–8)

In retrospect, the idea of replacing traditional channels was naively optimistic. However, this ongoing rationalisation of the SST’s purpose highlights again the reflexive form of knowledgeability that is involved in the recursive ordering of IT practice. The actual behaviour of the users reveals that for the majority of members that had access to the Internet, the SST was viewed as a complementary channel, and not a preferred channel. The excerpt above demonstrates that the surrounding world of management influences adjustments in their intentions. It also demonstrates that management had conceded that it was not within their scope to alter the behaviour of their members to use the most ‘cost-effective channel’ in their engagement with the health insurer. The majority of users had decided that the predictable routine of engaging with a call-centre consultant was still the most effective way of interacting with their health insurer. At the same time, the traditional systems department staff were

continually drawing on their customer service discourse to seek improvements in the service delivery of the call-centre systems environment. The norms and values which sought to achieve 'reduction in call waiting times' and improve the 'first time query resolution' ratios enhanced the call-centre facility and hence its dominance among members. Thus the practices of the traditional systems environment, drawing on their structures of legitimacy, and the power of the users displayed by continually drawing on call-centre facilities played a central role in the emergence of this new cognitive frame. Not surprisingly, the use of this cognitive frame as a 'complementary channel' evoked a less grand conclusion about the self-service technologies' capabilities and led the development team to become anxious about their own roles in the organisation. Consequently their identities, in this case, were threatened rather than reinforced.

The following analysis examines social practice by the various user segments, specifically sporadic users, lapsed or discontinued users, habitual users and non-adopters. Individual users are embedded within social systems which influence their behaviours. For the habitual users, the self-service technology became an integral aspect of their practice of engaging with their health insurer. For these users, institutionalised practices, such as the use of traditional channels, had been disturbed, thus altering the structures of interaction. Given the practices of high claimers who are usually associated with chronic illnesses, the self-service technology is particularly important in supporting their intense interactions with the firm. As observed in their engagement practices, accessibility to claims, benefits, and funding information is critical for their quick decision making. For habitual users, the laptop or desktop PC at home or inside the office plays other roles in their social practices, apart from interacting with their health insurer. Sporadic users frequently drew on traditional channels and less frequently on the new channel. For a majority of the users, the social context had constrained their actions to use the new channel. Consequently these non-adopters and lapsed users continued to draw on the traditional channels in their interactions with the health insurer.

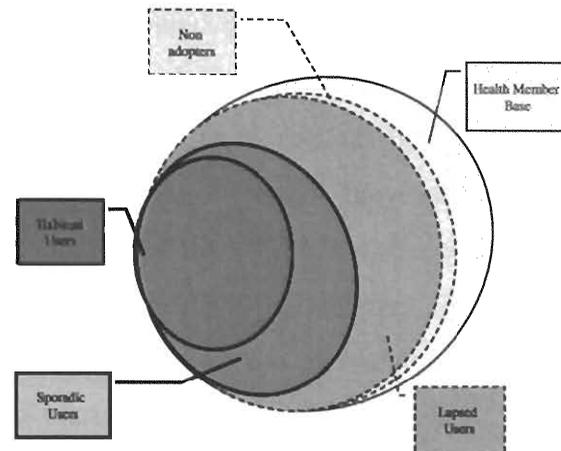


Figure 7.7 Self-service technology in practice: size representation of user segments

Easy access alone does not lead to the recursive use of the SST (as figure 7.1, and the behaviour of lapsed users demonstrates). More specifically, accessibility to the channel does not imply stability in engagement practices. Multiple factors are operating in combinations to create a context. That is, a set of conditions come together to produce a specific situation. The manner in which the channels are utilised varies significantly among users. Some assert that they prefer personal contact for particular health-related issues. For this reason, to appreciate the significance of the utilisation of SSTs among alternative channels, engagement practices embedded in a local context need to be explored. The impact of a particular channel of interaction with a healthcare insurer may vary significantly, depending on the condition and occasion it is used. Designers typically drew on the signification structure, which contained the notion that the Internet-based technology could enhance the convenience of the user by affording stable access, irrespective of the time. However, such stable and constant access may hinder the user's interpersonal interactions, owing to the overwhelming amount of electronic interactions he or she is used to. Human interaction is inherently situated in a particular context that recursively frames and is reframed by the actual practice of social action. Suchman (1987:28) argues that the 'coherence of situated action is tied in essential ways, not to individual predispositions or conventional rules, but to local interactions contingent on the actor's particular circumstance'. This may explain why more users tend to use the SST sporadically. To sum up, the introduction and utilisation of SSTs can generally support and facilitate social practices of users in engaging with their health insurer. However, the impact that they hold and the extent to which they influence can vary according to how and in what context SSTs are being used.

During this period, we presented ad hoc reports to management demonstrating the significant loss of users. When reviewing lapsed users, although various dissatisfiers could account for this phenomenon, the management team related user discontinuance to being part of a natural occurrence. By adopting this line of thought, they had sidestepped the cost impact of discontinued users. Therefore accounting of the SST is not shaped by rational reasons. Instead it is shaped by rationality that serves the interests of management (Morgan, 1986). So instead of retaining users, the strategy appeared to be to obtain a large registration base of users. However, registration does not equate to critical mass because it does not guarantee loyalty to the channel. How is it possible that large segments of the user population that have chosen to discontinue their use of their SST can be rendered economically or socially irrelevant? Morgan (1986) suggests that an organisation embraces several rationalities, and management in particular use the idea of rationality to pursue political agendas to suit their own personal aspirations.

This attitude indicates that the level of reflexivity demonstrated by managers is often constrained. For example, while authors such as Introna (1997:158) suggest that because of management's deep engagement with action, the next steps are self-evident 'as part of getting the job done', I would be less inclined to place management practice on a pedestal, and posit that there is a need for more reflection by management. Clearly Introna's 'real' manager needs to be blended with the 'rational' manager. Rationality is bounded not only by limited cognitive skills, but by 'regimes of truth', supported by a network of people (Kling, 1996). So what is rational does not represent what a report says, but what managers and their allies would like to say about the report. It is because the 'real manager' is implicated in a range of decision-making priorities and power networks that some obvious decisions are not acted upon. The 'real manager' understanding as 'part of being in the world' is limited when it comes to new innovations, where measures are still evolving, and where the exact role of the innovation is not explicit, but eclectic and contradictory.

Meanwhile, despite questionable returns, the SST had become a competitive token, which the firm used to differentiate and innovate itself, in its discourse with potential joint venture (JV) partners. From an organisational perspective, the use of the SST in the US and UK equates to re-enacting innovativeness in different spaces. Apart from maintaining the link between technocentric and actuarial culture through claims that the SST could improve operational efficiency and service delivery, as internal processes strengthened and became more predictable,

local servicing needs for claims online became less important, so attention shifted towards the global operations.

Following structuration theory, one can understand the process of globalisation by placing emphasis on the local and global dialectic, constituted as the interplay between the local operations and the globalising initiatives. The globalising tendencies brought about as a result of the SST included time-space distancing and disembedding mechanisms which, together, involved the stretching of social relations between local and overseas designers and users. The local e-commerce capability permitted the stretching of consumer-driven healthcare practices from a third world country with first world financial services capability back to two first world countries, in the form of the US and UK. These shifts in institutional practices are linked to changes in the role of the consumer in the global healthcare practices and the part played by the Internet as the vehicle to support that role. In a sense, there is a drive to expand consumer-driven healthcare products and transform them into a common cultural good via the Internet. Castells (1998:338) comments on the decisive role played by ICT in capitalism thriving throughout the world:

... [capitalism] deepens its penetration of countries, cultures, and domains of life. In spite of a highly diversified social and cultural landscape, for the first time in history, the whole world is organised around a largely common set of economic rules.

The global rise of consumer-driven healthcare also demonstrates the interplay between designed and emergent structures characteristic of contemporary organisations. The self-service technology developed in South Africa became an instrument for communicating the ideas of individual responsibility in healthcare, and extending this idea globally. Furthermore, it demonstrated to potential joint venture (JV) partners the firm's capacity to create productivity out of the innovative use of information technology and the cultural capability of using it. However, this does not imply that the implementation of self-service technologies is accepted wherever they are implemented in the globe, and that the world is becoming totally homogeneous. Dismissing global diversity can create major hurdles when developing and using SSTs. For example, the conceptions of an online nutrition tool inscribed with a South African perspective required modifications to suit the UK context. From a local adaptation perspective, bringing a technology to a new local context also involves some implicit elements of cultural

transfer and mutual learning. As the following comment highlights, the embedded requirements were at odds with the local requirements:

... The UK system uses the imperial system, while we use the metric system. This affected recipes, portion sizes and body measurements. The dietician in the UK helped us with translating the recipe measurements and portion sizes from metric to the imperial, which involved calculating the equivalent ounces where the recipes stated grams, millimetres or litres and converting kilograms to pounds. Some of the measurements looked ridiculous and didn't seem to make sense, so we had to try and convert to household measurements where possible. For example – 1 teaspoon, 1 cup etc. Regarding the body measurements, one of the tools in the nutrition programme involves calculating your body mass index (BMI). This requires you to enter your height in metres and your weight in kilograms. Naturally we had to modify this tool to allow for the UK market to enter metric friendly data such as feet and pounds. This wasn't difficult as it was simply a case of applying conversion factors. (Nutrition expert, interview 46, p 14)

By replacing the stress expert or the dietician, the SST would eliminate the time-space link and enable interactions to take place across different time-space configurations. In this case, the SST was demonstrating its ability to enlarge the world by exposing the wellness capabilities to overseas partners. However, the UK nutritionist revealed the differences and idiosyncrasies that were concealed beneath the apparent homogeneity of the UK requirements. While on the surface the UK and South African cultures may appear to be similar, this evidence is counter to the global homogenisation notion with respect to SST implementation. The UK users appropriated the 'materials of modernity', in this case the online nutrition centre, differently as a result of their specific geographies, histories, standards and languages (Barrett, Jarvenpaa, Silva and Walsham, 2003).

.. At first we thought it would simply involve removing the South African foods, for example biltong³ from the recipes and menus on the meal plans and replace them with foods familiar to people in the UK. So we needed to find out what equivalent foods would be available in the UK to use as substitutes. Then we realised we also had to change the names of certain foods that were common in both countries, but that were called something different in the UK, like eggplant instead of brinjal, which affected recipes and menus that contained these foods. We also had to change the names of recipes, such as potjie to something more UK-friendly, like casserole. To ensure that all foods would be recognisable to UK consumers, we enlisted the help of a registered dietician in the UK. (Nutrition expert, interview 46, p 14)

Therefore firms must be cautious about rhetoric that suggests that SSTs are readily accepted in a homogeneous manner wherever they are implemented.

³ Biltong refers to a type of South African food consisting of small pieces of meat that are dried in the sun.

However, the difficulty of managing the interdependence and diversity in economic, political, and social environments was also applicable within a single country. Whereas UAG often accused the local South African government of developing an onerous regulatory framework for the funding of private healthcare, the US market proved to be much more complex. Although the US market makes claims to be a 'free market', it became clear that the US lacked an overall framework for health policy and therefore inconsistent standards for health plan coverage were being applied from state to state.

... but I think the US product is more complex, in that the number of options that are available to you are more. And also, you are affected by state governance. Each state has its own rules around what medical aid must do or cover. The product has to be modified in every single state. (Programme manager, interview 33, pp 12–13)

For the health insurer, this implied different product designs for the different states. Consequently the SST had to be adapted to manage the different local environments in the US. The excerpt below points to another local contradiction that influenced the shaping of the SST in the UK.

You see, where, in our UK market we needed to get customers. In South Africa, we needed to maintain customers. So they were two fundamental different things, that I used to always get frustrated with, because I would say, why are we basing a new Website, for a new company on an existing company's Website that services existing members. We need to get members where this one was servicing existing members. (Business analyst, interview 47, p 4)

Some of the key members of the UK SST development team expressed concerns that the UK initiative was seen by management as a project where the team could simply leverage off the South African SST. Consequently, the UK site inherited a lot of the logic of the South African website. However, the UK market had to perform functions such as quote submissions and health plan comparisons to enable direct-to-consumer sales, which were not available in the South African SST. Whereas the assumption was that the team could reuse the components developed for the South African SST, a number of new applications and features had to be built from scratch for the UK site. In this case, the Internet shrinks the world, because JV partners located overseas can access skilled developers based in South Africa. The different local requirements were constraining the South African development team and as a result, relationships between the local and UK design teams were often strained.

Well, in the beginning, there was a very much of an 'us' and 'them'. So, we are the South African developers and now we are doing the UK Website a favour by helping them, by

developing stuff for them. We were not a priority. And, yes, I used to get a, a definite feeling that we were the enemy, coming in to use up their time, you know. (Business analyst, interview 47, p 10)

Local contradictions in global ICT implementation efforts are not limited to influencing the development team. Users also behave in fundamentally different ways. The effects of local diversity as users attempted to appropriate this tool differently within their own social context had several implications for the designers. The firm had to seek a balance between global integration and coordination of services and local customisation efforts (Barret *et al*, 2003). For instance, while the majority of the users in the South African social context were generally younger, the UK SST was used by older semi-retired and retired users.

The people who ended up using the website quite a bit were a lot of elderly people, which we didn't quite expect. And, yes, that was quite interesting. They were also quite particular and had these great ideas of what we should do. So that was quite interesting ... I think a lot of emphasis was put on winning points from the website. And that is inevitably, what people want, it was an incentive for them to go to the website, and they were very particular about their points, because in the UK this resulted in them getting discounts off their premiums. So, they were obviously trying to push their premiums down ... So they were definitely the type of people that had more control over, likely, their incomes at that stage. Because they needed to have more control, because that is it. You know, if you are retired or semi-retired, you only have got so much to deal with. So, they have that time on their hands. (Business analyst, interview 47, pp 16–17)

Simple cause-and-effect studies assume that older people are less inclined to use technologies such as SST (Parasuraman and Colby, 2001). By analysing the details of user adoption we can see how the type of product, incentives to drive down personal healthcare costs, and the broader social context can shape the use of the SST by older people.

Meanwhile, in becoming a global organisation, IT governance and related standards – such as Control Objectives for IT (COBIT), IT Infrastructure Library (ITIL) and Sarbanes Oxley (SOX) – were forcing the firm to comply with some of the common business practices of their joint venture partners across time and space. For instance, the discipline of testing applications in the systems development life cycle (SDLC) process lacked ceremony and a sense of formality. Over the years, there had been many appeals by the staff of eHIC to improve the testing process. However, the idea of formal testing only came to the mind of the head of eHIC on his return trip from the UK where he had observed a more disciplined approach to system testing. There he had observed first hand, accompanied by his peer, the value in formal testing and the use of packaged application to support this process.

This example demonstrates that the adoption of discourses is a power relation. Despite the ideas of a formal testing methodology being impressed by the local team, these concepts were transplanted only when an expert and a peer from an industrialised nation demonstrated their organisation's substantial spend on compliance by using formal testing approaches. This is another example of how best practices and procedures between different contexts and countries may be motivated. The major motivation for purchasing the testing application, it appears, was not simply to improve testing practices locally, but to conform to a set of practices established by a well-respected JV partner.

The testing process obviously had an effect on the go-live process, which was now much more formal. The development team had much less discretion over how they conducted their work. Development tasks were now under the control of the tools. The tools prohibited the execution of tasks unless all the prerequisite work (defined in the methodology) met the tools' completeness criteria. This ensures that system development tasks were executed in the 'correct' order, and that all relevant documentation was available before coding began. Those staff members who had worked at eHIC from its inception were frustrated at the significantly less latitude they had in their work. With the design of Web applications, they argued, the approach needs to be flexible, allowing for prototyping and other forms of improvisation. In their opinion it was difficult to design Web applications using a rigid methodology. For newer members of the development team that had no prior exposure to developing systems, tools were not interpreted as restricting their autonomy, for they were unaware of other ways of designing systems. Others simply started hiding behind the new processes, as the following business analyst remarks confirm:

... I actually became less customer focus, and when I say less customer focus not from a user but customer focus from internal customers, so for me servicing the internal business. And the reason why, and I will give you an example. The business would ask me to do something that was not approved from a user perspective and I know what the focus is so I say no I need a business spec please, and I need three people to sign it off which obviously delays it, and what it started to doing for me is that I can start hiding behind the process ... (Business analyst, interview 14, p 4)

Here again we see the unintended consequence of a new process. While managers were expecting that tighter control and surveillance of the development team would improve performance, it sometimes had the opposite effect.

Meanwhile IT became an easy target for a ‘streamlining initiative’, as broader structures such as shareholders and the regulator expressed concerns about the organisation’s cost structure. Another new form of organising with regard to the SST evolved. The IT management team believed that by integrating the various channels in the back-office organisation, where the core production processes were being managed, significant efficiencies could be gained. Problems relating to front-office and back-office integration were high on the agenda. Meanwhile, there was talk of refocusing H-World’s capabilities and competencies related to this. The following excerpt demonstrates how social, political and technical interests intertwine to give birth to new structural forms.

Well, there has always been a kind of disharmony between the online environment and the back-end systems environment. And I think a lot of that was, in the beginning, around technology. But it is also very much people driven. And some people want to control more than other people ... (Business analyst, interview 41, p 4)

This move coincided with technological changes that made it possible.

And then even within health systems, I think a lot of their applications are moving to Java. Like, for instance, the claims environment. I think they are going to rewrite that. (Business analyst, interview 41, p 17)

There was strong internal debate concerning the merits of integrating back-end and front-end development into single teams versus separating the two areas of responsibilities. The H-World management team put forward their claims that eHIC had developed a significant amount of intellectual capital over the years on the ‘softer’ elements of interaction. These include how to position, how to message, and how to design a user interface. They emphasised that there was an increasing need for these skills throughout the UAG Group, including within the traditional systems environment, which used to build ‘unfriendly’ user interfaces for the call-centre users.

Meanwhile, those development staff members with back-end process competency were transferred to systems areas supporting the back-end processes. And the staff that had developed competencies in front-end and usability were moved into the front-end or ‘customer experience team’. In other words, usability emerged as a regime of truth. During its existence H-World built a competency around the development of front-end applications. The materialisation of this new regime of truth influenced the emergence of a new structure, the CIS (customer interaction

systems) department, whose purpose was to serve front-end development of all channels. This new structure led to further ramifications for the firm.

Yes, my way of dealing with that was, to highlight the fact that my belief was that productivity would be affected. And the reason I thought that was, was because I knew people would, in undergoing change, without a slowdown, redirect their energy, want to spend time understanding everything. And I was almost sort of put in my place to say, you know, we have still got the projects to deliver. It is the same people who just happened to be working at different desks, almost, or being, you know, put in a different division, but the work is all the same. Now, but I don't think it is as simple as that. So, so I almost failed myself by not being more persistent with that issue. So, yes, I mean, you can argue now, yes, look, things are carrying on, we are delivering, etcetera. But I think, when we, I personally believe that a few people who moved on recently to resignation and I think there is probably, my expectation is that in the next two months, beginning of December and beginning of January, we will have a couple of more people leave. And I am convinced that is a knock-on effect from this change. And they wouldn't have left if it wasn't for this. (Programme manager, interview 42, pp 16–17)

More important than productivity issues, the restructure of the department resulted in many individuals having to reconstruct their self-identity.

I see usability as a purely pragmatic thing that, you know, as a, as a graphic designer, you have a feel for it anyway. And now it seems a huge departure, a whole bag of resources being positioned under this one heading, Usability. (Graphics, interview 43, pp 6–8)

Given the context of increasingly tighter control and surveillance, the restructure compounded the belief that jobs were not secure.

Clearly the idea of running around 'complaining about pedantic stuff, like colour and shapes, and whether or not something makes sense from a wording perspective' did not appeal to the business analysts. Walsham (1998) argues that chronic monitoring and drawing on new knowledge creates existential anxiety in the individual. In other words, the anxiety felt by the members in the development team cannot be attributed to job insecurity alone, although this was certainly evident. The anxieties also related to 'What is a usability analyst or a front-end developer?' or, as Walsham (1998) puts it, 'Who am I?'

The BAs don't know what the most intuitive way to structure a page is cos' they never had to deal with that. That is what the graphics team did ... They all left except for one. Off the Wellness team all the BAs left. Because of this change they chose to leave. They were, it's quite funny (laughter). They were given a choice and then they all wanted to leave but then the choice was retracted. There was a big fuss and eventually they left ... For them it's a bullshit job, its something that they are not capable of doing. They don't know that, you know the yellow button is better than the blue button, because the heuristics model say so. You know, I mean they do not want to do shit like that. To them they don't want to that. They want to do business analysis, so they left ... I don't know what the hell's going on.

They are nine teams excluding the Usability team so I don't know what the hell's going on there. We are short six developers and seven BAs. So out of all this movement we gained departments which is amazing and we are short a shit load of people. So I don't know, I actually don't know what CIS does ... (Systems architect, interview 053, p 6)

The hard-hitting cynicism of the architect in the excerpt above also demonstrates fundamental features and a knowledgeable insight into the realities of the systems development environment. Clearly, the business analysts and developers at a practical and discursive level had a more sophisticated understanding of the 'structures' of usability than management. And it is because they understood this context more proficiently that they moved on to another department or resigned. Nevertheless, the scarcity in the IT market enabled the acting out of this rebellious attitude. The following excerpt demonstrates how this major change created tensions of identity between the corporate employer and the e-commerce team:

For me the main changes, it felt like a small company when I first started here, people ran on adrenaline, they were processes in place but you could break them, there wasn't a lot of red tape which I enjoyed because that is the kind of environment I prefer working in. I think slowly that culture has changed. It has become more corporate, they started bringing in a lot more processes, just in terms of doing anything really, taking things live, making changes to databases, from getting sign off ... Maybe it can be seen as a good thing but it also slows things down a helluva lot. From a time capturing time perspective they have gotten stricter with that, how often people capture time, to what detail people capture time, and I don't see that stopping anytime soon. In fact I see it becoming more and more corporate. We also moved from daily go-lives now to go-live every two weeks only, and they are getting stricter and stricter about breaking any kind of rules. And to me those are the major changes. I think also you know the management team in H-World has also change quite drastically. A lot of them have moved out or moved into other things. So I think the culture of H-World is still out of all the departments in UAG still has probably the closest to a small company feel than the others do and I think part of it has to do with just the average age of the people within H-World. I think it is younger than the rest of the company. As I said I do not know how long that is going to last. I am not saying whether it's a good thing or a bad thing but I just prefer the previous culture. (Business analyst, interview 14, pp 3–4)

In contrast, one of the senior managers articulated the firm's need for 'discipline':

That is not a H-World phenomenon. That is a function of UAG being a different organisation. That is the function of UAG having to account for close to 1.8 million lives. You can't do things, to use the analogy, you can't have kids running around a nuclear reactor. And then if it's not bureaucratic then it tends to kill people. And likewise, if you do stupid things and don't have the appropriate discipline, and yes that can be interpreted as a bureaucracy. So in the client face, the needs have shifted, the needs have shifted to stability and robustness and as a result the process and the ways of doing things had to shift ... No, I mean, I do not see that as being mutually exclusive. If fun is defined by, being flippant about how you manage a very big, complex environment, then I would say yes, fun is going to fall by the wayside. If fun is defined as achieving a major milestone, and you are continually pushing the boundaries, doing new stuff, doing new and interesting things, meeting new requirements, I don't see any trade-offs. (CIO Health Systems, interview 36, pp 11–12)

Thus, individuals monitor knowledge and its constant shifts, and use it as the basis for changed action and social relations (Walsham, 1998). Given the firm's tremendous growth, there was now a definite shift in the way e-commerce roles that used to operate within a fairly loose structure were now being operationalised within a rigid operational structure. Even though managers of eHIC attempted to augment and maintain the roles of their subordinates as custodians of all front-end development within the organisation, most team members felt constrained, and were experiencing great difficulty in coping with the change. Team members were faced with a new job description, but they did not know exactly what the new job description entailed. They were not totally familiar with their new responsibilities. For instance, in this new practice new documentation must be produced. Furthermore, they had to work with unfamiliar channels such as call centres. Whereas the business analysts used to complete a business requirements specification, they had to now focus on specifying usability aspects. Would there be a new template? Many were unaware as to how this was actually going to work. Furthermore, the autonomy and self-regulation of individual designers in the eHIC team were being undermined by the firm's focus on quality through the enforcement of disciplined work practices. Many of the experienced developers who had the ability to reflect on the assumptions, rules, and concepts that facilitated and constrained their work in this new context decided to resign and leave. Thus one of the unintended consequences of this restructure was that the more experienced staff chose to leave either the H-World team or the organisation.

Ja, leaving H-World team, clearly, and what that really meant was that the people left over are fairly junior. And people that have moved to Corporate actually do not have the skills to do this. And this is actually becoming a problem for them. They do realise it. Hopefully they will hire, they effectively got vacancies, they need to hire the skills. (Systems architect, interview 43, pp 6–8)

These staff members may have been in search of systems development environments that were premised on the initial assumptions they had about systems development and technology, those that had transpired when dotcom was at its zenith. Those who remained were cynical because management roles had not changed. Nevertheless, even those senior managers who were frustrated opted to stay, as they would lose their lucrative share options in the event of resigning.

In the following analysis, I turn my attention to inequity in the South African IT work environment. Historically, for most women in the South African IT context, specifically in senior management positions, there is a marked awareness of their oppression. The interviewee below demonstrates discursively that she is aware of broader conditions of social practices; conventions

that uphold the inferiority of woman in the workplace, beyond those in which her own activities take place (Giddens, 1990).

I think Sally has got very big shoes to fill. Firstly in the workplace it is not easy being a woman and being such a senior manager and its tough, its tough to get the respect of upper management, whether they are male or female ... I feel sorry for her, I think it is tough. But because women have to work so much harder. Maybe she feels she has to prove something you know, which is quite unfortunate because if a man was in her position he wouldn't have to do that. (Staff, interview 38, p 5)

It is also relevant to apply the knowledge actors have about the societies of which they are members to white South African males. A number of white South African males feel alienated by affirmative action and legitimated employment equity policies, where jobs are now being reserved for previously disadvantaged populations, which include white females and other racial groups. The racial skew in remunerated employment (alluded to in previous chapters) reflected the uses of political power that created economic opportunities for white men in their favour during the apartheid regime, while denying similar possibilities to white women and other racial groups. As the political future of South Africa changed, there was a noticeable power shift in favour of the previously disadvantaged groups. Organisations are now being pressured to recruit previously disadvantaged individuals, and are being monitored by the Department of Labour to assess their level of compliance. They face substantial penalties in the form of fines if they fail to adhere. Consequently, one of the white male staff articulated a belief that while it easier for the previously disadvantaged groups to find alternative employment, he and members of his social group were being constrained by certain social forces. In discussing the exodus of staff from the department, this perspective was articulated:

But the reality is, for someone like myself, it is not that easy to move on. And I think it is a different reality maybe for, like, I don't know, some females around, some, like previously disadvantage communities, it might be easier. And like the guys that are maybe moving on, or, you know, I don't think any of them are like the white males. Because it is just not, you can't find a job overnight. (Staff interview, interview 42, p 35)

However, Giddens (1984) suggests that it is not unlikely that false beliefs are held by members of a society about features of that society. The reality is that while there are attempts by the regulator to promote more equity in organisations, many who had left H-World for 'greener pastures' were in fact white males.

The Department of Labour has been critical of the abuse of the employment equity law by South African organisations. Many companies were accused of using the ‘white female criteria’ as a loophole. As figure 7.2 illustrates, H-World employment systematically shifted towards white females over the years, perpetuating inequality along racial lines. Only a minority of the staff members were previously disadvantaged individuals belonging to other race groups (18%). Most firms contend that the lack of IT skills among the previously disadvantaged population constrains them, hence their justification for recruiting white members of the population.

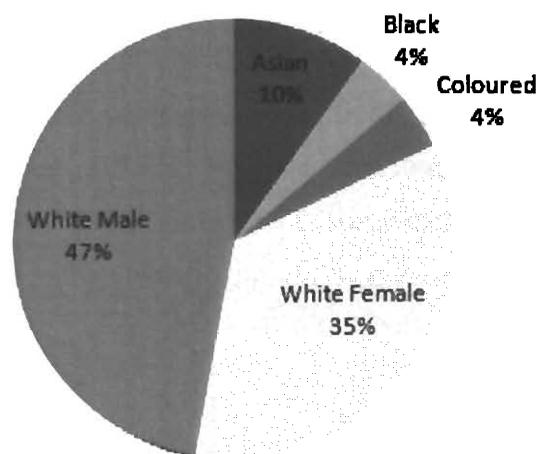


Figure 7.8 Staff profile of racial groups

Source: H-World’s staff reports (2004) n=118

However, it was noticeable during this field study that a few white women who were once personal assistants and call-centre consultants had been promoted to act in business analyst positions without formal IT/IS or university qualifications. Ironically, while sanctions related to employment equity should place limits upon the range of actions open to the organisation, this particular skills development programme and normal recruitment practices did not appear to give preference to previously disadvantaged individuals. Nevertheless, using the skills argument as a constraint in this case is flawed since formal IT skills were scarce, even among the senior managers, who were in the main white males, as noted by one of the more educated senior architects.

Experience of high level executives, not, not enough. I will call it not enough formal education, maybe for some of them just high school, just to learn everything is you need to rediscover the world and that takes so long ... people like that they ignore research, best practices from other companies, obviously we struggle for a while and figure out that actually the industry is right, but because these people sit in high positions and make these decisions ... this affects everyone in systems, many people are leaving ... Even visionaries like Tom with very good formal education suffer in the implementation. But in other executives they are learning, they are quite intelligent, quite clever, but learning is slow because we need to convince them on things a university would have given them as a start. (Systems architect, interview 19, p 2)

As Giddens (1984) suggests, 'all societies are predicated upon claims to knowledge that are disparate or left unexamined'. Clearly, certain individuals are resorting to false theories to legitimise, dominate and thereby protect their own economic interests. Despite the regulator's threat to apply sanctions in the form of quotas, timetables and recruitment policy, apartheid structural properties, albeit more covert, persist in South Africa's private sector organisations. This resistance by the private sector to actively employing and developing black staff is of particular concern since the IT sector represents a significant growth area for the economy, and thus an important avenue for previously disadvantaged individuals to improve their living standards.

Giddens (1984) points out that a sanction requires some form of 'acquiescence' from those who are subjected to it. Given that socio-economic power is concentrated in the hands of the white elite, it is not surprising that the properties of apartheid appear to be reified. In other words, the properties of apartheid continue to demonstrate a level of fixity in the workplace. Consequently, the main beneficiaries in the private sector and particularly for IT employment, at least for now, are white South Africans. The irony is that South Africa's inclusion in the international market as a result of the dismantling of apartheid continues to benefit the white elite. More than a decade after democracy, and despite stringent regulations, it is disconcerting that South Africa is still trying to overcome the racial and gender structures that persist in its private sector institutions and the country as a whole.

To conclude this section, the shifting roles of the e-commerce development team were strongly enabled and constrained by the existing structures of legitimation and domination at the health insurer and related contexts. The role as the replacement channel – which in hindsight was a bit implausible – laid the seeds for new structures. Some of the joint actions began to embed potential structures in the technology, while others set up rules and routines for the SST, which over time developed into new organisational structures. Eventually UAG became process-centric

(which in itself is not a bad thing). However, management neglected deep-seated employee concerns like job satisfaction and employee morale. While change itself was inevitable, management failed to demonstrate sensitivity to staff concerns during these periods – that is, to have the best of both worlds, retain that ‘family feel’ that many believe has been lost, and achieve new levels of system development maturity. After all, ‘maturity’ and ‘family feel’ do not have to be mutually exclusive or contradictory goals, do they? Nevertheless, the SST was implicated in many ‘complex debates and struggles’ which were taking place in the firm as they attempted to come to terms with their changing world and the place of the SST in it (Walsham, 1998).

Lastly, in the short term, H-World’s achievements might be questionable or might have come under scrutiny, thus leading to various episodes of the revision of its structure. However, H-World’s improvisation using Web technology supported product innovation and globalisation initiatives. Even though the SST was only in the fifth year of its implementation, its presence had helped to bring about significant changes in departmental structure and the overall conduct of business internally and externally, with members, providers, intermediaries and with JV partners. The SST influenced and was influenced by organisational changes, such as the manner in which intra-organisational communication took place. For instance, individual system departments communicated with each other more effectively, because they had become jointly responsible for maintaining high standards of integrity for the data that they all shared. New components were designed with multiple channels in mind. Such high levels of interaction among departments and design maturity were unthinkable prior to the SST implementation. Furthermore, the SST architecture served as a framework for supporting the global strategy.

Yes. I mean, if you are looking at the UK, we have got consultants sitting in, in the UK, using the website to do the online quoting on all our applications. So the website has been transformed from purely the external communities to serving internal communities as well, on a global basis ... But I think what is important is that going forward, both the UK and US initiatives were fairly difficult to implement. Going forward, we cannot actually afford to spend that amount of effort on, on new countries or new initiatives. So, we are looking at globalising our systems in a way that is configurable, and, so that we can position ourselves in any country or any language, you know. And I think that, that's where the challenge is that we face now. And if, yes, when in terms of, again that budget, you know, if they did cut the budget, it will severely impact our ability to do the whole globalisation thing. (Systems architect, interview 43, pp 37–38)

Table 7.4

Summary of key theoretical concepts and illustrations from the study

Theoretical elements	Main themes	Illustrations from the case study
Routinisation	<ul style="list-style-type: none"> Traditional channels and SST 	Using the telephone to contact the health insurer was well entrenched in the day-to-day practice of members
Trust in abstract systems	<ul style="list-style-type: none"> Design and operator failure 	Design faults diminished trust in SST
Reflexivity and identity	<ul style="list-style-type: none"> Existential anxiety 	Changing identity of e-commerce team to front-end development team led to insecurity about work and new role as usability experts
Intended and unintended consequences	<ul style="list-style-type: none"> Interactions intended by designers and actual interactions by users. 	<p>Intention to become channel of choice ruined by users' use of multiple channels</p> <p>Use of wellness points to reward healthy behaviour results in unplanned use of the SST to earn easy points</p>
Disembedding of social relations	<ul style="list-style-type: none"> Disembedding of social relations from local contexts of interaction 	Wellness applications based on generic knowledge via impersonal wellness practitioner-user relations
Time space distancing	<ul style="list-style-type: none"> Enabling wellness interactions and transactions at a distance 	The SST enabled transactions at a distance in an attempt to replacing co-present interaction (face to face) with call centre consultants and wellness practitioners
Local-global dialectic	<ul style="list-style-type: none"> The global reproduced in the local Local appropriation of the global 	<p>The UKHC and USHC website are globally designed systems that are appropriated locally</p> <p>Designers draw on local knowledge and client interactions in implementing these abstract systems. Design changes to accommodate local adaptations of nutrition centre</p>

Table 7.4 presents a summary of the key theoretical concepts and illustrations from the study. So the question remains, how do you put a financial value on competencies and capabilities with complex computing and network architectures, object-oriented software technology (albeit relatively immature) development, security, and user interfaces? In other words, what emerged

from the introduction of H-World were strategic assets, which in a sense were not the intended goals of the SST, but valuable assets nevertheless. The irony is that there is now a danger that improvisation – which served this innovative organisation so well in the past – might diminish as the organisation continues to grow and seeks to become process-centric because its ally bureaucracy will strengthen.

7.3 Conclusion on structuration theory perspectives

This study drew on the premises of structuration theory to discuss the nature of SST implementation and its interaction within the organisation and social setting. Structuration theory appears to be well suited to understanding the linkages of the SST and organisational structures, as well as to understanding the interaction of SST within the wider socio-historical context. The study traced the eHIC experience to show how throughout the SST implementation structural rules and resources within the environmental, organisational, and IT contexts are produced, reproduced, and changed. The analysis illuminated the diverse social influences by which the SST evolved and the way in which the traditional channels that it aimed to defy survived. The way in which meaning was shared, norms and resources communicated, and human action was sanctioned and facilitated, sustained, yet at the same time changed, certain social structures during the process of SST implementation. At every implementation shift, there were distinctive transformations of the technology, the organisation, or the environment, and each set of changes provided a new context for a later set of implementations. Over time, as the firm struggled and experimented with the technology, different assumptions and diverse interactions with the SST both shaped and were shaped by new organisational forms.

Users drew on and responded to a multiplicity of rules and resources in this context of multiple channels. For the SST, this makes the relationship with particular sets of actors tenuous. Where contexts cross-cut and structural properties are diverse, users tend to draw selectively on rules and resources, instantiating some and leaving others (Orlikowski, 2000). Again, the users did not draw on every single rule and resource in the SST. In other words, for certain sets of users, certain rules and resources need not be turned into practices. It appears that the range of ‘interpretive flexibility’ of external users in the context of alternative channels is far broader when compared with findings of users of internal systems.

It also appears that managers cannot apprehend the complexity and everyday life of the external user. These general and imprecise judgements about these remote sectors imply poor judgement. However, management do have complex and detailed information about the everyday life they deal with. This social stock of knowledge supplies management with a typificatory scheme required for the routines of everyday life, that is, servers, networks, applications, internal business processes and so on (Berger and Luckmann, 1967). The occupational worlds of the users, though, are sketchy, since there are too many. In attempting to please the mass of users, the organisation continually redesigned the SST. However, site redesigns were often a hindrance. Many users view this as a change in convention, whereas the telephone has remained a standard convention and a stable technology, whose inscribed conventions have been black-boxed.

The SST was subject to differing interpretations among users and designers and depending upon the social context and the process of implementation. As the SST technology was introduced and put into practice, differences in social meaning and their importance to the implementation and consequences of SST emerged. The structural analysis drew attention to the links between social interpretations and the context and processes of implementation. Examining how different groups (such as designers and users) interpret the SST technology within their social frames of reference yielded valuable insights for understanding actual patterns of implementation and use.

As the study reveals, the design, deployment, and institutionalisation within the particular organisational context, as well as their ongoing uses by particular users in multi-channel environment, together determine the impact of SSTs on the social structure. SST's should be viewed both as enabling and constraining social practices. Furthermore, while SSTs show certain potential in mediating social interactions, this is much more varied and flexible. Based on a structuration analysis, one should perhaps remain cautious about the optimistic predictions of SST in the healthcare insurance context, as these prognostications ignore the domination and legitimation aspects that are always central in social structuring.

The healthcare insurance context is not some clearly bounded unity. The practices of the users and designers are vital in the reproducing the SST, but the media, software vendors, regulator, and other steering mechanisms are equally implicated in its reproduction as a service channel. To a large extent, SSTs are also an instrument for economic and social gains within the context of a market regime (Avgerou, 2003) as in this case – of consumer-driven healthcare. This particular

configuration as a complementary channel, instead of the channel of choice, was emergent and unintended, but has maintained the SST for now. It may be more appropriate to conclude this part of the chapter with some parting advice for proponents of consumer-driven healthcare in their use of the SST in the eloquent words of Giddens himself:

No matter how well a system is designed and no matter how efficient its operators, the consequences of its introduction and functioning, in the contexts of other systems and of human activity in general, cannot be wholly predicted. One reason for this is the complexity of systems and actions that make up world society ... For all these reasons we cannot seize 'history' and bend it readily for our collective purposes. Even though we ourselves produce and reproduce it in our own actions, we cannot control social life completely. (Giddens, 1990:153)

Chapter 8

Interpretation of Case Study: An ANT Perspective

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8.1 The many translations of self-service technology: an analysis using actor-network theory

8.1.1 Introduction

To augment and enrich some of the structuration findings presented in the previous section, I now employ actor-network theory (ANT). In contrast to structuration theory, ANT looks at the world as full of hybrid entities containing both human and non-human elements. ANT is ideal for analysing a self-service technology (SST), since separating these elements in the SST situation is difficult. For instance, it is difficult to establish which part of the SST is just an inanimate object and which aspects are the results of human interactions. It is also difficult to differentiate the SST's technical aspects from the influence exerted by the socio-cultural background of the designers or users. Therefore, ANT will help to trace the innovation path of the SST as these various actors co-evolve.

Drawing on empirical data from the case study, throughout this section I suggest that the SST can be viewed as an actor. The series of three strategic shifts or translations of the SST will be used as scaffolding for the analysis. The selection of the three translations from 'channel of choice', 'dazzle the customer' and the 'complementary channel' will be used to retain a chronological order and thus provide a succinct analysis of the masses of detail involved in this study. These three translations also act as technological frames to link the translation process of ANT within broader social and cultural processes. According to Bijker (1995), a technological frame consists of 'all the elements that influence interaction ... and lead to the attribution of meanings to technical artefacts'. The concept of a technological frame will be applied to capture both the social and technical resources that are drawn upon to create the various interactions (Allen, 2004; Gash and Orlikowski, 1994). By encompassing technological detail as well as social conceptions, these technological frames will assist in structuring this ANT analysis.

8.1.2 Inscribing the channel of choice

Many researchers have criticised ANT for being too focused on the local and contingent aspects of socio-technical change, at the expense of broader social and cultural processes. To overcome this, I used three technological frames as episodes of translation, as suggested by the work of Bijker (1995) and Allen (2004), as a means of linking the enrolment process of ANT with

broader social and cultural processes. The frames were useful in overcoming the tendency to heighten Machiavellian perspectives by sensitising us to the fact that translations are a matter not only of negotiation and power plays, but also of redefining the technology by including and excluding different actor-networks.

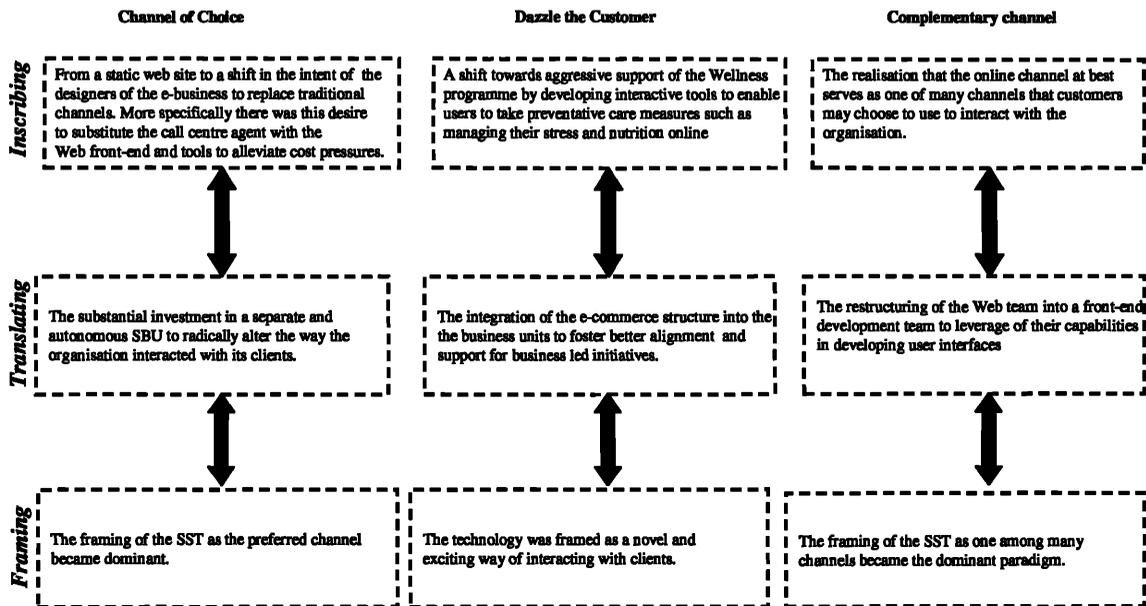


Figure 8.1 Self-service technology in practice: shifting translations by designers

Source: Adapted from Faraj *et al* (2004)

Inscription

Until 1999, the technological frame of disseminating ‘static content’ dominated website implementations. A new technological frame to become the ‘channel of choice’, or in other words, the preferred channel, was emerging at HIC as the ability to transact online became more plausible (see figure 8.1). Clearly, the first intention for the designers of the HIC e-business was to replace or substitute traditional channels. More specifically, there was this desire to substitute the call-centre consultant with the Web front-end. This major inscription to take on the role of the call-centre agent was based on the assumption that the self-service technology would save calls by having answers to key call reasons programmed and made available on the website, using the Web and related technologies. This deterministic approach stems from the organisation’s culture, which is dominated by an actuarial science perspective. The same inscriptions, founded on formal mathematics, that were embedded in developing healthcare

insurance products such as probability, statistics, finance and economics, were being applied to the SST's performance. For instance, in the same way that the actuaries measured the claims value per thousand lives, the Web was being measured on the value of the call reduction per thousand lives. As opposed to involving users in the requirements analysis process, designers looked at call reason statistics and built online features around popular call reasons, such as submitting and tracking online claims, viewing statements, and checking medical saving account balances. Similar to actuarial models, this call-saving model would be soon prove vulnerable because of its assumption-dependent approach. At the time, the growing member base resulted in increasing capital expenditure on call-centre technology. Furthermore, the high fixed-cost base of the call centre, combined with the high labour cost attributed to the growing number of call-centre consultants, all gave strength to this internal inscription of improving service efficiency through automation.

This inscription was strengthened by the hype created by the other steering mechanisms at the time. For instance, the threat of a pure-play competitor may seem far-fetched now, but at the time it was viewed seriously by UAG's executive team. The Internet browser was also positioned as an obligatory passage point (OPP) because it was an 'open', 'electronic' platform that could deliver the paperless environment – vast amounts of paper had plagued healthcare insurers for years. The provider of the Dynamo suite of e-commerce applications, Applied Technology Group (ATG), offered the following 'objective information and practical guidance' to IT professionals during the dotcom boom:

For all businesses there is an unrelenting pressure to control costs. The pressure of competition and financial investors will not allow managers any relief in their efforts to drive down costs. (ATG Technology Guide, 2000, p 7)

An organising vision – emerging from a heterogeneous collective consisting of the academic world, media, consultant, software vendors, and dotcom start-ups – bestowed a lot of appeal upon this 'substitution claim' and other 'efficiency' inscriptions. Hannemeyr (2003) found that the popular narrative concerning the Internet during the dotcom boom possibly resulted from translations into carefully phrased restatements of fact to support a particular financial or political agenda.

In spring 2001, the *Journal of Healthcare Information Management* summed up how misconceptions were being propagated about the Internet at the time:

As we move through the millennium, the Internet is dramatically changing the way business is conducted on a day-to-day basis ... E-commerce is driving change within organisations across virtually all industries at an extraordinary rate. The unprecedented volume of Internet advertisements and start-up businesses demonstrates that e-commerce is the new model for business and is growing at a rapid rate. More consumers are going on-line, and their rapid acceptance of e-commerce as a way to conduct business and access information demands that organisations think and plan strategically in order to take advantage of the new Internet possibilities. (Megliola, 2001)

This excerpt, which is packed with sweeping generalisations, was more attuned to writings in a product brochure than an academic journal that is supposed to be subject to rigour. Yet Hannemeyr (2003) argued that these misconceptions about the Internet were able to ingrain themselves in popular academic and practitioner discourse because of our trust in, and reliance upon, media-constructed reality.

Translating

Swanson and Ramiller (2004) suggest that this ‘bandwagon’ phenomenon is especially prevalent where an innovation achieves a high public profile, as with the Internet and e-commerce. Planned action is typically dismissed by the urgency to join the stampeding herd, despite the high costs and apparent risk. This tendency in the case of HIC is confirmed by a remark made by the head of eHIC:

Initially it was just be part of the space. And no one really could draw a more rational reason than that. You have got to be part of this play. The whole world was going to go online ...
(CIO Health Systems, interview 36, pp 1–2)

Clearly the larger community’s organising vision was the embarking point for HIC’s sense-making journey with e-commerce. Based on buzzwords such as ‘cost advantages’ that the media presented about the new channel, the apparent ‘rapid rate of adoption’ globally, and the ‘first mover competitive advantage’ this would present at the time, HIC invested significantly in the development of the self-service channel. To show support for the new channel, the leadership of the organisation gave it autonomy to transform the ways in which members interacted with the organisation and were to be serviced. For this reason, among others, the self-service channel was structured as a separate company. Recalling the mood at the time, one of the senior managers of the initiative stated:

We had direct support from the very top. Andy, Ben and Jim sat on our Exco for the first six

to nine months so focused were they on the Internet possibilities. HIC itself was flying having redefined health insurance in South Africa so all in all there was an abundance of goodwill and positive energy. Pretty much anything Tom (referring to the Head of H-World) and I wanted to do with H-World we could and we had the support. Our only limiting factor was capacity and time. We did not have enough time and actual people to chase all of the great ideas we had at that time. (Community head, interview 049, p 2)

The focal actor – in the form of the newly appointed head of e-commerce – enrolled the executives to establish an exco to support their activities. The exco could assist the newly formed e-commerce organisation to address the criticisms from a number of quarters that were unwilling to participate in this ‘new era’. Despite overwhelming support from the CEO and most of the senior members of the executive team, a number of executives, particularly from the marketing and the new life business, expressed a level of apprehension about the merits of eHIC operating as a separate entity. First, there were those who were sceptical about whether eHIC could succeed without closer engagement with UAG’s IT and business departments. Linked to this were concerns that incentives would be misaligned in the IT area if the dotcom start-up was conceived separately. In the second place, others in opposition did not believe that UAG’s health and life products could be sold over the Internet. For these detractors, face-to-face contact via financial intermediaries had been the hallmark of HIC’s success thus far, and was essential in selling financial products. Indeed, some of the key exco members felt that the role of the Internet should be limited to services only.

Over this period, UAG had substantially expanded the use of brokers and consultants as distribution channels for selling its health insurance. This approach led to the launching of the UAG Intermediary Institute, which provided intermediaries, such as brokers, with advanced education in healthcare financing. Apart from its innovation in health insurance products, what set UAG apart from its competitors was the way in which these products were communicated, distributed and sold through the broker channel. For this reason, there was great resistance by certain exco members towards any attempt to sell HIC’s healthcare products online. Criticisms relevant to the *problematization* of the self-service were identified as: ‘Should the Web be used as a direct sales channel and servicing channel?’ or ‘Should the Web be used as a servicing channel only?’ The realisation would prevail that intermediaries were a ‘necessary evil’ and the intermediary channel should not be one to be ‘messing around’ with.

The *problematization* in this scenario is overtly concerned with the power relationship between brokers and employers in the South African context. In effect, brokers sold health insurance

directly to employers, and employees had to select from a group of health plans as part of their 'employee benefit'. Employers typically offered plans from a single health insurer. There was no empowerment of the employee in the sense that employees would be able to select from a range of health insurers. So as not to jeopardise the relationships with these powerful intermediaries and hence future sales, the SST initiative had to realign with the interests of sales and marketing. For these reasons, the seduction of the Internet as a direct sales channel could not be used to coax some of the 'grey beards' on the exco committee. The obligatory passage point (OPP) towards a shared view of a service-centric online channel was established.

Despite the support and mandate from the exco members, political battles were being fought at other levels. After all, there were fears in areas such as corporate systems that the role of the SST was to squash legacy practices. The following extract sums up the environment during the early stages:

There was a lot of political wars ... you want to achieve your initial goals so to expose everything is sometimes not the best thing because you are selling something, when you are selling at that moment you are making a claim, and it does not mean that everything that you are selling is the best thing. It's a war in the beginning, it's a business war ... and like in any war the general cannot expose his strategy to the army at any stage, at least at the beginning ... especially in an environment like this if you want to achieve anything ... (Systems architect, interview 021, p 9)

Nevertheless, the level of optimism was so great at the time that the firm invested significantly in hardware and software, such as the state-of-the-art technology in the ATG Dynamo suite of applications, which was then the leading and premium Web server technology. Other leading tools such as Documentum for document management and Verity as a search engine formed part of the envisaged solution. The firm chose Java as the development platform instead of .NET as this was deemed to be the best technology for constructing Web applications at the time. Introduced by Sun Microsystems in 1995, Java's 'write once, run anywhere' philosophy made it the ideal language for distributing code across the Internet. Inscribed in Java, among others, were the notion of reuse, shorter time to market, and increased connectivity. Over the next few years Java's general-purpose programming capability would impose new inscriptions in the overall development environment. The newly formed company sought to recruit highly in skills in Java, graphic art and e-commerce generally. Despite its growing popularity and ease of use, Java skills were hard to find, given the exodus of skilled IT workers from the country and the newness of e-commerce at the time. The lack of skills and newness of these technologies would later impinge

on the team's ability to deliver on time, with as few 'bugs' as possible, and thus contributed to poor translations of eHIC. One of the senior members of the development team described the immature development environment:

When H-World was started everyone was in bloody real trouble. People were in real trouble. Everyone was new to all the technologies that were used, new concepts that were introduced, under huge pressure as well as everyone was just hired, everyone was trying to their best to keep their jobs and it was the job necessity itself that made everyone work so hard, they never did this in their lives before so it was a matter of survival. That kept them together and built strong relationships It was not the leadership ... it was the pressure, the struggle for survival that kept them together. (Systems architect, interview 019, p 2)

Poor translations also involved the internal systems. The predominantly batch mode of processing between internal systems, the use of a non-standard database platform, poor data quality and integration issues all made for weak (ties) inscriptions. The internal Magic-based systems, and a robust client-server application used by the internal operational areas for high-volume data capture were at odds with the Java-based application for developing Web-based applications. The Magic-based systems were not readily interoperable with the CORBA standard, which meant that a lot of the business logic was inaccessible to the Java-based applications. Furthermore, a number of the functionally driven Magic systems were built as one monolithic piece of code, and therefore could not be easily adapted for a component-based Web environment. This meant that business rules had to be rewritten, using maintenance-prone Store Procedures to access the data from the already unconventionally designed tables.

Apart from contributing to high maintenance levels, this obviously led to strained relationships. Because the current system environment was designed to support the internal processes, and was not designed for real-time e-commerce, this created a lot of animosity between the eHIC and the systems departments. The e-commerce SBU claimed that the current systems were antiquated and not supportive of e-commerce.

I think we were sort of seen as, call it the interloper, ja, that's what we were ... and I think we sort of came in and expected them all to drop everything to give us what we needed. We were dependent on some of these systems. It's like okay you have to deliver this for us. You know so we weren't part of Systems, and also the departments were also treated differently, like eHIC, in the early days we had our own chill room, it might seem silly, we did not go to the systems functions, we had our own functions, so if there was a general systems function we never went. We just did our own thing. And I think that also did not help. And we didn't sit near them, because we were in Eaton House and everything, so ... (Developer, interview 016, pp 6-7)

On the other hand, the systems departments were unhappy with the manner in which eHIC representatives ‘bullied’ them for assistance. This approach was counter to the loosely coupled organisational form in the systems area that was characterised by semi-autonomous reporting relationships and was deemed one of the reasons for their past successes. In fact, the intense mood at the time is reflected in the name of one of the workflow processes developed for eHIC. The systems department reluctantly built a workflow to adjudicate member personal information that was updated online. The name of the workflow type was ‘GEB’. The workflow description of the GEB procedure read, ‘Get eHIC off our Backs’.

The introduction of eHIC also exacerbated relations between the business departments and eHIC representatives. As a result of the conflict between the two technologies, and the resultant unsteady support from both systems and business departments, the implementation of the project was completed much later than envisaged. In addition, the frequent system failures created a flood of phone calls to the call centre, which did not help the reputation of the online service internally.

As expressed by ANT, and apparent in this case, technical artefacts are not neutral. In this instance, the Magic development environment did not require a skilled systems designer or architect. This led to suboptimal design of the databases. On the other hand, the e-commerce department was a Java-based environment. Java is tied to object-oriented modelling and mapping classes to relational or object-oriented databases. Therefore Java developers tended to have a different set of skills. To add to this, the SST developers required a single view of the customer and a process view of the organisation. The current stovepipe systems environment and the need to achieve systems integration were at odds with the approach inscribed into the SST. These differences are explained in the following comment:

... There were many data issues which had to be resolved. One of the more complex areas was of profiling. What if a Broker was also a doctor? And a member? And a dependent on another policy? With Wellness? What could he or she see? How would it integrate? This was a significant issue that we had to overcome. It forced a redesigned of our databases from policy driven design to an entity architecture. Extremely challenging but in the end it was well worth it. Another major issue that H-World introduced was the transparency of our information to our communities. It’s easy to hide bad information from your customers over the phone. But when they log in and view their statements in real time and you have data issues it’s very difficult to get around that. I guess there were two issues here. The first was bad data and the second was the timing of information. Our data was bad, at least H-World forced the business to sit up and take notice of this and clean up the data. Secondly, many of

the processes in the corporate systems were updated in batch. This didn't work so well when our users wanted to see up-to-date information. (Senior business analyst, interview 30, p 3)

On the other hand, Magic applications were used to sustain robust applications to support the call centre and the myriad functionally based administrative processes. Although Magic supported business growth and rapid changes, it led to suboptimal designs for Java-based concepts such as reuse. Over time, the idea of a database design on an entity model would only gain traction largely because of the SST's needs. At the outset, the collision of these two (Magic and Java) socio-technical assemblages constrained the way the SST functioned.

Moving to users, although *interessement* was positioned in the various promotions for convenience, secure and real-time information, from a user perspective the corporate standard to verify user name and password through a call-centre validated process was a major barrier to using the system. Since firms can be held liable for granting consent to users to access a member's information, trust is a concept that applies equally to the firm and the user. In supporting relationships via SSTs, the firm delegated trust decisions to verify and authenticate the identity claimed by the user to both human and technical systems. The SST was liable for any breaches of trust or negligence in its use. Therefore a policy for controlling access to the SST via new roles and profiles had to be established. These were stored in a database. Linked to these new identities were a variety of attributes describing specific relationships, so that the SST could grant the correct privileges to the user. Some users expressed their frustration that this process was protracted:

The only snag is the registration process. 48 hours is too long to wait for registration confirmation. Everything else, WOW! (Online feedback, June 2001, line 119)

On the other hand, the telephone was ready at hand. Instead of grappling with the cumbersome registration process or the cognitive effort of remembering a password and user name, the member could easily access the firm's phone number and his or her membership number, which was required for authentication. These details were already inscribed on his or her membership card.

Furthermore, servicing issues were directly associated with the claim processes. Given the younger profile of the HIC member base, it is not surprising that most members who represented

a critical mass called the call centre less frequently (see appendix D, figure D1). In other words, these healthy members who had low claim incidences had a low need to interact with their health insurer. Despite this, following Pareto's principle, as a collective they represented the majority of calls. To make a significant impact on calls, the SST team would require the arduous task of enlisting these members. However, what would emerge over time is that those members with the greatest servicing need, using multiple channels – in other words high-frequency callers – would also be loyal users of the website. Whereas the intention of the organisation was to develop a channel that was to replace the traditional call-centre channel, different and unexpected patterns of use emerged.

Another reason that negotiating with the SST to become the dominant channel did not work is implicit in the role of the call-centre consultant. It soon became apparent that the call centre agent's role is multidimensional. In a typical conversation about the depletion of funds (illustrated below), the call-centre consultant can play multiple roles, including distilling the information from her system, interpreting it by quickly reviewing historical transactions, and, by combining knowledge of the product and member, offer reasonable solutions to the problem:

Member: What is my current savings balance?

Call-centre consultant: R350,00, sir (information distiller).

Member: Why is my balance so low?

Call-centre consultant: I see that most of your claims by your doctor have been charged at private rates, sir (interpreter and product expert).

Member: But my son needs his spectacles changed.

Call-centre consultant: I am sorry to hear that, sir (empathy). Unfortunately you would have to cover this from your own pocket. In future, I suggest that you please ask your doctor to charge you at medical aid rates (adviser).

So the call-centre consultant is also a financial advisor, product expert, and information interpreter, in essence a knowledge worker. In her dialogue with the member she is able to provide an understanding of the problem and opinions based on sound experience. In addition, she has the ability to display empathy, which provides that personal touch which is essential in dialogues that are both sensitive and controversial, such as a query over funds.

Davenport and Prusak (1998:5) define knowledge as follows:

Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating experiences and information. It originates and is applied in the minds of the knowers. In organisations, it often becomes embedded not only in documents and repositories but in organisational routines, processes, practices and norms.

From this perspective of knowledge, the embedding of the call-centre consultant's work routines was evidently more complex than the programming of Web applications that represented the key call reasons of members. Moreover, informational asymmetries are evident between the customer and the call-centre professional. The service user engages with the call-centre professional from a position of dependency, and the call-centre expert determines what is in the member's best interest, based on his or her professional judgement (Laing *et al*, 2004).

Furthermore, in using the self-service technology, the user is responsible for navigating the pages, finding the information, and expending effort to establish why his or her funds were depleted. In this way, the user interface provides a key contrast when compared with traditional services (Gummerus *et al*, 2004). However, the user interface is limited to displaying the functionality and content organisation. Thus it supports the look, feel and usability of the SST, and passively facilitates the interaction. On the other hand, the call-centre consultant's value is inherent in the ability to dynamically interpret the text. The Web relies on the user for this function and, given the technical complexity of consumer-driven healthcare products in general, this counts as a limitation.

In ANT terms then, the interrelated roles of the call-centre consultant cannot be easily defined and attributed to the Web actor for acceptance. Making the Web front-end function as effective as a call-centre consultant would result in a long and difficult set of negotiations – as future redesign attempts will reveal. Customising a message to address a specific user problem and packaging it into a personalised response is a complex task that human actors tend to dominate. This applies in particular to follow-up queries of a financial nature, such as unpaid or rejected claims, chronic medicine queries, third-party payments, errors with statements, and high-risk transactions, such as hospital authorisation or travel bookings, as suggested by users in a focus group session. As a result, it is not surprising that loyal users prefer to use the Web for simple transactions such as general product information, viewing claims, MSA balances, and benefit

information, and checking their wellness points.¹ This view is confirmed by the usage statistics in the management reports.

Opening the black box of the call-centre consultant reveals many more actors, many more roles, and many more associations that are not amenable to the Web technology. The telephone was inscribed in the membership card, and in the firm's correspondence to members in the form of the claim statements, magazines, fact files and so on. In other words, the telephone number was ready at hand. The rapid increase of cellphones in South Africa further strengthened the ties of the member to the call centre. Even while members were mobile, they had access to the call centre. It is therefore not surprising that the users still contacted the call centre. To add to this, the batch mode of processing meant that the call-centre applications often had information that was timelier than the website. For these reasons, the call-centre channel displayed properties of irreversibility.

Successful networks require that allies think and act in a way that maintains the network. In contrast, the online service was being negatively hampered by the poor ICT infrastructure provided by the monopoly service provider at the time. Although the firm invested in a virtual ISP arrangement with a leading Internet service provider (ISP) company, this did not appear to alleviate the 'speed' problem. One of the users noted:

Even with a dedicated 64K ISDN line, I have not managed to get to any page I tried to access. Please ensure that there is either more bandwidth for access or the system does not bump you off in too short a time. Note: Most people access with a normal Telkom phone line at 14,400 K and must find it impossible to access the site. (Online feedback, October 2001, line 533)

The comments from frustrated users suggested that the site had been designed for broadband users. For those home users with a 28.8 k modem, the site would be difficult to access. The typical webpage size was only about 150 k. However, 150 k + the additional 128-bit encryption, made the pages sizeable. Secure Sockets Layer (SSL) would set up an encrypted session between a client and a server using 128-bit session keys once the user logged on. It was assumed that the users would feel more secure in their interaction once the yellow padlock appeared on the bottom of their browser. However, security concerns would exacerbate speed issues. For this reason the business analysts and developers often suggested that a no-frills website should be designed for

¹ Feedback from focus group session.

the many users with poor bandwidth. Other suggestions included limiting the encryption to areas containing transactional information. However, the custodians of branding and corporate security policy standards – represented by marketing and internal auditing – curtailed these options. The irony is that as computing and networking power increased with the advent of the Internet, there was a pressing need to increase security measures and censor information.

For the most part, even in the context of slow and costly access, the majority of HIC's members simply did not have access to the online service from home. At work, most employers were imposing restrictions on employees against using SSTs in order to alleviate productivity and security concerns. By design then, the online service was accentuating further the social exclusion of marginalised and impoverished members by creating 'information haves' and 'information have-nots'.

And even for those members who did have access to the Internet, the openness of the Internet standard was contestable, as members using different browsers continued to undergo varied experiences. As has been shown, the SST can be described as a heterogeneous network consisting of varied technologies, networks, and standards to support a diversity of application areas over time and space (Hanseth, 2000). At the time, Microsoft and Netscape, the two popular browsers, were in a 'battle' to become the browser standard setter. So while eHIC was attempting to become the dominant service channel, these firms were attempting to grow their install base. Their lack of consensus was creating confusion among HICs consumers as well as software developers. In these early stages many users expressed disappointment that the site was not compatible with their browser versions. For example:

I was disappointed to find the limited number of browsers available for Linux, but dutifully went ahead and started downloading Netscape 6.2, but lost interest when I discovered it was 27MB, stiff for a dialup ... I don't quite get what's wrong with, say, Konqueror, Galeon, etc, all excellent browsers capable of SSL2 and 3, Java, etc. Anyway, I poked around looking for a SA copy of Netscape, hoping for a quicker download. On the off-chance I tried Mozilla, and hey presto, it works like a bomb. Guess I shouldn't be surprised, since Netscape lives off it, not to mention a few other 'famous' browsers. Enough blurb I guess, you may want to advertise Mozilla as an option, since it's included with many recent distros. More to the point, its Mozilla 0.7, for a 2.4.2-2 kernel, Gecko 20010316. It's great to be able to browse with 128 b security, and an operating system pretty immune to those naughty trojans that email your details anyway. (Online feedback, July 2001, line 558)

I use a iMac with Internet Explorer 5. Given that IE5 for the Mac and IE5 for Windows support the exact same features with full java support etc. I fail to see why your site disallows my browser. The only reason I can think of is that your programmers never

thought it possible that someone with a Mac would want to use the site. I trust that this can be fixed quite quickly. (Online feedback, July 2001, line 558)

Initially, operating systems such as the Apple Mac (Macintosh) platform, by virtue of the design, were ignored in the H-World online strategy. By dismissing Mac users as insignificant because of their small numbers, they were in effect keeping valuable services out of their reach. Over time, and given increasing member demands, the development team had to ensure that users with different browser types and versions were accommodated and that the website was therefore compliant. This obviously had an impact on development timelines, and increased the amount of testing for the business analysts and graphic artists. On the other hand, while browser standards constrained the user, the open standard for telephone interconnection gave users the assurance that despite the type of phone they owned, they could still interact with the health insurer. But over the years Microsoft and Netscape would learn to cooperate more extensively with each other to facilitate the widespread use of e-commerce and thereby better serve their mutual interests. Soon these companies would decide to settle on a truly open standard. Consequently users would not have to worry about their browsers not working at a particular website.

Meanwhile, for the majority of users, the SST was not being viewed as a substitute channel, as the business had defined. First, for most members, access to the Internet was simply lacking, so by design they were not part of this system. For those who did use the SST regularly, statistics revealed that most of these users called the call centre soon after using the website. This finding suggests that for most of the loyal users, the translation of the SST that resulted was that of a technology that offered them a means of arming themselves with their health plan information, so that they could be well prepared when engaging with the call-centre consultant.

These examples make it clear that the ICT infrastructure, browser and operating system standards interacted with internal system differences between Magic and Java – and the various beliefs by actors such as management, designers, other departments and users about the role of the Web – to affect the extent to which the SST could become the dominant channel. In this episode and in contrast to the traditional channels, stable networks or aligned interests with allies of the SST could not be maintained.

Framing

From this discussion, it might be concluded that the translation of the actors in eHIC, the OPP, failed to achieve the desired outcome as the preferred channel or the channel of choice. As described, H-World was an association of human and non-human actors. The inscriptions internally among management and eHIC representatives were certainly stronger than those displayed by the external users. The initial network and its loosely formulated OPP – ‘to become the channel of choice’ – were readily accepted internally by a few of the key senior executives, but remained too weak to mobilise a sufficiently strong network to become the dominant channel. Inscriptions were strong among the management team, given the investment in people, hardware and software. In addition, exploiting the Web capabilities was in line with increasing the innovativeness of the company. After all, potential joint venture (JV) partners, the media, software vendors, and other major industry players were supporting these notions. One of the reasons for this outcome was that the advocates of sales via an intermediary were aligned with powerful networks inside and outside the organisation, so that the vision of direct sales had to be reformulated.

Naturally, a loose formulation of goals such as ‘the preferred channel’ was not sufficiently convincing for those managers and staff that represented the channels the SST was attempting to substitute. More specifically, during this long implementation journey, the interactions with human and non-human actors supporting the traditional channels would be more contentious than collaborative. In this spiralling innovative climate, and increasingly demanding service environment as a result of rapid membership growth, achieving synergy between departments would prove particularly problematic, largely owing to the various actors having to facilitate multiple and conflicting agendas. As a result, negotiations were often beset by ‘clashes’ of interest, and these conflicts often became irresolvable.

Successful translations also depend on how faithful key actors are towards their alliances. Certainly, the local ICT infrastructure was not supportive of a self-servicing environment for a majority of the members. Furthermore, standards and security were impeding the Web channel, compared with alternative channels. In addition, the poor interoperability with internal systems designed to support internal processes, and the lack of technical skills of the newly appointed development team, translated into unsuccessful and unstable translations between internal actors.

While some of the key human actors internally were convinced of the value of the SST, most of the external users were not. Attempts to mobilise, expand and stabilise the majority of users turned out to be complex and frustrating. For the user, the telephone clearly had a better inscription than the web. Allied to the telephone was the membership card, with a membership number and telephone number, which could easily fit into a member's wallet, while a user name and password remained a cognitive challenge. There were simply too many things attached to the use of the call centre. The competing call-centre channel in alliance with the frozen network element of the telephone was now being acknowledged as a black box. On the other hand, weak inscriptions demonstrated by the allies of the SST and their inability to act in ways that maintained the network led to many members persisting with the use of traditional channels. Given the properties of irreversibility demonstrated by the traditional channels, there was a realisation among the senior management team that the 'substitution claims' may have been far-fetched. These views are noted in the following comments:

When the dot bomb started happening, you know, the realisation of what happened is that, maybe it really wasn't this tsunami ... (CIO Health Systems, interview 36, pp 1–2)

From a landscape point of view we may have been a bit blind to the fact that connectivity levels and even on dial-up at that stage were abysmal ... (Community head, interview 49, pp 1–2)

When the dotcom bomb started, the role of e-commerce in the organisation was subject to further internal evaluation. The inability to deliver the initial projects on time, as well as the inability to convert a majority of the members to the online channel, meant that the intention to substitute the call centre and become the channel of choice was compromised. This led to a shift in strategy as well as a change in the way that the e-commerce organisation was structured to improve internal alignment as well as inter-departmental relationships. While there was still a focus on efficient servicing, major emphasis was being placed on a new paradigm that was emerging, one where the organisation sought to 'dazzle users' with online tools designed to support its Wellness program.

8.1.3 The channel that dazzles

Inscribing

Ironically the same media that had once supported the ‘hype’ around the Internet conveniently reassessed their views after the spate of dotcom failures.

It grew to be known by many names – the Information Superhighway, the World Wide Web, the Internet, Great Supreme Digital Being – and its promise spread its wings the way promise is spread on a really large piece of toast. This new thing was so deeply wonderful that it would boost planetary wealth and alter the business landscape with all the impact of an asteroid. Startups rise. Giants fall. Hope survives. What a cruel, cruel illusion it all turned out to be. Stoked by the false promise of office foosball and a lot of irrational exhibitionism, the dot-com phenomenon proved to be shot through with phoniness – an apparition within a hologram wrapped inside two spectres of a mirage, with some tulip mania to boot. As for why anyone ever thought doing business on the Web was a good idea, search us. (*Fortune*, 2000)

Meanwhile, to get acceptance internally and externally, a stronger form of enrolment was needed. After the ‘dotcom bomb’ the e-business was reintegrated into the IT division, and was now operating as one of the many systems departments. Senior management were hoping that the closer relationships with rival systems department and a location change would resolve some of the alignment issues experienced during the previous phase.

The ‘dazzle’ metaphor describes the shift that reveals the second major inscription of the online self-service technology. The role of the self-service technology was fundamentally driven by the firm’s focus on the wellness offering. Within this technology frame, the emphasis was on hedonic aspects, as opposed to merely health plan transactional features, as during the ‘preferred channel’ era. Members were now being incentivised to stay healthy, and the wellness team were interested in whether the Web could be an appropriate mechanism to promote a healthy lifestyle. After all, interested members could now earn loyalty points and receive rewards for following a healthy lifestyle through online tools.

According to agency theory, incentive benefits can align the consumer’s behaviour with support of the firm’s goals (Bhattercherjee, 2001), in this case leading a healthy lifestyle and thereby reducing the claims. These programmes are developed for a variety of reasons: to increase the loyalty and value of existing customers; to gain access to richer customer information; to manage

consumer behaviour; to combat competing schemes; and to counter shifting sales (O'Malley, 1998). These incentives can be offered in the form of cash, prizes, coupons and redeemable points. According to cognitive-learning theories, the value of a loyalty program for a customer can be identified by five elements (O'Brien and Jones, 1995):

- The cash value of the incentive as a proportion to spend or effort
- The range of rewards offered and the redemption options
- The aspirational value of the loyalty program
- The feasibility of attaining the aspirational value of the program.
- The ease of participating in the loyalty program

The same literature offers mixed and somewhat sceptical views on whether these programs can meet some of these objectives. Nevertheless, the Forrester Report estimated that US online retailers alone would spend \$14 billion on online promotions by 2005 – a large part of these promotions will be in the form of loyalty incentives.

Meanwhile, clicks and mortar firms like UAG were also differentiating their loyalty incentives by integrating offline and online loyalty programs to attract members. Apart from incentivising members to lose excess weight, quit smoking and boost their fitness, UAG used its Wellness program to enrol members to utilise the online channel to track their claims, conduct hospital pre-authorisations, view their saving account balances, book their flights, and so on. The rewards included discounted gym fees, lifestyle magazines, movie tickets and airline travel and hotel accommodation. Members were being encouraged to achieve the aspirational as well as the intrinsic value of moving from 'blue status to gold status' by participating in offline and online programmes to improve their health.

Translating

The philosophy of improving the lives of its members by providing them with lifestyle benefits and rewards for maintaining their health is captured in the following comment:

The problem with human beings is you need to give them some reward for their effort. And the whole concept of Wellness is that you get a reward or an incentive, but by then you would feel so good that, that it is sort of, you know, an added bonus, 'the reason why I am doing it is because I am actually feeling good by exercising or if I meditate twenty minutes

every day'. So you catch people, either with, you know, scaring them, showing them the huge risk, or you catch them with the incentives, which are just so attractive, that in the end, you have them stick with it long enough to feel it in their bodies and mind that they are actually benefiting. (Stress expert, interview 35, pp 15–16)

This extract points to the conflict of interest between the member and insurer, and the use of power by the firm to resolve these conflicts. Economist John Kenneth Galbraith (1984) distinguishes between three kinds of power: coercive power wins submission by inflicting or threatening sanctions; compensatory power by offering incentives and rewards; and conditioned power by changing beliefs through persuasion or education. The firm was attempting to inscribe the right mixture of these forms of power in order to resolve conflicting interests between itself and its members.

Power can be socially essential, but it can also be socially maligned (Galbraith, 1984). After all, inscribed in the Wellness program is the view that consumers follow the mannerisms established in behavioural psychology theories. In particular, humans behave in the same manner as Pavlov's dogs.² The organisation was attempting to obtain compliance through the principle of association (Cialdini, 2001). Similar to Pavlov, the organisation was attempting to get its members to attach pleasant feelings and a positive attitude towards a healthy lifestyle by making these behaviours closely associated with rewards. In doing so, the organisation was able to attract many members by connecting its healthcare product to the current cultural rage of 'healthier lifestyles'. To increase familiarity with the Wellness program, UAG became a major sponsor of popular sporting events, including rugby, soccer, cricket and wheelchair basketball. Unlike other healthcare insurers, UAG spent a substantial amount of money on advertising, specifically during recurring sporting events on television, such as the English Premier Soccer League.

However, on perusing the internal reports, while more than two thirds of the health member base were also wellness members, less than 1% of wellness members achieved gold status (highest status), while more than 70% remained on the blue status (lowest). Clearly, while members liked to be associated with the Wellness programme, this did not necessarily translate into habitual

² Ivan Pavlov was a famous Russian behavioural scientist who showed that he could get an animal's typical response to food (salivation) to be directed towards something irrelevant (a bell) by simply connecting the two objects in the animal's experience. In this famous experiment, Pavlov demonstrated that when food was presented and accompanied by the sound of a bell, over time the dog would salivate only to the bell, even when no food was presented.

behavioural changes for a majority of them (if one were to assess this from a change in status perspective).

Nevertheless, the ‘regime of truth’ that ‘prevention results in reduced healthcare costs’ was perpetuated on the results of the minority of members who were on gold status. Internal research indicated that members on gold status had a lower claims ratio than members on lower statuses, and significantly low in-hospital claims. How much of this was due to correlation as opposed to causation was not explicitly communicated. After all, the gold status of wellness members might be attributed to a prior or already habituated healthy lifestyle and not to the program. In other words, it is not unlikely that for the most part these members were already living a healthy lifestyle and easily ‘fitted’ into the Wellness program. Another perspective is that gold status and low claiming may be primarily associated with the age profile of the person, rather than the program itself. After all, the incidence of in-hospital claims among younger members is naturally higher than older members, despite lifestyle changes. One would need to study the lives of these ‘gold status’ individuals to understand this more closely.

At the time, WSC was powerfully positioned, and was becoming a major part of the network. There were definitely strong ties between the head of e-commerce and the head of the Wellness Program. Consequently, the online channel was being viewed by the business proponents of wellness as an important ally to their success. The two leaders shared similar views, using the ‘cost savings’ argument as the rhetorical device to enrol users to self-service wellness applications, as opposed to wellness practitioners. With these redefinitions of the SST concept came shifts in the enrolment strategy of H-World. A set of deliberate decisions were made to ensure that the best – and formidable – team of developers and business analysts were available for wellness projects. H-World had now become UAG’s spokesperson for wellness.

The ‘dazzle the customer’ technological frame became a significant source of new online tool ideas. Two noteworthy online applications were the nutrition centre and the online stress centre. Based on their belief that the Web could add value in preventative healthcare, the nutrition centre project team aimed to establish an integrated nutrition programme, using scientific guidelines, periodic reviews, and data collection, all supported by a nutritionist co-ordinator. Unlike in the past, when H-World team members drove the project, the approach H-World took during this phase was more consultative. Meanwhile, the clinical team who were now driving the project

selected a panel that consisted of three nutrition academics from universities around South Africa. This panel was tasked to review the design of the application and provide guidance. Panel members were also involved in a number of workshops with the development team. The design of the tool had to get their stamp of approval on the ‘scientific basis’ in particular as well as the ‘user friendliness’ of the design. Here again H-World was the obligatory passage point linking and translating different actors, such as self-service concepts, information technology, clinicians, dieticians, academics, developers, business analysts, and users. The nutrition expert described the various interests implicated in the design of the online nutrition centre:

Although they are not technical people [referring to the panel] they obviously have experience in their academic and dietetic practice scenarios. This is how we kinda got the rubber stamp. There were a lot of challenges I mean within any panel you are going to have differing opinions. Although they are all excellent academics in their own right there was of course a certain degree of not necessarily conflict but differences of opinions in certain aspects. You could certainly pick up the different slants in their particular field of interests and or passion. So for example one would constantly be harping about fibre or lentils and the other one would be harping on about you know various different angles. That is one of the reasons you have a panel I suppose but when you got a specific task to perform you don’t really want to have to deal with too many opinions. The other challenge was also getting them to understand what HIC wanted to do with this scientific information which they are often used to working with and why it wouldn’t necessarily be possible or feasible in a Web environment. So taking the science and translating it into an interactive tool was quite a challenge. (Nutrition expert, interview 46, p 11)

The team worked very hard to establish specific goals about what the tool was and parameters for what it was not. Some of the key individuals felt that this was one of the areas where they stumbled a bit, because they were almost aiming towards something that was too complicated, whereas they should have been focusing on keeping things simple.

At the time the nutrition centre had not put in any specific programmes that enrolled registered dieticians. While members could go to see a dietician, there was nothing in place that ‘pushed’ members to dieticians. So the only way that members could obtain nutritional information initially was via communication through the magazine, email and the weighless programme. However, the weighless programme did not appeal to everybody. It was obviously seen more as a programme specifically for people who wanted to lose weight, but the objective of the online nutrition centre was ‘to catch the entire population’. The panellists had the view that the team needed to create an online dietician and the development team were transfixed by this conceptualisation.

Upon reflecting on this inscription and the ability of the Web to translate this inscription, a senior member of the team viewed this as a mistake.

... trying to figure out everything a dietician would want to know from a person and trying to put that in some kind of tool was actually a mistake because we really didn't intend to become or replace the services of a registered dietician, there is absolutely no way that we could possibly do that and yet we were trying so hard to get to that point of being an online dietician. (Nutrition expert, interview 46, p 11)

Having been a practising dietician, the nutrition expert suggested that because food and eating are very emotive issues, the 'real-world' dietician often has to play the role of psychologist, part-coach, part-friend, and part-dietician. A dietician also spends an enormous amount of effort in motivating a patient. And even during the follow-up sessions, the dietician becomes the motivator and the counsellor. The limitations of delegating the role of the dietician to the self-service tool are succinctly described by way of example by the nutritionist:

I mean online, on the tool I could have had two men who were trying to lose weight and exercising three times a week. One could have been a bachelor who was a complete perfectionist and working very long hours and travelling a lot. One could have been a retired man who had lots of time on his hands and had his own vegetable garden in the back and lived out on the coast. You know or something like that. Those are the kind of things, the small nuances that are important, to bear in mind because of the fact that this eating is something we all do every day and it is highly emotive and so highly affected by the type of life that you lead. So there are so many factors and not even necessary really to be written down. You know, you just pick these things up. It's really about gathering information and then tailoring it. Because we know with compliance, with any kind of lifestyle change, the more you personalise it, the more suitable it is to the person's lifestyle, the more success you going to have. (Nutrition expert, interview 46, p 15)

In attempting to emulate the interpersonal ability of the dietician and the resulting interactive nature of the application requirements, Java scripting was enlisted to construct the front-end. However, this design would soon prove to be prone to maintenance issues as most of the rules were hard-coded and not variable driven.

One of the key features of the tool was assisting users to track their progress on the programme. This was largely in the form of self-reported measurements. However, there was no mechanism to establish whether their measurements were accurate, and therefore these measures had to be trusted. Furthermore in the online environment, it was difficult to counsel users at the point that they might have slipped or diverted from the programme. The SST was prescribing a particular approach to dietetic practice. To support this approach, the development team enlisted the aid of

other non-human delegates such as frequently asked questions (FAQs) to address common issues people faced when they follow a dietary programme. Users could select from a list of common issues and the system would automatically provide the user with generic feedback on those issues. Apart from coverage in the UAG magazine to enlist and keep users interested, users received monthly electronic newsletters.

Over time the application was extended to include an 'email a dietician' facility and the team viewed this as taking one step further towards translating the tool into a real dietician. The dietician coordinator for the online nutrition centre was responsible for answering questions posed by the users. However, the following comment suggests that responding to these emails was extremely challenging:

... I would get an email saying 'Dear dietician, How do I lose weight'. Not signed. I don't know the gender I don't know how much exercise the person is doing. I don't know anything cause what they do or don't eat. So they would have to get a generic response because the generic information I received could only be translated into generic recommendations and I did not feel that was very fulfilling because it was almost like, what is the point then, they could have probably just as well searched an FAQ database. (Nutrition expert, interview 46, p 11)

On the other hand, some users would email with elements about themselves and in significant amounts of detail. But this information was still insufficient to create a proper individualised meal plan. As a result, the online dietician coordinator found that she was providing generic recommendations. To counteract this, in her email follow-up responses she began to tell users how to get hold of a registered dietician, and referred them to the registered dietician association's website so that they could search for a dietician in their area.

The realisation eventually emerged among the development team that designing a diet on the website was not going to be the 'be-all and end-all'.

In July 2003, HIC enlisted a medical doctor who specialised in stress management and wellness to assist in developing an interactive online stress centre. Despite being an author and an avid user of the computer and the Internet, the stress and wellness expert had not previously been involved in the development of a self-service application, and found the experience to be quite a learning curve from the outset. The team had to launch the first phase in December 2003, so there was immediate pressure to complete the project in a very short period. No similar application was available online, so in many ways it was pioneering work. Even the

organisation's prior experience with the nutrition centre was not remotely the same as the envisaged stress centre.

However, the high-level layout of the nutrition centre, which is based on following four or five 'easy' steps, did offer some direction. Nevertheless, the content and the mechanisms for interaction had to be different. So the first hurdle was designing the user-assessment templates, and then adapting these, so that they could be used on the Internet. The assessments were designed to assess personal stress. Personal stress aspects included personal, relationship and lifestyle stress-related issues. Also inscribed in the design was the ability to demonstrate to users the strong link between stress and medical ailments. For instance, users could be shown that there was a strong link between their stress level and their risk of high blood pressure. There was also a major emphasis on stress in the work situation. The design of work-stress assessment was influenced by the fact that most users of H-World accessed the Internet during work hours in the work situation (see appendix D, figure D4). So it was assumed that work-stress assessment can be targeted successfully at that large segment of users.

The stress management tools were aimed at addressing specific stress triggers. Once users had completed the stress assessment form, they could save their input. When they had completed the assessment, they would get feedback on their personal stress triggers in their personal stress form, which they could either print or save. Users would also receive guidance on the stress areas they needed to pay attention to. And then they were directed to a list of tools that were effective in managing the triggers that they had experienced. Some of these popular tools dealt with work-related stress, personal relationship issues and financial strain. Users could then select two or three tools that they wanted to work with. They could also reassess every three months to see whether their 'stress scores' had improved as a result of using the tools.

However, stress is difficult to observe without the physical presence of the patient. A lot of energy was devoted to personalising the interactive stress centre and interpreting user feedback, as described by the stress expert below:

... the way the questions were posed and the feedback was developed, so that people feel this is now really me, this is my stress triggers, this is my personal feedback and this is what I can do about it. So I have tried to make it you know, a bit more personal than what one would often get on an Internet site, with the language I used, in the first person, like 'you' and 'I' and so on. Instead of saying a person should be doing this, rather say, this is what you

can do, this is what I would recommend for you, so keeping a little bit of a personal feeling there. But, otherwise, it is very similar. It is your medium of communication and to write this, and you write for journals and magazines, and you have done something for Websites, it is not that much of a leap to doing it on an Internet site ... it is a sense, especially when I do the expert queries, but that is also something that you can sense. You can sense a lot of the person's, you know, how they are feeling at that stage, from the words. And even things like, you know, if they write the question and it is just like one long paragraph without any full stop and without capital letters, there is a sort of sense that you get that this person is quite disturbed and in stress and in need of help. And also, the length of the description and if, is it by point by point, or is it just one long rambling story. So, one does sense, you know, that sort of sense that you didn't pick up on body language but the way they write, and what they say, and the words they use, it gives you a bit of a sense. (Stress expert, interview 35, pp 5–6)

One of the inscriptions in the design of the stress management tool was that people think and conduct themselves in very similar ways. To a large extent, despite attempts at personalising the feedback, this feedback was impersonal, because it would generally be the same for anybody with that stress trigger. The process of responding to user queries about stress was described by the Stress Centre expert:

So I have got some standard responses for financial stress, relationships, for aggression ... So, from sort of the whole file of responses, I can copy and paste and then adapt it to that individual's specific question. (Stress expert, interview 35, p 21)

The feedback included the disclaimer that it was a general response.

The online Stress Centre was intended to help users address day-to-day stress triggers. Users who experienced 'painful memories coming to their conscious mind' were referred to a healthcare practitioner, or mental health expert, from a reference list. So the tool was by no means a diagnostic tool for serious mental health problems. The examples below clarify the distinction between day-to-day stress and serious stress issues. An example of a day-to-day stress trigger is the busy traffic that people who drive into South African cities for work have to deal with every day. So the tool would offer generic advice such as stagger your work hours, come in late, leave later, or try an alternative route. If people did not manage stress triggers such as traffic on a day-to-day basis, the assumption was that this would eventually escalate and become a point of stress that could lead to disease, for instance high blood pressure. An example of serious stress would refer to major events such as divorce, losing a loved one, or post-traumatic stress after being hijacked or attacked during a serious crime. If inputs or queries suggested that the user might be experiencing depression or post-traumatic stress disorder, he or she was referred to a mental healthcare practitioner.

Apart from engaging with users online and responding to their queries, the interactive stress centre sent out monthly electronic newsletters to keep users' interest alive. Not surprisingly, both the online stress and nutrition tools would become an important ally in selling the wellness concept to potential clients as well as current clients who were still sceptical about it.

... and then PB, she was at that stage Marketing Manager for Wellness, she realised that this was a very important value added tool for our clients ... Because, often you would find people saying, well, you know, 'I am not that keen on Wellness', because they don't really see the value ... or they live too far from the gym, or whatever. So that they can now see there is value in the Stress Centre and of course in the Nutrition Centre. Because that is something that most people have an interest in, you know, sort of throughout the world.. it is worthwhile paying that R84, or whatever it is at the moment, for Wellness membership. So the aim was in the end to increase Wellness sales, to show them that the Stress Centre actually provides value to people who might not see the benefits of gyms and movies. (Stress expert, interview 35, pp 5–6)

In other words, the SST had received yet another inscription as a sales tool for wellness.

As noted, these online tools are about the separation of practitioners and patients, and the development and employment of technical artefacts to mobilise representations or information about the patient (Smart, 1985). Importantly, this representation must be adequate to 'speak' for the patient across time and space. By their nature, stress, wellness and nutrition may seem to be ideal focuses for an online self-service. For instance, nutrition takes as its business certain measurements such as body mass, age, gender, height, and waist circumference which appear to serve as a suitable 'diagnosis'.

However, in this process the user is transformed into a patient, the patient into measurements, the measurements into numbers, and the numbers into variables which represent easily transportable, understandable, and usable pieces of data for a computer program. The dietician is reduced to a computer program that is able to compute pieces of data. In a sense, both the user and the dietician have been displaced (Callon, 1986). They are transported across the Internet as a series of transformations. The user has been mobilised. That is, the user has been displaced from her seat behind a computer into a virtual world. The user participates through these mediators in negotiations over her 'new meal plan' for example, and aligns with the interests of the dietician and the health insurer.

The dietician has been rendered a multiple. Her reach has been extended to a mass of such users. The enrolment is transformed into active support by a host of users. These users choose the

online wellness tool as an ally and are proponents of the Wellness program, or so it appears. Unfortunately the negotiations do not end just yet. First, some important controversies must be dealt with. After all, the mobilisation can only be deemed successful if there are behavioural changes in the user, as inscribed by the designers, and not by the mere use of the online tool.

Certainly the possibility of remote diagnosis via online assessment tools captivated the panel members and the wellness team. As a result, this was deemed an appropriate area for development. However, by detaching the diagnosis from the traditional interpersonal approach to dietetic practice, these measures stood alone to represent the patient. Against this reduction of the user and then patient to a set of numerical measures, the dietetic practice itself was reduced. The nutrition centre's role was confined to a generic diagnostic reasoning algorithm that used a set of measurement inputs from the user against programmed guidelines or coded diagnostic rules provided by the panel. In a sense, the panel and the development team were attempting to 'black-box' the contents of a 'real-world dietetic' practice. The complexity in wellness practice includes personalising a programme from the way the dietician 'reads' the patient and motivation, so that the patient perseveres with the suggested behavioural changes. In the design, there was failure to understand the pivotal role that the dietician plays in interpreting the needs of the patient and motivating a patient in a face-to-face encounter.

Maybe the conceptions of the technology needed to be widened. To supplement these roles, the development team enrolled an ally in the form of email, so that users could correspond directly with the dietician through the e-dietician facility, and used regular newsletters to keep the user interested. Typical issues were also managed with the aid of FAQs to make the tool more interactive. Furthermore, points were awarded to users to interest them in using the tool continually. However, even with these allies enrolled, most users did not appear to be mobilised to make real behavioural changes.

Furthermore, only a minority of H-World's total registered user base was enrolled. The role of the dietician, it was soon realised, was multi-skilled and complex, and changing patient behaviour even more so. As a result, members were referred to dietetic practices near their locations.

In a Foucaultian sense, the SST had the effect of organising wellness into a classificatory scheme (Mort, May and Williams, 2003). In this system of knowledge, the human body constitutes merely that object or space in which the ailment (or in this case the diagnosis of stress or malnutrition) may be located. The SST ‘subtracts’ the patient by focusing on the measurements and symptoms. In this way the SST reduces the patient to merely an external fact, a space occupied by an ailment. As a result, the SST appears at best to provide an overly standardised approach to wellness, as implied in the range of generic solutions offered to the user.

Nevertheless, the website was gaining popularity among internal actors for keeping members informed and engaged in UAG’s Wellness program. After all, members were now being informed about their current wellness status. They were also encouraged to proceed to the next status level on the program, and offered guidance on the actions to take to get there. Furthermore, the website was showing members the kinds of rewards and benefits that they could aspire to. In addition, for proponents of online wellness, tools like the nutrition and stress centres were viewed among the internal allies as demonstrating real value add to WSC’s members. In this manner, the electronic channel was seen to be keeping users continually engaged in their healthcare. Also supporting these views were the internal management reports.

There is no doubt that H-World gained a lot of traction through its alliance with the Wellness program. After all, it contributed considerably to the growth of the SST’s registered user base. The reports indicate that 90% of the SST’s users were members of the Wellness program. Meanwhile, based on this rapid growth, statistics such as the size of the registered user base and the count of the daily logins to the self-service technology supported another ‘regime of truth’, that is, the success of the SST internally. Statements such as ‘We are the largest online health insurance website in the country’, ‘We have the largest amount of pages on a website in the country’, and ‘Forty per cent of all interactions with the firm are via the SST’ were the kind of rhetoric that was used to align interests internally. An income statement (not one that was based on strict accounting principles) that was vetted by the actuaries was used to demonstrate costs savings as a result of call reductions, based on the SST use.

Enrolment of users also occurred through the use of electronic newsletters, magazine articles, and site awareness created by the various wellness offerings. Wellness points were used as an *interestment* device to persuade users to use the online channel. Call centre agents were also

incentivised to enrol or persuade callers to use the online channel during a number of awareness campaigns. Viral campaigns and a host of online competitions that were tied to rewards and points were some of the other elements used to raise the interest of the user.

But while these allies were strong enough to attract users, they were ineffective at retaining them. Usage for registered members continued to hover around 25%. Even though the majority of users discontinued the service, there was no measure of lost users in the standard management reports. And even when management were provided with sophisticated representational systems in an ad hoc report that indicated the loss of users, they rearticulated this to mean that the current user base that had emerged was the intended one.

H-World had enlisted, through its design, those users that claim a lot as well as those that are faithful to the loyalty programme. The majority of members were neither high claimers, nor loyal followers of the Wellness program, and H-World seemed unable to impose the latest inscription onto them. Meanwhile, many of those users that were enrolled were later identified as ‘points chasers’. These users were dissidents. Points created the interest, but did not ‘black-box’ the network for most of the users, as suggested by the high lapse rate of users. Many users used the points for online use in an unanticipated way. Rather than follow the assigned way of using the online channel as an obligatory approach to ‘improve their health’, the anti-program of ‘points chasers’ emerged as a result of the incentives. ‘Deal loyalty’ transpired where users were more interested in moving statuses with minimal behavioural changes to their lifestyles to obtain higher discounts. The designers had been betrayed by the users they thought they were representing. The online feedback below demonstrates a user’s interest in obtaining points as opposed to the content.

I have been trying to complete the four exams for the nutrition section of the web site to get the 500 Wellness points. I passed the last three but can't get the 1st (basic) exam to display. My girlfriend logs on and sees (and completed) all four so it can't be my PC it must be something to do with what happens when I log on to the web site. Please advise how I can get the 500 points. (Online feedback, February 2003, line 2464)

Clearly for this particular user, like many others, the points were of more importance than the inscriptions of wellness designed into the system. Using the website was an easier way of gaining points. After all, instead of difficult behavioural changes such as quitting smoking or going to the gym, wellness members could simply gain points by registering on the online

channel and by ‘reading’ articles or ‘using’ the wellness tools. Yet again, despite the creativity demonstrated by the designers, many users were shaping the innovation towards their own ends.

Incentives also created anti-programs for the internal staff, who often colluded to protect their own interests:

We hide back what is happening from management, from everyone, and trying to sort it out as colleagues. Now it is happening on the UK side. X said don’t mark the site down, because if the site is marked down all the management will get the email the site is down, then we will be penalized. But at the same time the site is not functional, it is broken, so very much to protect their own skin, to get promoted, to get good incentives and whatever, the customer, self-service is suffering. (Systems architect, interview 19, p 1)

Meanwhile, there was constantly this internal challenge by the corporate systems (Magic) environment on the role of H-World (Java). While the roles of Magic and Java appeared to be a neutral discussion and simply a matter of a technical debate about what technologies fitted the organisation’s needs the best, it was clear that the system heads were using these artefacts to manoeuvre themselves into alternative obligatory passage points. As Hanseth and Monteiro (1997) point out, appealing to the symbolic character of technology makes it possible to disguise non-technical interests as technical arguments. In the H-World case, it was certainly true that the two heads of departments had enrolled technology into their own actor-network as their ally. Therefore, when the role of the head of H-World was extended to manage the health systems portfolio, another competing network emerged.

From a technological standpoint, the SST initiative had led to the organisation breaking away from Magic, and taking to new technologies which were much more progressive, and introducing them into the organisation. During this time, most of the corporate systems developers were skilled in Magic, and any new technologies were seen as a threat to their future employment. There were growing concerns that while Magic was playing a pivotal role as the internal user interface, its role in the back-end interfaces did not necessarily work that well, from the point of view of performance and acceptability. While Magic was often lauded for enabling the speed of internal user inputs, allies within the health systems environment were questioning whether Magic was the most appropriate mechanism to speedily process what were now 1.8 million lives.

When the responsibility of the head of H-World was extended to the health systems area, there was a race – predominantly in the health side of the organisation – to transform the Magic environment into a Java/C-type environment. He authored a strong narrative as to why all core processing should sit outside the Magic system. This move was also aligned to a service-oriented architecture (SOA) design. As strong allies of the focal actor, some of the key architects from H-World sought to become indispensable to other actors in this drama by defining the nature and the problems of the latter and then suggesting that these would be resolved if the actors negotiated the ‘obligatory passage point’ as painted by them. This excerpt provides evidence of this move:

Just take JEE, EJBs, they are very good standards but it’s not easy to work with standards because you must first know them, and when you know them you need to apply them and for you to know them and apply them, you must be trained to do that ... (Systems architect, interview 19, p 2)

Aligned to SOA at the time was the Java and JEE platform, with the industry claiming that this was fast becoming the industry standard for developing portable, robust, scalable, and secure server-side Java applications. The new JEE platform was providing Web services, component-based modelling, and communication application programming interfaces (APIs) for implementing SOA and ‘next-generation Web applications’. In other words, the focal actor favoured enrolling these technical allies for the recoding of existing and new functionalities into atomic services that could be reused by other services. More specifically, his new vision was to integrate the communication channels across the organisation by reusing software components. From the initiator’s perspective, the development teams’ focus should be directed towards enabling the capturing and leveraging of member information in real-time to ensure that service encounters were up to date across all the member touch points. While the rhetoric of ‘service-oriented architecture’ – a technical interest – was quite effective at aligning commercial interests, certain other non-technical interests were evident. For one, the attempt to adapt Java from purely an application for Web development to core processing was a way of associating the software to multiple interest groups within the organisation. Attention must also be drawn to other social agendas inscribed in the Java/SOA concept, as suggested by the following comment:

... There was competition between the two teams on many levels. At the top level, Tom and Luke both were competing to be Jim’s (Group CIO) understudy. Luke was the more conservative, hands-on, cost conscious IT manager, whereas Tom was a big ideas, big budget, silicon-valley type of persona. Which leadership style would prevail would determine the future of UAG’s technology platforms? (Senior business analyst, interview 30,

p 3)

As argued by Morgan (1986), the notion of rationality is always interest based and political. The excerpt above supports the notion that managers often use the idea of rationality to pursue their personal aspirations. Nevertheless, the key to translating the interests of a service-oriented approach rested with the technical superiority of a Java/C environment, and as such, the 'old' Magic technology was rendered as being inferior. As a result of the introduction of Java in the health systems area to redesign certain core processes, many developers in the Health Systems began to support Java, mainly on a personal basis. After all, Java presented a new set of skills for them, because Java was more broadly acknowledged in the IT job marketplace than Magic. Even within the organisation, component-based design and principles of object-oriented (OO) programming such as reuse were expanding, and these events 'interested' the developers. As Java was becoming pervasive in the organisation, so it became easier to enrol allies among developers to gain acceptance for concepts such as entity relationship modelling and SOA. At the same time, many developers in the traditional systems area were starting to accept that the classic client-server approach inscribed within the Magic software was antiquated. The newer thin client technologies had the advantage of low maintainability and the much-desired ability to interconnect to a broader set of IT assets. Furthermore, services could be encapsulated and made easily accessible. Therefore Java was not neutral in its effects on developers. Inscribed in Java was a better 'cv' for the developers. It also represented current technology and therefore current exposure. The excerpt below demonstrates how the shift towards a new platform was aligned with the interests of developers.

H-World is probably at the forefront. We offer latest technologies to our developers, trying to keep their minds active. I think the fact that we are on Dynamo ATG, a product which is not well known amongst South Africans, that is a bit of a drawback for developers so we can go with something more mainstream that will benefit developers more. Unfortunately developers view Web Logic has a mainstream technology or J-Boss or something like that. They offer a product based on standards. (System architect, interview 30, pp 2-3)

As a result, new standards for systems development would emerge over time with JEE. Furthermore, as time would go by, the current systems methodology would be enhanced to include minimalist concepts from UML that are aligned to OO development methodologies. In effect, Java imposed a new way of working for the back-end systems developers. They started to play an increasing role in developing components, instead of the monolithic code associated with

the Magic era. And since these components were portable, they could easily be reused for the Web. The developers were aligned with the focal leader's vision that a Java/C environment was technically superior as well as more suitable for the back-end processes, at least for health systems. Having enlisted these allies, Java was now in an ideal position to forge a durable and dominant place for itself in the systems environment.

Framing

As the SST started to play a major role in the Wellness program, it was slowly being validated as a novel and exciting way to interact with the clients and promote wellness. However, although UAG is known in the marketplace for offerings that are inventive, attempts to engage people in managing their health through the online channel, when compared to the size of the user base, showed only moderate success. It appears that translating the wellness innovation and engaging style to the online world appealed to only a minority of users and not the numbers had been envisaged by the designers. There was this realisation that at best the self-service tool was a complementary channel for a small captive audience. The Wellness program itself, while proving to be an effective product differentiator for the health insurer and attractive selling point for brokers, was not effective at enrolling a majority of the member base in terms of behavioural change. With the appointment of the new head for the Wellness program, there was a 'push' to drive members towards the organisation's wellness partners. In the end, despite moderate use by end users, the SST was an oversimplification of what wellness practitioners do. It appears for now that only 'real world' wellness practitioners can deal with the full complexity of the wellness practice.

At the same time, alliances between H-World and the health systems department played a key role in the new way of processing claims data, and had significantly enhanced HIC's claims-paying process. The organisation's ability of same-day processing of claims meant that there was marked improvement in payment times. The success of electronic claims processing was also as a result of the new electronic interface that was developed between the healthcare funder and the major hospital groups. As a result of mutual interaction, the traditional systems area and the once-formidable e-commerce actors (actor-networks) joined to achieve these broader aims. However, one of the side effects for the SST was that as the organisation's claim payment turnaround times and reliability increased, once-popular online applications like claims tracking

became less and less critical to the member. Furthermore, significant system enhancements were being made to the call-centre environment, further developing the telephone as the dominant device in interacting with HIC.

Meanwhile, internal research to evaluate the performance of the call centres suggested that the call rate increased significantly soon after a site visit. Paradoxically, the calls made by loyal users of the SST were markedly higher than non-users. Significantly, there was also a positive relationship between calls and wellness status, which suggests that the greater the wellness status, the greater the servicing need via the traditional call-centre channel (see appendix D, figure D1). eHIC's income statement, which assumed that it was reducing calls, was being challenged. The e-department was entering another episode of scrutiny. Various actors began demanding proof of the claims reflected in the SST's OPPs. After all, inscribed in e-commerce is the actuarial discourse of minimising risk while maximising returns for the firm. The burden of proof was sidestepped with rhetoric. Instead of addressing the facts, a new OPP was articulated, one that suggested that the type of service provided by an SST is something that 'customers expect from a firm like UAG'.

8.1.4 The complementary channel

Inscription

The previous head of Wellness was reassigned to improve the call-centre service performance. Meanwhile, his successor was sceptical about the efficacy of the Web in improving a member's health, and showed more interest towards the network of human actors in the form of healthcare and wellness professionals. Being less attuned to the value of the SST in wellness offerings than his predecessor, there was accordingly a notable shift in alliances with the Wellness team from the Website to networks of healthcare professionals.

And Wellness is kind of moving away from just the Web, you know. I think we have been fairly Web centric. Now they have said ... no, for nutrition, you have got to go and see a nutritionist, which I agree with. There are certain things that we are not very good at, for the Web. You are not going to go to the gym on the web. You are going to go to the gym near you, physically, you know, physical ... (System architect, interview 30, pp 2–3)

Despite attempts by H-World management to persuade key actors that wellness online ‘worked’, the third major inscription that emerged was one in which the self-service channel was regarded as a complementary channel. A missing spokesperson for H-World in these debates was the previous head, who was now focusing on his new portfolio as chief operating officer (COO) of international operations. Some of the H-World staff believed that the new head of H-World was unable to ‘drive’ H-World the way the previous head had. A number of reasons explain why she was unable to become an effective spokesperson for H-World. Some are captured in the following excerpt:

I don’t think it’s humanly possible for people to deliver what he delivered and worked like how he works. She’s at least a couple of points behind with that. And maybe it’s kind of expected. I think he carried the can. He worked so hard, he earned those people respect. When he walked in he wasn’t liked. When he arrived here five years ago he wasn’t popular. They thought he was this young chap who thought he’d walk in here and sort of run the place And I think he learnt a lot along the way, I think Sally’s got very big shoes to fill. I feel sorry for her, I think it is tough. (Staff, interview 38, pp 5)

Meanwhile, of the two networks, face-to-face consultation would prevail over the use of virtual diagnosis and consultations mediated by a stress and dietician practitioner. This current technological frame emerged as contemporary social, technical and political contexts made the inscriptions for other channels stronger. In this case, the prevailing network appeared to be mobilised by one actor, the new wellness head, who became its self-appointed spokesperson. As a result, there was a change of heart over the role of the SST channel. The strategies to achieve the next translation required the skill of rhetoric, using conversation, argument, persuasion and justification to create a ‘heterogeneity of alliances’. The new inscription that depicts a complementary channel is an example of such an articulation:

Our members can continue to use the call centre and rely on our regular postal mailings, but if they find the Web more convenient, we wanted them to have that option as well. We also recognized that many members would want to communicate with us across multiple touch points, including Web self-service, phone, e-mail, or even mobile devices. So making sure that the experience was seamless and consistent across all those service points was critical. We want to be able to recognise our members as individuals on contact and ensure that we are using everything we know about them to deliver the most fulfilling service experience possible. (CIO Health Systems, December, 2005)

This redefinition called for different enrolment strategies. With this redefinition it was acknowledged that the SST would continue to have many identities. Furthermore, by drawing upon the inclusion of previous technological frames in this broader ‘complementary redefinition’, the SST was able to resist many of the commonly held beliefs that the SST had not

delivered on previous technological frames. For instance, it was now acceptable that a user could use the phone as well as the website. The new frame provided the SST with more flexibility and in this way became a key OPP for significant organisation events. In fact, in its latest conception, the SST was becoming a proxy that tangibly represented the firm's 'innovativeness' and as such, would assist in enrolling JV partners willing to form an alliance with a 'progressive health insurer'.

Translation

The path of translation is seldom smooth. When there was a change to a new head of the rewards program, points for using the website were immediately reduced. The new head was not interested in users who were 'points chasers' and therefore there was a shift to fewer points for clicks and more points for physical activities. Furthermore, there was a shift towards a physical network of partners for fitness, nutrition and stress. In a sense, wellness, led by health practitioners, became 'black-boxed'. The self-service technology had lost a key ally and had to alter its conception as a key driver in the Wellness program to the new head's interests and began to play more of a supporting role.

As a result, there was a definite shift in how the online nutrition tool fitted into the bigger picture of the Wellness programs. For one, there was this 'figuring out' that the tool could not operate as a 'real-world' dietician. There was still a need for a dietician, even though a tool was available on the web. There was a prevailing view that the self-service channel was only one of many ways of communicating with people. As a result, even the contact with the e-dietician service for South African members was removed. Today the Wellness program has a network of dieticians, and members seeking guidance in this area are referred to those dieticians. They are in place to service wellness members, and they have been trained on an assessment which HIC clinical staff and panel members devised to ensure that wellness members are getting the latest science in dietary care in a professional and consistent format.

Even with the online stress centre, there was the realisation that there was a need for more personal interaction. The stress-centre team started to work directly with corporate clients through marketing, the brokers, franchise directors, and corporate relationship managers. A stress course was also under way for health partners. Apart from general stress management, part

of the course explained how the stress centre worked. By working personally with these groups and individuals, it was envisaged that this would encourage the use of the online stress centre.

Meanwhile, internally senior management used the SST as an ally to convince joint venture (JV) partners of their 'innovativeness'. The attention of the development team shifted to the international operations and their online requirements. The initial assumption was that the team could just 'plug and play' local services into the UK context. However, in many areas, the local inscriptions did not apply to the international initiatives. Some interesting challenges were associated with creating a UK-friendly Nutrition Centre. For instance, it soon emerged that the dietetic products available in the UK market far exceeded what was available in South Africa – for example wheat-free and soy-based products.

... A major nutritional issue in the UK is intolerance or allergy to wheat and there are many more vegans than in South Africa. We had not catered for wheat-free and vegan meal plans on the SA Nutrition Centre and the UK office requested that we design such options to suit their market. This involved the UK dietician supplying us with the names of products available in the UK that could be used as substitutes for wheat and animal protein foods. (Nutrition expert, interview 46, p 15)

The other issue that came to light was that although South Africans and UK members might share the same physiology, the content and educational articles needed to be checked and modified for the UK market, owing to certain differences in how the UK national dietary guidelines and health systems operate. Furthermore, while the South African dietary guidelines were designed specifically for that nation and its nutritional issues, the UK had its own set of dietary guidelines. The team had to change the content to reflect these cultural practices instead of the South African recommendations. In addition, any reference to contacting a registered dietician in South Africa was updated to reflect the process in the UK, which is completely different, because of the way the National Health Service (NHS) works there.

The design of the UK nutrition site initially had the South African nutrition rules embedded in it. In a sense, the UK system of nutrition was an OPP that was ignored by designers. Various UK actors came together to align with the interests of the UK users, such as UK nutrition standards and guidelines, UK nomenclature, a qualified UK nutritionist, and the UK language and metric system. This narrative demonstrates the tension in developing SST systems between wishing to standardise applications for efficiency and imposing the same applications on local contexts.

During the ‘dazzle era’ there was this notion that improvements in the redesign of the website would facilitate call reduction and improve user interaction with it. The redesigns always had a front-end focus, although most of the major issues –at least from a systems perspective – appeared to be back-end related or more of a social nature. Somehow the user interface design was reduced to the panacea for transforming service on the Web. One regime of truth suggested that the site should be ‘crisp, clear and transactional’, a notion borrowed from banking sites. There was also a school of thought that the site should distinguish between lifestyle, content and health plan-related issues as separate areas. Redesign projects for some reason were always high-profile, despite being a process of merely ‘changing the skin’ of the website. In other words, for the most part they involved changing the look and feel of the site, the colour, the layout, the navigation, the imagery, the branding and so on. Given the high profile of these projects, redesign episodes were not without their politics. In the most recent redesign, one of the senior team members describes how he positioned himself as the spokesperson for the process.

I made an appointment with X (Group CIO) and I went to his office and said look, I can change your Website around. And he asked me a few questions and ... he said go for it. (Graphics, interview 26, p 2)

However, marketing’s strict control over their ‘super brand’ meant that the design of the site was somewhat constrained. For instance, certain images were too large for the landing page, and there often had to be a negotiation process or a compromise reached to do what was in the interest of both parties. Furthermore, there was often this criticism that marketing services did not write for the online channel, but simply applied traditional brochure-ware to the online environment:

You know, you just get the most ridiculous concepts. It is like, marketing will produce this beautiful brochure, and it is fantastic when it is sitting on your coffee table. And they would say, stick it on the Web and now when you have to interpret that onto the Web, you know, the concept of bolding text so that users could skip read was unknown. As I say, I am always pushing for that. (Graphics, interview 26, p 11)

Even within the teams, the software developers and business analysts were not immune from conflict during these periods. A business analyst discusses some of the challenges when negotiating with a developer:

For me sometimes the challenge is if you are dealing with a difficult developer sometimes you are just not sure if the person is bullshitting you, because obviously they have better technical knowledge than you do, they are doing the actual work, So if you say to them listen

I think this is a better way of doing it from a user perspective and they say no well that will take forever to do or we can't do it, it is difficult to challenge that because you don't necessarily know if they are telling the truth or not. You need to either try to find developers or almost try and code that kind of culture where the developer themselves have a different perspective, they don't only look at it from their perspective, they look at it from a members perspective as well, and you find some developers are better than at it than others, there are some developers that I have worked with, and this is after its (referring to the specification) gone to Marketing, Graphics, even myself who really theoretically should have the user more in mind than the developer does. I see some developers when they get the actual spec say gee if I was a member it would never work for me. And I think that's really great feedback, were some developers whatever you give them that's what they will develop which I think is a really old-fashioned way of thinking and it does not add any value ... (Business analyst, interview 14, pp 3–4)

While redesigns eventually mobilised the organisation into action, users were often varied in their responses to the outcome of the user interface changes. One view was that the user interface change was a hindrance, while the other was more supportive.

This website must be one of the slowest in the World. Honestly, it is far quicker to do a booking via telephone. I realise that you have a lot of users, but surely there must be a way to encourage people to utilise the otherwise very informative site. (Online feedback 2, July 2005, line 17)

It is a bit awkward to have the details windows popping up half off the screen. Can't you have them smaller with their scroll bars all visible when they pop up and then one can resize if necessary. Also the details pages do not print very well. In landscape, some details are just chopped off, and in portrait the pagebreak is very messy. (Online feedback 2, July 2005, line 97)

The site is very user friendly and easily navigatable! Well done!! (Online Feedback 2, July 2005, line 152)

Despite several attempts – which appeared to be trial and error, as opposed to identifying a concrete solution – the redesigns were not addressing tangible issues like the speed of the website. However, apart from the broader concerns of bandwidth, implicated in the speed issue were many other technical actors, as this excerpt describes:

... we are now using the XML HTTP request mechanism for data retrieval. With that you can put your XML with your XSL to transform it or you could put your XML pages or segments of your XML page request, like if you doing a search you got a whole lot of lists and if you want to change the order of your lists instead of changing request to the server to send page back with all the navigation, you send the request to the server to bring back the results in the new order. That's something that might just speed it up, and then there are other problems you know there is the problem with the proxies, you know we are even more reliant on the proxies now, and reliant on java scripts ... they are trying different technologies, even moving to different hosting companies. (Graphics, interview 25, p 16)

However, the designers continued to reinforce the claim that focusing on the user interface had led to improvements in the user's experience. The designers in effect were systematically prioritising technical issues over the social, although the Web interaction touches on both the social and technical. XML, XSL, Java scripts, jpegs, left nav, right nav, and landing page dominated discussions on how to arrive at the best user interface design. Research was used merely as a form of rhetoric to lend credibility to the redesign process.

And with the latest redesign, there was a fair amount of research that went into that. A lot of ideas went into it. Usability studies, a lot of it went into that. The results of the customer survey were fairly positive in terms of usability. So there has been a, how should I say, a marked improvement in, in the usability of the site since the last redesign, which was backed-up by fairly solid research ... external companies, clients, listening to calls, coming up with ideas. So there was a lot of research. (Systems architect, interview 43, p 14)

It was simply easier to focus on the technical than to negotiate with the findings of the research. After all, the research, including focus groups findings, meant facing up to the conundrum of having to develop a user interface that met the varied needs and opinions of a mass of users. But alas, the users were a mass and were therefore rendered invisible, at least in the re-design of the user interface.

To counter this mass, the senior management called for the use of ATG's personalisation and scenario server. Within this climate of techno-centricity, even those team members who were proponents of customer relationship management (CRM) had a bias towards the use of technology and readily accepted technology to be the panacea – the human element and the social context appeared to be afterthoughts or not dealt with in depth. The use of scenario server and personalisation server were touted as another 'regime of truth', a silver bullet. In other words, by focusing on the users and their scenarios or events, H-World would be able to engage with its mass of users at a more 'personal' level by delivering 'the right message to the right customer at the right time'. With the latest 'regime of truth' of customising the SST for segmented audiences, the designers assumed that users would be more willing to use it. After all, the SST would be tailored to their precise needs. For instance, an event like a claim submission would be used as a trigger to personalise the user-SST interaction. However, the developers on the project were very cynical about the potential of Dynamo.

He is driving an ATG technology, technology you couldn't even purchase in South Africa, right? Let alone have any support. He went in there, convinced business of the idea and they have been running it ever since. And I believe that H-World has been on the back foot ever since, because they have been trying to fix and catch up with deadlines since they started six

years ago. (Graphics, interview 54, p 9)

The team had established that Dynamo was more suited to the pure online business environment, and not the bricks and mortar environment of UAG. Data revealing scenarios and events were stored in UAG's back-end systems, and Dynamo in their opinion was not architected to integrate easily with back-end systems. However, there were rumours that certain members of senior management were trying to justify 'the spend' on Dynamo, in an environment that was becoming ever more cost conscious. Furthermore, there was growing talk that the systems area was looking at standardising on application server platforms, either to Weblogic or Websphere, and that the fate of Dynamo was therefore tenuous.

Redesigns were often followed with elaborate campaigns to attract more users. In the short term, many more users were attracted to the 'new and improved' website. Nevertheless, the overall effects were negligible externally as, despite these major user interface changes, the patterns of use remained the same. More importantly, the redesigns which focused on the 'fluffy stuff',³ like navigation and ease of use, did not appear to change this pattern of discontinuance among users. The redesign had also failed to deliver inscriptions that would enrol a critical mass of users to the same magnitude as that of the call centre. Neither would the redesigns create strong inscriptions of the Web as a channel to support the Wellness program. While it was assumed that users would take these notions that were concealed in the SST for granted, it was 'mobilised', but only for a minority of users.

More recently, another assumption was that the website would be more successful as a direct sales channel in the UK. After all, the general discourse among the proponents, mainly among senior management, was that while South Africa was still 'lagging behind' the UK, online interaction in general, as the primary means of communicating, was more widely accepted in the UK. However, what emerged over time was that significantly more and more applications were being submitted via the brokers, rather than customers via the website.

... I think, a person sort of, does not want to join a health care plan on the Website. You want to go and you want to see a physical person, like a broker. And say, 'but I like this, it sounds good, I like this plan, give me some affirmation for what I have come to', you know... And I think, also, yes, that feeling of, you know, I am going to, like now, give away my credit card

³ 'Fluffy stuff' was a cynical term used by the development team to describe those aspects on the website that had aesthetic appeal, but did not necessarily create value for the user, typically 'stuff' that was proposed by senior management.

details, you know, sign up for something that I sort of need to have my thoughts affirmed by a person, either an independent broker, or someone that, you know, is involved in the healthcare industry. (Business analyst, interview 47, pp 6–7)

The novelty of this virtual practice, even in the UK, and despite the solid reputation of the UK JV partner, was not convincing enough to get many users to use their credit card details online. Clearly the use of the Internet to purchase health insurance was at odds with societal concerns such as privacy and security. This reluctance to purchase ‘direct’ may have also been exacerbated by the high value and complexity of the product. In structuration terms, the inability of novel practices to gain momentum, points to the importance of routinisation in sustaining trust in social practices. When the realisation that ‘selling direct’ through some of the international initiatives was proving quite challenging, a new translation emerged.

The latest discourse argued that the Web does not work well for the highly differentiated products supplied by HIC. What emerged was that in the sales of highly differentiated products, people need more personal interaction at sales time. There was the realisation that ultimately brokers had been more effective than the online channel. There was also a prevailing view that the majority of users had problematised the SST as research tool. As such, the role of the Web in the sales process was not totally dismissed. Instead it underwent another smart retranslation as a ‘sales research tool’.

... we have seen strong evidence to support the notion that the online channel used in conjunction with the interactive channels probably results in the highest levels of success. So, even if you are buying very high-end products, and very complex products, you will use the online channel to do research and understand the products, and do the evaluations even though you might not execute in that channel. (CIO Health systems, interview 36, pp 3–4)

In other words, the SST was rearticulated as playing an effective role in supporting the sales process.

Meanwhile, the advancement in the use of technologies to support SOA rescripted the initial OPP of e-commerce. Since SOA would unify the systems departments by structuring larger applications into smaller services modules, two new OPPs emerged. It was an opportune time because senior management were looking at ‘streamlining’ the IT organisation in order to improve performance. In the past there had been a lot of duplication of effort, lack of alignment and difficulty with priority setting. Furthermore, maintenance costs continued to grow rapidly. This comment captures the point that performance of the IT team was under scrutiny:

I mean, from the business side now, the guys would really question, you know, 400 software developers. What do guys actually deliver? Why don't we often get to do all the stuff that we commit to upfront? (Business analyst, interview 002, p 9)

One OPP suggested that a single team of developers and business analysts could focus on the delivery of specific functionality. Proponents of this angle used the wellness systems as a model that emerged where systems staff from all the areas worked as a more cohesive unit, compared with the fractured manner in which the other systems area operated.

An opposing OPP proposed that a distinction should be made between front-end development and back-end development. As such, technology allies were enrolled to control 'back-end and front-end' systems. By positioning itself as the front-end expert, the new head of H-World attempted to make H-World an indispensable actor in this regard:

I strongly feel that that would be a mistake for H-World, because at the moment we bring all the product elements together to service that community ... for getting into the mind of that consumer and what do they need. Whereas the other areas (referring to other systems areas) are silos. So, you have health systems and then within health systems you have got claims and you have got MMD. You have all those other components. And I think that that is why for the internal systems the user interface is not geared around what is the interaction that is taking place, and how do I need to present things. It is rather about, here is the product stuff and then make it work in terms of your interaction. And so I think that there is a significant value-add in terms of having your focus communal as opposed to product. But it is a hot debate at the moment ... (New H-World head, interview 30, p 9)

This view was endorsed by the previous head of H-World, who was now leading the international operations.

One of the things that H-World does particularly well, which maybe more an art than a science is the softer elements of the channel. How to position, how to message, how to design the user interfaces. Now all of those are steeped in something that is not well understood by the traditional environment. And I think maybe as a natural consequence of that there is almost a resistance or true prejudice against them for this and they understand and deduce that either it is not necessary, or potentially there is a threat associated with it. Or they just question it almost out of sheer confusion. I think that, that probably does play out to an extent. But I think it we have also seen inside the organisation that there is a stronger need to get more user interfaces. Therein lies a very large opportunity to leverage of the huge intellectual capital that has been formed. (CIO Health Systems, interview 36, pp 6–7)

The proponents of the 'front-end focus' started to define roles for other actors in the network so that they would also align with the problem definition and solution. In this vision, a customer interaction systems (CIS) department would be formed to develop front-end applications for

UAG. It would be responsible for usability of all the systems and the customer experience, be they internal or external customers. In other words, the call centres, who were the biggest users of the internal systems, would also be interested in this kind of focus. The head of the call-centre channel was enrolled as a key ally in this process:

What actually happened was that business, X, and the rest of the call centre people really said, 'look, but, look what is happening on H-World. You log on and without clicking, you are actually seeing the entire profile. You see the guy's health plans, his life policy, Wellness, all of that, Cards, all are on-stream', you know. 'Why can't we have the same kind of stuff in Paradigm [the call centre application]?' (Systems architect, interview 43, p 14)

During this time the legitimacy of 'back-end developers' doing front-end work was challenged. For the proponents of the customer interaction focus, these developers were not regarded as being effective at developing front-end tools.

I think you need to be able to develop not with a focus on your functionality, but on the focus of how the functions would be used. And I think the typical systems developer, doesn't give a, two hoots about how to use it, but for the fact that the component works. (Community head, interview 26, p 11).

While leaders from most of the systems areas were aligned with this view, this articulated vision in which actors such as the architects, developers and business analysts would play specific roles in front-end development did not materialise. It appears that the best interests of the development team were not aligned with the interests of the managers. The following excerpt describes why some of these key allies could not be enrolled:

The BAs don't know what the most intuitive way to structure a page is cos' they never had to deal with that. That is what the graphics team did ... They all left except for one. Off the Wellness team all the BAs left. Because of this change they chose to leave. They were, it's quite funny (laughter). They were given a choice and then they all wanted to leave but then the choice was retracted. There was a big fuss and eventually they left .. For them it's a bullshit job, it's something that they are not capable of doing. They don't know that, you know the yellow button is better than the blue button, because the heuristics model say so. You know, I mean they do not want to do shit like that. To them they don't want to that. They want to do business analysis, so they left ... I don't know what the hell's going on. They are nine teams excluding the Usability team so I don't know what they hells going on there. We are short six developers and seven BAs. So out of all this movement we gained departments which is amazing and we are short a shit load of people. So I don't know, I actually don't know what CIS does ... (Systems architect, interview 053, p 6)

Although the restructure was communicated to the team by the Group CIO, many of those who were involved in it believed that insufficient change management interventions had been applied in the process.

I mean, all the affected systems areas were called together in the auditorium and he [Group CIO] did like a 20 minute presentation, highlighting, you know, how this model would benefit the end user of the system. And sold it well. I mean, there was good reasoning. But that was almost like an announcement and then you are expected to change. So, that type of change is viewed as like a, you know, like something has gone horribly wrong, we are turning this thing on its head, and we are going to move forward. That is how I would see for someone understanding it. But if you say there's a good reason for change, we have not like absolutely failed our systems' recipients. So, like the business have, you know, we delivered on our functions, we delivered some good stuff, yes, there he has been some poor delivery, but I think it happens even in the best of organisations. But, if you announce a change, and actually say, we understand that with this change will come certain questioning, so we will need some workshops, and adopt it in that fashion, then people might have been more ready for it. And they might have said, oh, okay, we see that we are undergoing a process of change, not an overnight change. (Program manager, interview 042, p13)

Some were surprised that human resources (HR) had been excluded from this process. IT personnel, mainly architects, developers and business analysts from all areas, appeared to be unhappy with the change process. Even departmental managers were not effectively enrolled in the restructure, and expressed mixed feelings about the changes. One of the departmental managers summed up the reactions of her peers:

... it's about losing power, it's about losing resources and feeling that your power base is dwindling A lot of individuals measure the power base by the number of people they have reporting to them, not necessarily by what they are doing to deliver. And as a result we have architects whose teams have been slashed by half, I mean my team has been slashed by half, we've had other areas where the teams have been slashed by 70%, we've had gains and losses but the overall results has been loss of resources, but it should not be seen as loss of resources because you may be losing resources but you are also losing the responsibility to deliver on what those resources used to deliver, so you now have the opportunity to work at a different level. I don't think that even the senior people here have bought into that concept. And until they do how can you communicate a positive attitude. (Community head, interview 044, pp 7-8)

Meanwhile, the JVs also became actors in this 'corporatisation' process. After all, notions of formal testing had always been part of the organisational discourse. However, this OPP was mobilised only after the COO's visit to the international JV partner's IT department. In a sense, the JV became the spokesperson for formal testing approaches. To keep faith with the JV partners, a more disciplined approach to testing was being enforced.

Most of the teams were quite negative because the formal testing approach impacted on the number of go-live cycles. Management had decided that the scheduled go-live day would take place every second Friday. This meant that if there were technical problems, the staff would have to come in over the weekend to resolve them. It also meant that the team would have to spend a

little bit of extra time by coming in early on Friday mornings, and if there were issues, probably stay late on Friday nights. While this may have been creating a more stable environment for the organisation and more synergy among the development teams from the different systems areas, it was interfering with their personal lives. Furthermore, the project teams had to plan more carefully: if the cycle was missed, the team would effectively have to wait two weeks for the next go-live cycle. Furthermore, the BAs had to play a large role in coordinating the testing activities, which included submitting their test scripts to the new testing team.

New actors by way of a change in leadership also adversely impacted the change process. This is expressed in the comment from of the older team members:

... I get the impression X to me has come from a banking environment. That she is trying to out of habit trying to implement some of those style in H-World, and especially for the people that have been here for a very long time, nothing really works you know because we are used to a completely different way of things working. It's a lot colder, she not as relaxed as Y was, She seems as lot more formal then Y was. Y was a much more informal person You still knew he was in charge but it wasn't like ... X is almost unapproachable. If you pass her in the passage you need to really get in her face to make her realize that you are trying to say hello to her you know. Most of the time you do not bother saying hello because she will not greet you unless she wants something from you, then she would come talk to you. She's more in with the community heads then she is with people a little bit lower down the scale, you know so just my impression. I am personally not happy. I used to love H-World, I used to love coming to work! Now I hate coming to work! I hate it! (Graphics developer, interview 030, p 10)

Rather than mere gripes with leadership, this excerpt demonstrates the strength of the self-image of the more informal dotcom start-up environment that had remained in some of the minds of the experienced H-World team members. The attempts to formalise or professionalise existing work practices and their associated shift in social values created a huge amount of controversy. The view of management towards this kind of reaction by staff is captured in the following statement:

That is a function of UAG being a different organisation. That's the function of UAG having to account for close to 1.8 million lives. You can't do things, the analogy, you can't have kids running around a nuclear reactor. And then if it's not bureaucratic then it tends to kill people. And likewise, if you do stupid things and don't have the appropriate discipline, and yes they can be interpreted as a bureaucracy. So in the client face, the needs have shifted, the needs have shifted to stability and robustness and as a result the process and the ways of doing things had to shift. (CIO Health Systems, interview 36, pp 1-2).

The excerpt demonstrates a more intense shift from self-regulating towards auditing, monitoring and regulating the development teams in order to increase the quality of the work. Clearly, the heads of the organisation were emphasising a higher degree of preciseness in the way tasks were being conducted. The rationale for increasing discipline was tied to political and economic

interests. However, the key to translating the actors in the workplace to be supportive is to align with their interests. Certain members of the development team were in despair, as they felt their individuality being stripped away from them. As a result of this misalignment, many team members resented this new approach. And because management had not aligned with the interests of these actors, there was a massive exodus of both the traditional systems and eHIC staff. Given the scarcity of IT skills in South Africa, staff were able to make this move without too much difficulty. The restructure of the systems areas into back-end and front-end systems had proved dysfunctional. In the end, the objectives were not agreed upon, and became the subject of considerable disagreement and debate. By choosing to restructure, management had emphasised resource, not social elements (such as the quality of the work experience and the impact on staff psyche). In becoming a 'corporate', it was the quality that the subjects offered the business that was important, and not the quality of their lives that was critical. Fun at work was being defined in new ways by the leadership:

No, I mean, I do not see that [referring to fun and bureaucracy] as being mutually exclusive. If fun is defined by being flippant about how you manage a very big, complex environment, then I would say yes, fun is going to fall by the wayside. If fun is defined as achieving a major milestone and you are continually pushing the boundaries, doing new stuff, doing new and interesting things, meeting new requirements. I don't see, I don't see any trade-off. (CIO Health Systems, interview 36, pp 1-2).

Framing

The initial organisational metaphor guiding the development of the self-service channel was that of a 'substitute call-centre agent'. Given the early furore about the Internet, it was conceived that H-World would replace the call-centre consultant with a broad population of the organisation's members. When contradictory social facts emerged, this metaphor was retranslated to 'dazzle the customer', where the technology was used for more hedonistic purposes. Internally the drive was towards novel ways of interacting with the users to promote their wellbeing. In its most recent translation the SST was framed as a complementary channel.

A seemingly endless improvisation with its role characterises SST applications. It appears that no particular role is permanent, specifically in an environment of alternative channels, so ongoing negotiations characterise SSTs better than the black-box metaphor. Although it sounds contradictory, the most recent translation as a complementary channel is likely to remain an

immutable mobile. After all, with this broader conception, the interests of other actors could fall in with the SSTs schemes without too much controversy.

This ‘complementary’ translation has shown itself to be emergent and not planned. There was no doubt that the initial metaphor as a ‘substitute call-centre consultant’, and thus reducing administrative costs, was the planned perspective, but many actors did not come together to make this possible. While excerpts like the one below point to the human actors that must coalesce to make the SST ‘work’, perhaps in this instance non-human actors were more crucial:

You will always have more naysayers and prophets of doom than supporters. Identify the key stakeholders early and engage them. This does not mean become their friends but stay close to them understand their fears, their drivers and their influence and how they can possibly use this to interfere with your plans ... (Community head, interview 30, p 9)

Technical issues such as database structures, communication protocols, software development platforms, poor ICT infrastructure, Web browsers, and the telephone can establish constraints that are not easy to interest and mobilise. As a result, the SST’s role was constantly mutable. Maybe this comment more aptly summarises the H-World story:

I never did the math, but I always wondered whether we had saved as much as we had cost. We had a big call centre by the end of the day. A very big development team and expensive! A lot of hardware and software. And then a bunch of specialist content providers, nutritionists, copywriters, etc. And I still remember something AKC said in a presentation ‘People breed people!’ – all of these employees needed support staff – think IT help desk, HR consultants, building services, etc. I think we gave our users more than what they wanted and I believe that the incremental benefits over their expectations did not justify much of the expenses to provide it. (Senior business analyst, interview 51, p 10)

On the other hand, simple evaluations of cost-benefits may not appositely describe the ‘effects’ of the SST either. UAG had batch processes, disparate, monolithic systems, poor quality of data, and a corresponding disparate view of the customer. H-World and the traditional systems environment were at odds with each other. After several translations, H-World has played a significant role in linking the systems environment together.

Today, the systems are real-time, component-based, integrated, reusable, supporting multiple channels and business processes. They have moved from a policy approach to an entity model to support a single view of the customer. The organisation now has a framework for globalisation, including support of international operations and quality user interface development skills. Internally, the SSTs interests have been translated into a larger heterogeneous actor-network,

including technology direction, architectural perspectives, development approach and methodologies and career paths. In its latest inscription, H-World has become a spokesperson for the JVs, for the organisation's innovativeness and for consumer-driven healthcare. Via inscription, discourse about customer empowerment became 'frozen' in the SST. Given these 'effects' of the SST, how does one use simple cost-benefit evaluation notions to then trace the value of the SST?

While it certainly acquires the features of a black-box for creating and strengthening other network associations, H-World does not appear to be a convincing inscription for the majority of its users who are placed outside the organisation. Using ANT, I have shown how the interpretive flexibility of the SST is largely attributable to the distance between designers and users. Many external users used the technology differently from what was inscribed into it. Unlike information systems in the work context, where designers are close to the users and can be prescriptive, and therefore the network into which the intended user behaviour is inscribed is stronger, external users in the context of multiple channels have much more discretion in their use. In a sense, there is a cannibalisation of channels. In other words, despite efforts of designers to customise the channels for segmented audiences, the trend was clearly towards users customising the use of channels to suit their own personal tastes. In a multi-channel context, designers are at the mercy of what individual users choose to do and how they elect to respond. Ironically, it seems that the essence of being an empowered customer is not in merely using the Web, but in having the ability to choose from among multiple channels.

Numerous transformations were applied to the call centre, such as the employment of quality staff, the streamlining and continuous improvements to the call-centre systems, thus developing the telephone as the dominant device in the member's service interactions. This does not preclude the influence of the current turmoil regarding broadband services in South Africa and how restrictions by employers against using SST services during work hours excluded many potential users. Despite attempts to interest potential users with incentives and revisions of the website's design, ANT demonstrates how alternative channels, user preferences for traditional face-to-face encounters, poor ICT infrastructure, and lack of accessibility to the Internet accounted for interpretative flexibility.

Even though users may not be receptive to the SST as intended by the designers, internal actor-networks and the translations among consumer-driven healthcare insurers and the larger community's organising vision have made SST actor-networks durable. The policy of implementing the SST did not rely solely on rational decision-making principles like use and call reductions. Instead, concerns, ideologies, and prejudices were used in negotiating the implementation of the SST, and 'new' facts were subsequently enrolled to support what emerged. While by design the majority of users were excluded in the SST definition, a number of internal human and non-human elements were brought onboard.

While conventional theories such as CRM and diffusion suggest that the success of a SST depends on the ability to retain a critical mass of users, ANT demonstrates how, by enrolling other key stakeholder groups with diverse interests to align their interests with the technology, relatively stable technological arrangements can be created, despite relatively poor use. Notions of continual use as a predictor of IS success are dismissed in an ANT analysis. Instead, an SST is deemed successful if networks of aligned interests are created through the enrolment of a sufficient body of allies, and the translation of their interests so that they are willing to participate in particular ways of thinking and acting which maintain the network (Walsham, 1993).

These allies do not necessarily need to be users of the system. After all, there is the politics pursued by health insurance firms and their allies in their encounter with governments, employers, intermediaries, regulators, JV partners and existing and potential members to drive the 'consumer-driven healthcare movement'. The inscribed implication is that the individual should be responsible for his or her own healthcare. After all, the Internet has ability to empower the individual, or so the story goes. A great deal of rhetoric surrounds SSTs as being able to empower individuals who are patrons of consumer-driven healthcare products.

By and large, it appears that decisions to use or not to use the technology have little to do with the supposedly innate characteristics of the SST, and more with specific uses of this technology that relate to users' social interactions and context (Tatnall and Lepa, 2003). For instance, some users used the technology to track their claims; others used it to earn loyalty points; and others were only interested in using the online wellness tools. Still others use it to prepare for their discussions on financially related queries with the call-centre consultant. Others again used it in

an act of betrayal to earn easy loyalty points, and take advantage of discounts associated with higher statuses on the Wellness program. In other words, in using SSTs and in the context of alternative channels, user preference is not static, but varies.

Furthermore, ANT reveals the weak inscriptions of online wellness tools in supporting preventative healthcare initiatives. The role of the consumer and the Web are sometimes taken too far. Consumers and the Web cannot replace wellness practitioners. But despite this, ANT has demonstrated how SSTs have become an institutional matter of fact.

The popular narrative concerning SSTs in consumer-driven healthcare has certain merits, but is contestable as a device that empowers users. The premise by healthcare insurers is that the only way to contain costs is to involve consumers in the purchase decision through devices such as the medical savings account, Wellness programs and SSTs. The story that unfolded in this particular case study showed a number of unintended outcomes as a result of these devices. However, healthcare insurers may continue to translate the appropriateness of SSTs as an 'empowerment device' into carefully phrased restatements of fact in order to support their broader political and financial agenda.

8.2 Conclusion on ANT perspectives

The use of ANT concepts as analytical devices lends itself to tracing actors that are crucial in understanding innovative IS implementations. By using ANT concepts such as inscription, translation and framing in this way, I was able to tease out important aspects relevant to the implementation process. These and other related concepts from ANT provided an insightful perspective to interpret processes of SST implementation. The analysis above has demonstrated the powerful role which human and non-human elements of healthcare finance and related social-technical systems can play within a long and heterogeneous network. The chapter provided a detailed description of the way in which hardware, software and system configurations interacted with the organisation's social, economic and cultural context in implementing the SST.

By transcending the undue importance bestowed upon human agency, ANT provides a technique for grasping the ways in which social establishments work. At the outset, a few actors gathered

and mobilised the support of influential actors and decision makers to accomplish their vision of transforming the organisation via the use of the SST. Over time ANT demonstrated how the implementation of an Internet-based self-service technology emerged from the many unplanned negotiations and mediations with human and non-human actors, and not from some perfectly executed grand plan. In this way ANT provides an understanding of the limitations and opportunities of SSTs in our increasingly socio-technically rich organisational practice. For instance, this study has illustrated the manner in which organisational imperatives, the Internet and related technologies, and healthcare and various other knowledge workers can come together in sometimes arbitrary ways and produce convincing facts about concepts such as consumer-driven healthcare, and accordingly persuasive inscriptions about the new channel. Different conceptions of the SST emerged as more ‘facts’ about the SST were produced over time and actors reflexively altered their stance. In this way ANT was very effective at teasing out those socio-technical relations that must be explicated in order to come to terms with the role of self-service technology systems, together with human actors, in constituting contemporary healthcare insurance organisations.

Importantly, the SST is never complete or final. That is to say, if the SST would remain fixed and stable and uncontested, it would not be translated and would likely die (Monteiro, 1999). In this case, the SST was consistently reinvented by both designers and users. Instead of reducing ourselves to notions of success and failure, what we can say is that the existence of the SST already makes a difference in the healthcare insurance context – in planned, but more so in many unplanned and emergent ways. For the SST to carry on its march, further translations are needed. One could speculate that as social influences such as accessibility become aligned with the interests of the SST, the SST may find it easier to enrol future actors. However, accessibility alone is insufficient to mobilise users. Therefore what these translations will be, only time will reveal. One thing is certain: the Internet and rhetoric of customer empowerment alone will not resolve the healthcare problem. As Porter and Teisberg (2006:3) eloquently (or maybe idealistically) put it:

There is no one villain here. Neither the problem nor the solution will be found in any single aspect of the system or in any single actor. Indeed, the whole approach of attempting to redress competing interests (in healthcare) is doomed from the start. The only real solution is to unite all participants in a common purpose.

Chapter 8

In the next chapter I will provide a synthesis of the ANT and structuration findings, and use this synthesis to build a more general theory of SST and IS implementation which, it is hoped, will enhance the understanding of IT interactions within social-organisational settings.



Chapter 9

A Four-Perspective Framework for Understanding SST Implementation

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9.1 Introduction

My objective in this chapter is to develop a conceptual framework that can be used to adopt a systemic approach towards understanding the crucial aspects of self-service technology (SST) implementation. I proceed by comparing the salient insights provided by structuration theory and actor-network theory (ANT) and by developing a synthesis using these findings to build a more general theory of SST and IS implementation. This is followed by some key principles and guidelines that were adopted in discovering the conceptual framework. Using the synthesis, the next section will then present a systemic model for understanding SST and IS implementation.

9.2 Comparing the insights from actor-network and structuration theoretical frameworks

9.2.1 Introduction

In this section, I will present a synthesis of the findings of structuration theory and actor-network theory in the analysis of the case study.

9.2.2 Insights gained from structuration theory

Structuration theory was particularly useful in shedding light on the contextual elements such as the impact of the healthcare environment and organisational discourses in the healthcare insurance industry in general and for UAG in particular. As compared with ANT, structuration was particularly useful at taking into account broader institution structures such as the South African healthcare and information and communication technology (ICT) environment, and the interpretive scheme of actors, by which actors make sense of the SST phenomenon. For example, the rational discourse of ‘reducing costs’ shaped the way that managers and designers of the private insurance firm interpreted the most appropriate use of the SST. In other words, structuration theory stressed the importance of understanding the ‘memory traces’ of the human actors and their implicit social structures.

The findings also showed that the SST implementation can lead to significant unintended or unanticipated consequences. For instance, many registered users discontinued using the SST

after a short period and persisted with the use of traditional channels. Ironically, despite claims that the Internet is ‘open’, security requirements severely constrained the use of the online channel. I also observed the telephone being well routinised into the day-to-day practices of health insurance members and playing a useful role in supporting interactions with call-centre staff. As a result, attempts to replace traditional channels with the SST were in most instances disregarded. Instead, users who have a higher servicing need appear to be using multiple channels in their interactions with the health insurer.

I also observed through the structuration lens that although the SST enabled wellness interactions and transactions at a distance, face-to-face interactions with wellness practitioners and interpersonal contact with call centre consultants cannot be easily emulated using impersonal online tools. Furthermore, design defects reduced trust in the SST. Surprisingly, and despite conventional beliefs to the contrary, this study reveals how older people had a higher propensity to use the online channel in a certain social context. I also observed how designers drew on local knowledge and client interactions in implementing these abstract systems. For instance, design changes were made to accommodate local adaptations of the nutrition centre in the UK market.

Although I used the concept of framing to account for the ahistorical nature of ANT, I found that structuration theory was still more effective in addressing the historical developments of social structures in this particular healthcare context and showing how these social structures affected the shaping of the SST. Nor was ANT as effective as structuration theory in taking into account broader social structures that influenced the local phenomena (Walsham, 2001). Nevertheless, ANT’s emphasis on understanding the arrangements of heterogeneous material was invaluable in developing a deeper understanding of the SST phenomenon.

9.2.3 Insights gained from ANT

Many researchers regard SSTs as neutral objects with no politics. ANT has demonstrated that SSTs are far from neutral or objective. An SST is a social construction, inscribed with many biased assumptions and notions of the designers. In the SST implementation process presented in the case study, the interests of various actors were shown to be inscribed into the technology. The first dominant notion that designers locked into the SST was that of substituting the call-centre consultant. While the use of the website as a replacement channel was in some respects a

rational decision based on internal efficiency goals, it neglected the socially rich context of the external user and already inscribed routines with traditional channels. Unlike internal users, who are subjects of the governing structures of the organisation, external users possess substantial discretion in their use of SSTs. This context of substantial ‘interpretive flexibility’ makes the process of attracting, converting and retaining external users a major challenge. Failing to see the intricacies of interacting with traditional channels as a social construction results in a misconception that an SST can somehow take on the role of traditional channels.

I also witnessed how the use of the channel as an online dietician reduced the patient to a set of measures, and by design had dismissed the other roles that are so essential in a dietician-patient interaction. There were several other attempts to black-box the notions of ‘consumer-driven healthcare’. The designers were attempting to present themselves as a solution to this notion. However, these notions of consumer-driven healthcare are not self-contained. They intertwine with the ideas of ‘others’. As a result, there was diversity in interpretation by different social actors, and therefore in what the SST ‘is’ to these actors. Therefore, although one may talk about self-service in the singular, the identity of the SST itself is dissolved into multiplicity. After all, the SST is performed by multiple objects and subjects. The translations of managers, developers, designers, users, analysts, marketing, traditional healthcare practitioners, application servers, software programming languages, browser versions, joint venture partners, the membership card, the telephone, traditional channels such as call centres, intermediaries, dieticians, clinicians all intertwine in translating the emergent outcomes of the SST. Therefore, we cannot talk about a single SST, since the SST itself is created relationally.

ANT also demonstrated how the tool had to be reconfigured to accommodate local adaptations. As such, SSTs are subject to their social contexts for their continuous adaptations. Designers of SSTs shape SSTs, but cannot control them in a deterministic way. SSTs that do not match the demands of their social contexts are unlikely to evolve in ways inscribed by designers. Furthermore, SST designers have to face internal business and traditional systems area interests and alignments that are often contingent and unstable. ANT also demonstrates that the implementation phenomenon is not just socio-political, but technical as well.

In other words, the SST demands or depends on the mobilisation of several SSTs. Thus ANT enables us to penetrate the SST phenomenon, not by using simplistic notions such as success or failure, but by tracing the socially rich and diverse translations.

9.2.4 Similar insights gained from ANT and ST

Both theories demonstrate that the range of interpretive flexibility in the use of SSTs is broader than for internally based systems, particularly in a socially rich, multi-channel context. Users modified the way in which they appropriated the SST, and the modified use often did not resemble the intentions of the designers. Furthermore, despite their beliefs and inscriptions, designers were shown to be more flexible in the way in which they followed their own interests. In both analyses, I witnessed that management – be it by acquiescence or coercion – were not ‘deterministically’ bound to their inscriptions of developing the ‘channel of choice’. Another important point is that both theories paid careful attention to the localities of the particular SST contexts, as opposed to offering generalised predictors of change. As a result, both theories demonstrated that universal solutions are unlikely to be immediately successful in multiple locations spanning different social, political, institutional and strategic contexts. Findings from both these theories also suggest that there is a need for a pragmatic balance between global standards and local needs. Furthermore, both analytical devices confirm that SST implementations are indeed context dependent. More specifically, SSTs operate in social contexts which design, use, adapt and modify them as tools for certain purposes. Thus the process of SST implementation is shown to be gradual and emergent. Moreover, the design and use of SSTs are subjected to improvisation. Accordingly, both theories were faithful in accounting for the gradual process of SST implementation and the tracing of divergent design and uses by way of multiple enactments and translations.

9.2.5 Conclusions on the theoretical frameworks

Structuration theory has offered a comprehensive approach to understanding SST implementation. It sensitised us to look at the macro and micro social issues with equal adeptness. On the other hand, through its emphasis on non-human actors, ANT offers a very enlightening perspective of design and use practices, shedding unique insights in answering the

research questions. However, structuration theory ‘naturally’ lends itself to observing broader processes and proves to be more adept at explaining the events that transcended the immediate ‘microworlds of the actors’ (Parayil, 1999). Nevertheless, by capturing the various interpretations and articulations of social and technological actors an in-depth and richer understanding of the SST phenomenon was attained. Jointly, these theories demonstrate how ‘meaning’ is bounded by context, process and technology, and consequently how both designers and users are enabled, as well as constrained in their actions. In the next section, I outline some key principles and guidelines that were applied in developing the conceptual framework from the above findings.

9.3 Principles and guidelines for building a conceptual framework

Eisenhardt (1989) points out two important concerns related to building theory from case studies. First, the intensive use of empirical evidence may result in theories that are too complex. The volume and richness of the data may give rise to theories that capture everything, but lack an overall perspective. Understanding the SST implementation phenomenon is complex, and the way I conceive it suggests the use of several perspectives and concepts. In this thesis I have focused primarily on developing a concept of SST implementation using key components of the analytical framework and associated conceptual elements (discussed in chapter 4). In doing so, the theoretical contributions are relatively parsimonious.

Second, Eisenhardt (1989) argues that building theory from case studies may result in concepts that are idiosyncratic to the case in hand. A primary aim of this thesis was to develop a conceptual framework of SST implementation for the commercial domain, and an extension to a more general IS implementation theory, thus making this concern less pressing. While I acknowledge that being embedded within this framework may be disadvantageous to the exploration of new concepts and theoretical ideas, I must remind the reader that all research theories have their inherent blind spots.

The main thread of the argument throughout this thesis has been directed at the drawbacks of mechanistic approaches to understanding the SST implementation phenomenon. As already alluded to, IS research approaches have been dominated by the Cartesian paradigm, and thus endless attempts to break up complex IS implementation phenomena into their smallest parts to

explain them in the form of predictable laws. However, more recently some IS researchers have been exploring ‘systems thinking’, which emphasises that parts can only be understood within the context of a larger whole (Checkland, 1999). In the words of Kwon and Zmud (1987), ‘most studies focus on small pieces of the implementation puzzle, without considering larger issues’.

Similarly, the main argument of this thesis is that understanding of social phenomena such as IS implementation can only arise out of understanding the interactions and relationships between the parts. Following this line of reasoning, an approach is proposed that emphasises the ‘contextual’ whole to understanding the implementation phenomenon rather than the analytical ‘sum of its parts’. This is aligned to the theoretical approaches already adopted in this thesis which emphasise that meaning develops within a set of other meanings, not in a vacuum, and which places human action in a stream of behaviour or events (process) to which it is related (context). Ignoring the context implies that social meaning and significance are distorted. (The importance of the social context in understanding the SST implementation phenomenon has already been shown.) The passage of time is also central to this type of approach, and so are paying attention to sequence of events and understanding how the SST phenomenon evolves, develops or emerges over time. After all, the SSTs can conjure different meanings in different cultural settings or historical epochs (dotcom vs dotbomb). And equally important are the day-to-day practices of users and designers, and the values, reasons or motives that shape their behaviour in particular ways. Of particular importance is how the stability of social practice is maintained or disturbed by interacting with others in ongoing processes of communication and negotiation.

However, what sets this conceptual framework apart from other similar attempts is the fundamental role that information technology is seen to play in shaping social action in specific ways. Information technology is influencing the very nature and direction of healthcare insurance. Therefore a truly systemic conceptual framework will include the technological artefact more prominently to improve the understanding of SST implementations (Orlikowski and Iocono, 2001). Furthermore, such a framework must be able to elicit a ‘socially rich’ perspective of social actors such as users and designers (Lamb and Kling, 2003). By supporting these two seminal studies, the envisaged conceptual framework will increase the applicability of its theory to other contexts (Carroll and Swatman, 2000). Moreover, by combining constructs and elements from ANT and structuration theory as ways of viewing the world, the conceptual

framework will not only allow for the understanding of the phenomenon from multiple lenses, but will also sharpen the definition of its high-level concepts and raise their theoretical level (Eisenhardt, 1989; Walsham, 1995). Furthermore, the development of concepts belonging to such a framework should be ‘generalisable’ enough to describe ‘tendencies’ (rather than predictions) in other IS settings, apart from SSTs (Walsham, 1995).

In chapter 4 I laid the groundwork by developing the initial conceptual framework for understanding the SST implementation phenomenon. In the next section, I attempt to unify concepts from structuration and ANT, based on the case study interpretation, so that such a synthesis can be extended to the SST and IS domain.

9.4 A four-perspective framework for understanding self-service technology implementation

9.4.1 Introduction

Because of their complex and abstract nature, structuration theory and ANT are very difficult to apply in the information systems context. A more parsimonious analytical framework is needed to understand the IS implementation phenomenon. In this section, a conceptual structure for such a model, inspired partly by earlier works from Walsham (1993), is proposed in the form of a tetrahedron.¹

This model is derived by combining insights from structuration theory and ANT from previous chapters. Unlike previous structuration theory approaches (Walsham, 1993; Pettigrew, 1987), in this approach meaning, process, context, and the technology artefact are intertwined, thus affording meaning and technology a more prominent role in understanding the SST implementation phenomenon. The concept of a non-human ‘actant’ (technology) – in this case the self-service technology and related technology allies influencing the social context and social

¹ A tetrahedron is a geometric shape belonging to a class of shapes referred to as polyhedrons. A tetrahedron is composed of four triangular faces, three of which meet at the vertex. These geometric shapes are often used in academia and business to depict the interrelationships between constructs. A well-known application is the Weberian pyramid. Famous interpretive sociologist Max Weber used a tetrahedron to depict the systemic nature of social systems containing three dimensions, which included political, socio-economic and ideological sides to discuss power (Craib, 1997). Similarly the form of a triangular pyramid is an appropriate way of illustrating the social dynamics of the four dimensions involved in the SST implementation phenomenon.

process on the basis of the interests and assumptions (meaning) inscribed within them – has an undeniable appeal in using ANT concepts for understanding the SST implementation process.

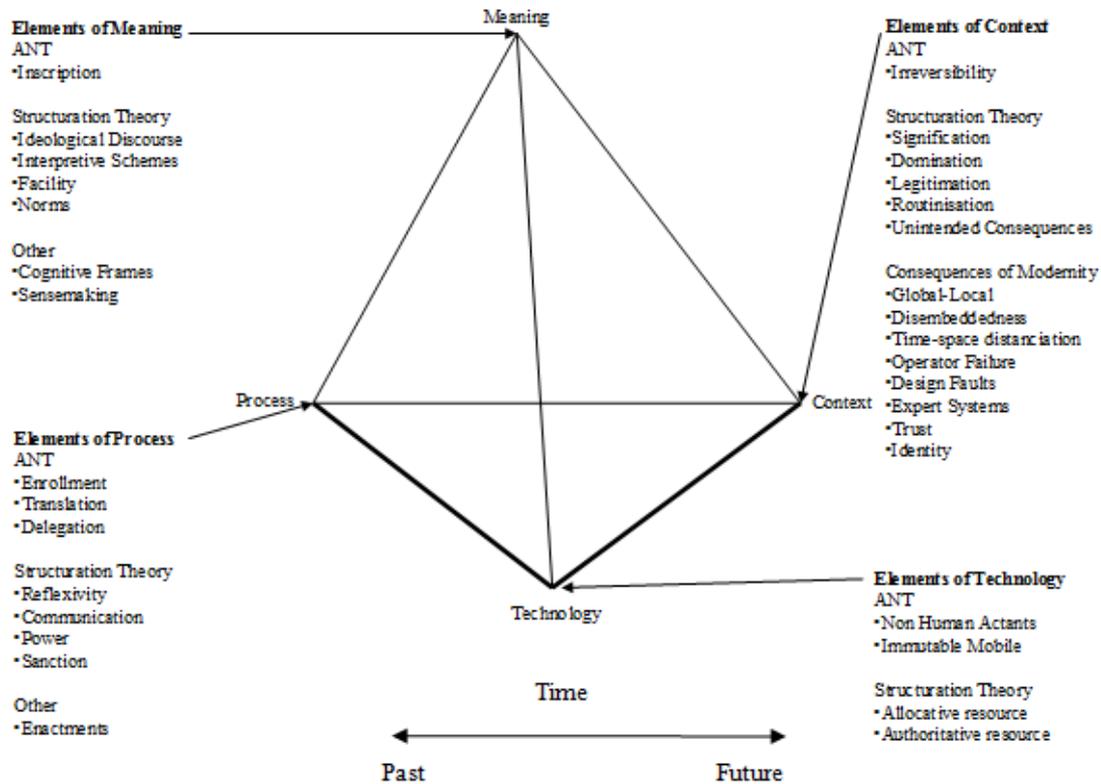


Figure 9.1 The four perspectives of SST implementation

In the conceptual model illustrated above, I indicate the interconnectedness between the four perspectives by representing them as corners of the tetrahedron. The analogy is similar to Swanson’s (1988) implementation puzzle in the flexible way it reflects on the perspectives and interrelationships that arise in implementation situations. However, Swanson’s formulation was limited to analysing the interaction of critical success factors of IS implementation. As the figure above illustrates, in order to develop a comprehensive understanding of SST implementation, such an analysis must incorporate the integration of four perspectives: meaning, process, context and the technology artefact. Integrating these perspectives means recognising that each dimension contributes significantly to understanding this social phenomenon. As I have shown, the meaning of the SST, while purposeful, was never fixed or static, but corresponded to local and broader contexts and responded to unanticipated or unintended consequences. The model also illustrates that the SST is implicated in a social context. Structuration theory adds a dynamic perspective by focusing on how social context enables and constrains interaction, and how the

interaction process, in turn, defines and redefines social context. Innovations such as SSTs should be viewed as continuous, as opposed to discrete (Kling and Scacchi, 1982). By incorporating time, this unitary model allows the plotting of changes in meaning, technology, context and processes over this longitudinal journey. This inclusion of time in the model does not imply that implementation should be viewed as a discrete or chronological process, but reinforces elements of past, present and future embedded in these four perspectives as another intrinsically important analytical dimension.

The implementation model also consists of design and use processes and draws out broader social actions in the recursive reproduction of the SST. Furthermore the model also responds to changes in the process, either designed or emergent. Although SST implementation involves relationships between processes that produce the material component of the SST, the SST implementation process itself is concerned with both material (eg Web browser) and non-material artefacts (eg loyalty scheme). Structural changes as suggested by structuration theory should be understood purely as a cognitive process. While meaning or understanding is a cognitive non-material phenomenon, using ANT concepts the unitary model above asserts that meaning is also shaped and inscribed in technology. Thus, implementation is never divorced from the technology, even though its essential characteristics – such as organisation, complexity, and processes – are non-material aspects. Indeed, disturbance in any one dimension affects each of the three sides of the implementation pyramid. In other words, jointly these dimensions can unravel the socio-technical complexity of SST implementation. For instance, the case study demonstrated that by not serving the interests of the majority of users and interest groups within the firm, the stability and the sustainability of the new technology as a ‘channel of choice’ were threatened. A new ideological constellation that aimed to ‘dazzle the customer’ emerged to rescue the technology that had been thrown into early crisis. The distinction of these four perspectives is therefore largely an analytical convenience, since these perspectives are mutually interrelated. In the next section I discuss the integration of the four perspectives – process, context, meaning and the technology artefact – in more detail.

9.4.2 Meaning as the first perspective

Social scientists have referred to the hermeneutic dimension to express how human action flows from the meanings that we attribute to our social context (Giddens, 1984; Habermas, 1976).

Accordingly, the above model postulates that the systemic understanding of SST implementation should incorporate meaning into the three other perspectives on implementation. The centrality of meaning in this model expresses the critical dimension of a human agent's reflexive (inner) consciousness of concepts, ideas and images that constitute social phenomena and language as the medium for understanding and agreement in a social, political and economic context (Butler, 1998). Following this line of thought, it is language that marks the coordinates of one's life in a social setting, and fills that life with meaningful objects (Berger and Luckman, 1967). The model emphasises that subjective insights and interests of human agents such as designers, users and other stakeholders are important if we are to understand human conduct in the implementation of innovative technologies. In other words, these practices unfold as an intersubjective reality involving a continual interaction and communication with others.

Understanding SST implementation is inextricably linked with the reflexive consciousness of users and designers and the social context. These mental blueprints enable users and designers to choose among alternative paths, which is necessary to formulate values and social rules of design and use behaviour. Conflicting interests structured on different values are also the bases for understanding relationships of power in a particular SST context. The concept of meaning implies that the SST phenomenon, while having been assigned or inscribed with specific objectives by designers, will lead to different or emergent meanings. For instance, we have seen in the case study how the SST team culture was created and sustained by a network (context) of media communications (process), in which meaning was generated. The SST culture's material embodiments (technology) included artefacts (such as presentations, reports and other written texts) through which meaning was passed on from the organising bodies, including management, software vendors and academics, to the design team. Several unintended or unanticipated consequences emerged as a result of inscribing these meanings into the SST. For instance, management eventually recognised that the role (meaning) of the SST as a dominant channel (intended outcome) was incongruent with the users' action (actual outcome) within a multi-channel context.

Many user social groups emerged, based on differing interpretations, varied access to channel resources, and norms that legitimated different 'orders' of use. In other words, the understanding of SSTs as a product of human action is subject to a 'circle of understanding' that includes the whole and the parts that constitute it (Butler, 1998). Orlikowski and Robey (1991:153) assert that

‘the content and form of an IT artifact tends to reflect the assumptions and objectives of its designers’, which was quite apparent in this case. However, meaning itself is a systemic phenomenon that is always shaped by and is implicated in shaping the social context. According to Berger and Luckman (1967:87), ‘this is done by various techniques of intimidation, rational and irrational propaganda, mystification and, generally, the manipulation of prestige symbols’. In the case, the designers interpreted the SST within a particular ideological context, beliefs and sets of circumstances perpetuated by various steering mechanisms during the dotcom era, whereas user groups were driven by different sets of norms. These unexpected patterns of use by these social actors led the designers to reconfigure the SST eventually to reflect ‘the way things are’ (Berger and Luckman, 1967). In this case, proponents of the SST had to concede to the definition imposed by user behaviour which supported the notion of a ‘complementary channel’. Therefore the SST has no meaning, that is, apart from the historical, organisational, political and economic context from which it emerges.

9.4.3 Context as the second perspective

Social context is considered both the medium and the outcome of interaction, therefore understanding interaction at moment requires taking the current and historical social context into account. Structuration theory adds a dynamic perspective by focusing on how social context enables and constrains interaction, and how interaction, in turn, defines and redefines social context. The unitary conceptual model avoids linear cause-and-effect relationships and emphasises that both users and designers interpret their social context to guide their actions. Furthermore, it suggests that human actions, while purposeful, are enabled and constrained by the social context, but not necessarily determined by it. In the case study, the context provided the external drivers for the SST implementation, and a number of internal organisational constraints that influenced the trajectory of the SST implementation outcomes. For instance, the strategic conduct of the senior managers of the dotcom initiative was shaped largely by how they interpreted the dotcom environment, positioned by the various steering mechanisms at the time.

Users, meanwhile, are also enabled and constrained by, but not determined by the context. This is not to suggest that users can be totally independent in the health insurance context, but merely to reinforce the notion that users can demonstrate a high level of autonomy over their channel preferences. This highlights one of the fundamental differences between users of Web-based IS and traditional IS systems. To understand the implementation of the SST, we need to relate it to

its historical context and in particular to review it in light of institutionalised and contemporary practices facing designers and users. Consequently, a more socially rich view of users and designers as multidimensional social actors emerged in the earlier analysis (Lamb and Kling, 2003). For instance, certain social user groups, such as loyal, polygamous, interpersonal and ideal types who were identified in the case, were selective about the use of the SST. Thus, the model can be extended to understand implementation at different contextual levels, and can account for societal, inter-organisational, organisational, group and user levels. However, as the above model demonstrates, context and use by social actors are not static. Instead, outcomes of SST use and strategies for SST implementation are clearly context sensitive. The dynamic process of action interweaving with the other three dimensions is also fundamental to understanding the SST implementation phenomenon.

9.4.4 Process as the third perspective

The social context continually and recursively coordinates the behaviour of human agents. Similarly, as the SST emerges, it enables and constrains human actions. In other words, social structures are produced and continually reinforced by the actions of agents in the process of instantiation. In understanding the implementation of the SST, both the ANT and structuration theory analyses uncovered a perplexing multitude of phenomena, rules, resources, goals, strategies, designs, and power relations that are essential to design and use practices. As a result, the emergent outcome of the SST arises from a complex, highly non-linear dynamic, combining rational and political processes. As Walsham (1993) has articulated in previous studies, ‘power, chance, and opportunism’ are as influential in shaping IS implementation processes as are ‘designed, negotiated agreements and master-plans’. The SST evolves out of a recursive process through which values, beliefs and rules of conduct are continually communicated, modified and sustained.

The case revealed how the SST emerges from a network of communications among designers and how, as it emerges, it produces constraints on their actions. In other words, the rules of conduct that constrain the actions of designers are produced and continually reinforced by their own network of communications. Consequently designers also produce a shared body of knowledge, including information, ideas and skills, that shapes their distinct practices in the implementation process. As a result, they shape their own cultural identity, which in turn

reinforces their own sense of belonging. This unique identity can sometimes alienate them from other systems areas. As already alluded to, the action of design agents is also implicated in the production of structures. These structures are a means by which designers attempt to inscribe and thereby embody meaning into the SST. Furthermore, through the process of translation, the designers of the SST attempt to enrol a group of allies, both human and non-human. It is important that allies share the same interests and through their actions demonstrate that they are willing ‘spokespersons’ of the SST. Therefore social systems produce material and non-material structures. To a large extent, SSTs are material structures that embody the shared meanings of designers. Similarly, in interacting with the health insurer, users draw on their patterns of signification, domination, and legitimation to interpret the role of the SST in the multi-channel environment, and enact the appropriate social practice according to their personal framework of norms. One of the limitations of structuration theory is that it does not specifically elucidate the relationships between the social aspects of the organisation and information systems such as SSTs. Thus, to understand the implementation of SSTs within a social system, it is also important to study SSTs from a material perspective.

9.4.5 Technology as the fourth perspective

In contrast to structuration theory concepts only, the model above explicitly incorporates technology in the four implementation perspectives. Human action, it is suggested, is not absolute, but responds to and itself shapes and is shaped by technology. In other words, technology is implicated in the regularity of social relations, and specifically in the way that interests are inscribed in them.

Consider the analogy of a speed bump (material structure) used by Latour (1999). It has certain inscriptions embedded in it, but it is not just in the mind (non-material structure) of the road user (human agent). The speed bump will interact with the reasonable road user and convince the user to slow the vehicle down, owing to its physical presence and real effect inscribed in it, not just as a mental effect. Similarly, in the case the designers enrolled the electronic newsletter and frequently asked questions (FAQs) as technology allies of the SST in attempting to enable the SST to interact more like a real-world wellness practitioner. While one can concur with ANT that social actions or intentions can be delegated to technical artefacts, one must still exercise caution so as not to overstate the importance of technological properties. After all, human actors,

via social interpretation and actions, can modify or ignore the inscribed or intended configurations of the technology. Staying with Latour's analogy, one needs only consider the examples of some drivers who in their day-to-day practices ignore the virtues embedded in speed bumps to challenge Latour's strong objectivist notions. For instance, despite the presence of the 'speed bump', some drivers may draw on their structures of signification which emphasise a 'get to the destination fast' discourse, dismissing the 'slow down so as not to endanger pedestrians' inscription embedded in the speed bump. In other words, it is only through human action, more specifically through the process of instantiation, that these inscriptions take any effect when interacting with material artefacts.

A number of IS studies using structuration theory have attempted to incorporate technology more explicitly in their models. Berg (1998) argues that most structurational accounts offer undue privilege to human agency, causing 'technology to vanish from their accounts, appearing only as an occasion for structuring, without any activity or specificity of its own'. More recently, Rose, Jones and Truex (2005) proposed the 'double dance of agency' model, as a more intermediate account of human and machine agency. However, as has been shown in the SST context, it is not only the technology that plays a central role in SST implementation, but other non-human actors as well, such as the loyalty programme and the telephone in the case study. ANT's symmetrical treatment of actors helps us to trace the role of other important actors in the implementation process, which may not be necessarily be an information technology.

Unlike ANT, however, the conceptual framework above does not treat technology and its non-human allies and human agency as equivalent. After all, technology does not have the capacity to reflexively evaluate its own purposes and actions or those of others in an autonomous fashion, unlike human agents. Despite the interactive nature of SSTs, these technologies are not aware in the same way that humans are of themselves and their social context. Furthermore, while humans can interpret meanings of technology, technology does not have the ability to interpret human action. Another important feature of being human is the intentionality that humans can direct towards achieving certain outcomes, despite these actions being prone to unintended outcomes. As Rose *et al* (2005) point out, technology does not have the capability to decide what actions to take outside those parameters established by their designers. Following this logic, it appears that technology does not deserve symmetrical treatment with human agency.

Similar to Rose *et al* (2005), the implementation model above gives prominence to the role of technology, and recognises the mutually dependent and intertwined relationship between human and technology actors. The model acknowledges the presence of and the alliances among technological artefacts (Web browser, Web server, Web software, national ICT infrastructure) and assumes that technology is influential upon meaning, process and context. However, the model, while giving prominence to technology, does not treat technology artefacts and human agency as equivalent. The model accounts for the different properties composing human and technology agency, and the emergent rather than predetermined outcome of human-technology interaction. Yet, at the same time technology is not treated as something that is neutral. Instead, technologies such as SSTs – through the inscriptions of the norms, values and rhetoric (that is, meaning) that they carry – can recursively shape or alter process, context and meaning dimensions in specific ways. In this way non-human actors, like human actors, are decisive in the outcomes of the SST implementation process. Since the model offers a comprehensive framework for understanding the dynamics of SST implementation, the applicability of its high order concepts and elements is equally relevant to other IS implementation phenomenon.

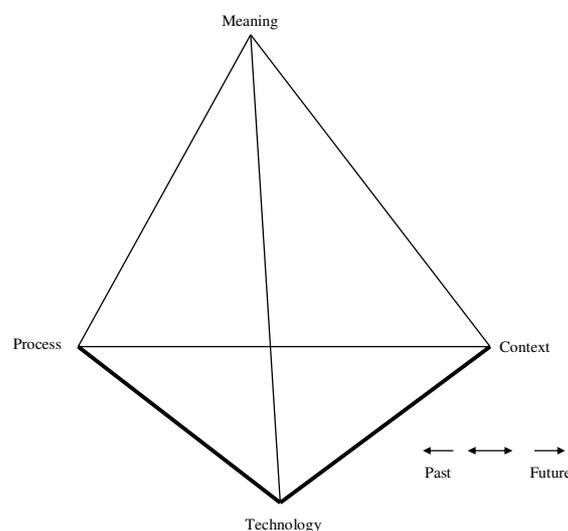


Figure 9.2 A unitary model for interpreting IS implementation

Figure 9.2 represents this relationship in the form of a unitary model of IS implementation. Therefore the analysis of the four interconnected perspectives – meaning, process, context and technology – makes it possible to establish a unified understanding of IS implementation phenomena. In this model I attempted to stay clear of any formulas, dogmas, or prescriptions for

IS implementation success. Instead of basing a conceptual framework on *what* to think (that is, a catalogue of factors or some hallowed postulates), I have based it on *how* to think about IS implementation. It is only through creative understanding that we can uncover the IS implementation phenomenon from moment to moment.

Table 9.1 presents some fundamental examples to illustrate the efficacy of the conceptual framework in uncovering the complex and interdependent issues in the implementation of Internet-based self-service technology that were evident in the case.

Table 9.1

Applying the four perspectives of the unitary IS implementation conceptual model

Model dimensions	Some related themes	Sample illustrations from the case study
Meaning	<ul style="list-style-type: none"> • Interpretive schemes • Facility • Norms • Inscription • Cognitive frames • Sense making 	<p>The SST discourse inscribed in promotional devices such as magazines and electronic newsletters to users drew on a signification structure which contained the notions of ‘convenience’ as a rationale for SST use</p> <p>Despite majority of the users not following the inscribed intentions of the designers, the SST remained a symbolic force signifying the ability of the consumer-driven healthcare movement to empower customers</p> <p>During the ‘channel of choice’ episode, the SST reflected a substitution claim. Thus the institutional values and interests that the insurer drew upon and attempted to inscribe in the SST were biased towards an operating efficiency logic</p> <p>As an autonomous SBU and as an ally of senior executives, the SST artefact was strengthened during processes of negotiation with competing institutionalised system practices, interests and norms</p>
Process	<ul style="list-style-type: none"> • Communication • Power • Sanction • Enrolment • Translation • Enactments • Delegation 	<p>The prevailing interests within the local health firm, employing strong images of consumer-driven healthcare during the ‘channel of choice’ episode summed up the existing power structure that facilitated the opportunities for radically ‘loose’ systems development practices</p> <p>Drawing on loyalty points while effective at <i>interesting</i> and enrolling many users were ineffective at sanctioning the intended behaviour of external users. Users displayed</p>

Table 9.1*Applying the four perspectives of the unitary IS implementation conceptual model*

		greater discretionary power over their choice on modes of interaction with the healthcare insurer. Nevertheless the SST emerged as a new structure for interaction with the healthcare insurer
		The ‘real-world’ dietician often has to play the role of a psychologist, part coach, part friend, and part dietician. The analysis exposes the limitations of delegating the social actions of the dietician to technical artefacts such as the self-service tool
Context	<ul style="list-style-type: none">• Signification• Domination• Legitimation• Unintended consequences• Global-local• Routines• Irreversibility	<p>The spate of regulatory reforms and rapid membership growth intertwined with local firm practices and priorities of lowering administration costs using the new channel</p> <p>The SST was legitimised by ongoing shifts and recasting of its role and reorganisation efforts. From the mini-crisis of not being able to replace traditional channels, the SST’s place was eventually strengthened as a complementary channel. From operating under the banner of an autonomous SBU, the SST was eventually fully integrated into the firm</p> <p>Owing to prevailing structures of domination, the international development team was initially forced to implement their SST using the inscription of a servicing structure bias although they required a structure that could gear online sales</p> <p>One of the established norms that legitimated the deployment of the SST as a service channel was ‘call reduction’. An unanticipated consequence of the SST was the marked elevation in calls that occurred closer to the proximity of an SST use event</p> <p>Out of the development of the SST an extensive stock of experience for developing and exploiting global ICT infrastructures emerged which was subsequently used to support the international growth strategy</p>
Technology	<ul style="list-style-type: none">• Non-human actants• Immutable mobile	By taking the material properties of technology into account, we observed that the SST is implicated in a highly fragile, contingent and improvised mode of forging relationships with other technical allies or foes such as the Web browser (eg Netscape vs Explorer), software development

Table 9.1

Applying the four perspectives of the unitary IS implementation conceptual model

languages (eg Magic vs Java), middleware, internal databases and server architecture, the telephone, call centre and so on with their inscriptions sometimes containing contradictory values and interests

Note: As the brief yet systematic analysis in the illustrations above indicates, the distinction of these four perspectives and their conceptual elements is largely an analytical convenience, since all four perspectives are mutually interrelated

9.4.6 Conclusion on the conceptual framework

By incorporating ANT concepts, the structuration theory model was extended to incorporate technology in ‘a four-perspective framework for understanding IS implementation’. Using the interpretive philosophy underpinning this research that values the multiple perceptions of actors more directly, it is shown how ‘meaning’ is bounded by context, process and technology, and consequently how designers, users and other stakeholders are enabled as well as constrained in their practices. Investigating the interrelationships, dependencies and mutual configurations of these four dimensions provides a more perceptive lens for understanding the SST implementation journey. The application of this framework and its accompanying high-order concepts and elements is equally germane to other IS implementation phenomena.

9.5 Conclusion

The important goal of this chapter was to synthesise structuration theory and actor-network theory (ANT) understanding and develop it into a systemic framework for understanding SST and IS implementation. I developed a conceptual framework that integrates meaning, context, process and the technology dimensions. This unitary model was also used to briefly demonstrate some of the complex and interdependent issues and their implications for Internet-based self-service technology implementation in the healthcare case context. Orlikowski and Iacono (2001) asserted that the IT artefact is shaped by the interests, values and assumptions of designers and users; that the IT artefact is embedded in a historical context, and therefore must consider cultural and organisational discourse that shape the implementation journey; that the IT artefact is composed of a multiplicity of fragile and fragmentary components; and that the IT artefact

emerges from ongoing social, political and economic practices. More recently, Lamb and Kling (2003) have called for a ‘socially rich’ perspective of the user. The conceptualisation of the SST implementation practice as comprising four salient dimensions makes a significant contribution towards these research calls to understand the ‘ubiquitous, interdependent, and emergent’ journey of implementing an IT artefact and equally to sharpen our perceptions of the ‘socially rich user’. With these ends in mind, I have shown how structuration theory and ANT concepts can be combined into a comprehensive theory of IS implementation without losing the inner logic of either.

In the final chapter (presented next), the research effort is concluded. Towards this end I will conduct a brief analysis of the contribution of each chapter towards addressing the research questions. This chapter also discusses the salient contributions of the research. This is followed by a brief evaluation according to certain key criteria for competent interpretive research. Finally, I will provide a brief exposition of the limitations of this research, which will be followed by reflections for further research work.

Chapter 10

Conclusions and Evaluation of Contribution

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10.1 Introduction

The main aim of this research has been to develop a conceptual framework to contribute towards the understanding of Internet-based self-service technology (SST) implementation. To this end, I adopted an interpretive stance and an in-depth single case study strategy. The derived conceptual framework in the previous chapter demonstrates that in order to develop a comprehensive understanding of SST implementation, such an analysis must incorporate the interconnectedness of four perspectives – meaning, process, context and the technology artefact – and the respective conceptual elements that make up these dimensions from structuration and actor-network theories.

At the start of this research a set of research questions were posed (*cf* chapter 1). In the first part of this chapter these questions are addressed. The next section discusses the research contributions and implications. Following this, I assess the contributions of this study, using criteria formulated by Atkins and Sampson (2002). The final section discusses the limitations of this study, and offers suggestions for future research.

10.2 Addressing the research questions

Revisiting the research questions formulated in chapter 1

Various questions were tabled in chapter 1 in order to understand the dynamic interplay between self-service initiatives within the individual, group, organisational, inter-organisational and broader social context. The main objective of these questions was to meet the overall objective of this thesis, which is to understand the opportunities and challenges of implementing SSTs in the healthcare insurance services context. In this subsection, the research questions are revisited in light of the results of the case studies.

How has the social, political, economic and technological environment shaped the healthcare insurance services context?

Although this question has been addressed throughout this thesis, particular attention was paid to it in chapters 6 and 7. In one instance it was discovered that intermediaries such as the broker played a dominant role in the firm's economic interests in the South African market, given the

strong ties between brokers and employers. Key members of senior management voiced their reluctance over the potential use of the Internet channel to sell products directly to this market using SST, as it could destabilise these relationships. Conversely, given the different structures in the UK market, it was interpreted differently and a direct-to-consumer approach (D2C) was deemed acceptable. In another instance, the traditional systems staff attempted to draw on their structures of domination (arising from their powerful position within the firm) and resisted participation in developing the SST capability that was attempting to replace traditional channels. Furthermore, one of the primary motives in deploying the SST was to lower administrative costs, particularly by reducing the number of calls made to the call centre. Call savings was one of the norms the SST team had to demonstrate to maintain their legitimacy. Despite its questionable performance in one of its key inscriptions, the SST became a spokesperson for the organisation's innovativeness and for consumer-driven healthcare. These salient examples illustrate the intricacies involved in fusing technological innovations with social, organisational and commercial concerns.

What contributions can SSTs make to healthcare insurance services in the context of traditional service channels?

This question was answered partially in chapter 3. However, chapter 7 provided deeper and richer insights into it. The study shows that relying on Internet-based self-service technology alone to improve healthcare service delivery is a channel strategy fraught with hazard. Traditional channels are well institutionalised in day-to-day practices and show strong symptoms of irreversibility. Thus, a more appropriate strategy may be to position the SST as complementary to other channels, and as one that supports less complex service encounters. Indeed, a convergence strategy that maps the role of each of the channels, both traditional and contemporary, based on its applicability and appropriateness, can produce better results than an approach in which channels attempt to compete with one another for the users' attention.

While self-service technology is applicable and appropriate in certain contexts, chapter 7 reveals that the subtle roles of service consultants and wellness practitioners such as dieticians and stress counsellors that are acted out in face-to-face or interpersonal encounters cannot be completely delegated to technology. Furthermore, both theories revealed that many users still adopt institutionalised practices such as the call centre, and prefer interpersonal engagements for

complex or sensitive matters. Granted, there are some users who prefer to use only the online channel, but in this case they did not form a critical mass that is sufficient to justify the spend on the technology. Even then, some encounters are simply more effectively serviced by traditional channels. As such, the SST did not radically alter the way services were provided in the case study. At best, the SST is more effective at supporting other channels than replacing them. More surprisingly, despite questionable performance, the SST has become a noteworthy rhetorical device to drive the ‘consumer-driven healthcare movement’ and the inscription that the individual should be responsible for his or her own healthcare.

What contributions can social theories make to understanding the implementation of SSTs in healthcare insurance services?

This conceptual model was derived from structuration theory and actor-network theory (ANT) in chapter 4. Unlike previous structuration theory approaches (Walsham, 1991), in this approach meaning, process, context and the technology artefact are intertwined, thus affording meaning and technology more prominent roles in understanding the SST implementation phenomenon. The concept of a technology artefact influencing the social context and social process on the basis of the inscriptions (meaning) within them is one of the major benefits of using ANT concepts for understanding the implementation of SSTs. I also augmented the structuralist conceptual model established in chapter 4 with key concepts from Giddens’ (2003) later work on the consequences of modernity. Jointly, these concepts served to uncover important implications for organisations implementing SSTs.

This thesis also addresses how these two social theories compare in assessing the implementation of the SST, and elucidates the different insights they bring to the case. This aspect was addressed in chapter 4 and more specifically in chapter 7. It was found that both theories demonstrate that the range of ‘interpretive flexibility’ in the use of SSTs is broader than for internally based systems, particularly in a socially rich, multi-channel context. Users modified the way in which they appropriated the SST, and the modified use often did not resemble the intentions of the designers. Furthermore, despite their beliefs and inscriptions, designers were shown to be more flexible in the way in which they followed their own interests. For instance, in both analyses, management – be it by acquiescence or by coercion – were not ‘deterministically’ bound to their inscriptions of developing the ‘channel of choice’. Another important point is that both theories

paid careful attention to the localities of the particular SST contexts, as opposed to offering generalised predictors of change. As a result, both theories demonstrated that universal solutions are unlikely to be immediately successful in multiple locations, spanning different social, political, institutional and strategic contexts. Findings from both theories also suggest that there is a need for a pragmatic balance between global standards and local needs. Furthermore, both analytical devices confirm that SST implementations are indeed context dependent. More specifically, SSTs operate in social contexts which design, use, adapt and modify them as tools for certain purposes. In addition, the process of SST implementation is shown to be gradual and emergent. Moreover, the design and use of SSTs are subjected to improvisation. Accordingly, both theories were faithful in accounting for the gradual process of SST implementation and the tracing of divergent design and uses by way of multiple enactments and translations.

As compared to ANT, structuration was particularly useful at taking into account broader institutional structures, such as the South African healthcare environment and the interpretive scheme of actors by which actors make sense of the SST phenomenon. However, ANT revealed different insights by challenging the notion that SSTs can be viewed as neutral objects with no politics. As ANT has illustrated, an SST is a social construction inscribed with many biased assumptions and notions of the designers. ANT was more adept at revealing how the interests of different actors were inscribed into the technology. ANT was also more informative about the negotiations, alliances and roles of those human and non-human actors that are involved. Nevertheless, it is in their joint application that a richer insight about the implementation phenomenon emerged.

This discussion will be extended in the next section, which focuses on some of the major contributions made by this thesis.

10.3 Contribution to knowledge

This section focuses on the contributions of this thesis. It addresses three areas of contribution: theory; methodology; and practice.

10.3.1 Theoretical contributions

The mainstream SST researchers have been adopting a strong positivistic stance, using variance theories and factor-based approaches to create new knowledge about the SST phenomenon. These approaches assume that cause-and-effect relationships are clear and pervasive when studying SSTs. Other researchers are suggesting that the study of SSTs is a relatively new field that should be informed by a broader set of research approaches. More specifically, researchers have been calling for the use of multiple theories, concepts, principles and methods to be used in the understanding of SST-related problems and issues.

Towards this end, this study has used process theories underpinned by an interpretivist framework to better understand the complexity of implementing online services. As opposed to using popular deterministic approaches to understand the implementation, adoption and use of SSTs – such as the theory of diffusion, the theory of reasoned action (TRA) and the technology acceptance model (TAM) – this study explored alternative theoretical lenses. This study introduces SST and e-service researchers in particular to structuration theory and ANT as useful theoretical frameworks for understanding the relationships between technologies, the social actors such as designers and users who interpret them, and the patterns of use that stem from that interpretation. In sharp contrast to variance theories, this study emphasises the individual's subjective experience and the interpretive lenses that give meaning to that experience. Using this approach, the study revealed that the interplay between broader social, cultural, political and economic issues (many of which were not directly controllable by the SST project team) was more influential on the outcome of the implementation than the more narrowly focused factors suggested by the factor research approaches.

Furthermore, most IS studies using structuration theory and ANT have been limited to users in the workplace context, where few systems alternatives are available. In this study, both theories were applied to external users who conduct their day-to-day lives in a more dynamic social context consisting of multiple channels. Nor have previous studies considered the influence of competing and institutionalised actors such as the telephone, call centre, and intermediaries in the implementation phenomenon. Moreover, most IS studies neglect the study of contemporary forms of IS innovations in developing countries. This study described the issues of the 'digital divide' between those people who have access to self-service technologies, and the ability to use

them effectively, and those who do not. The study also emphasised the importance of quality telecommunications infrastructure in supporting SST applications.

A major issue in this study was to enhance our understanding of the complexities of SST implementation. By using theories like structuration alone, one runs the risk of concealing the roles played by some of the key actors. While some simplification was necessary in this study, by using ANT, I was able to reveal those actors that mattered – in other words, those actors that made their presence ‘individually felt’ (Callon, 1986a). As such, I was able to provide a more holistic account of the SST implementation phenomenon. Moreover, ANT was used to describe both internal translations and external translations, in other words how internal groups (such as the staff) were mobilised and how different user groups were mobilised. Consideration of the negotiations, alliances and roles of those involved revealed how fragile the SST innovation was during certain stages. The shifts in the way the SST was employed also provided a useful approach to trace the progress of the SST implementation. Research of this kind is scant in the literature and for SSTs in particular is non-existent, making this study significant.

The research also addresses the limitations of structuration theory by augmenting it with Giddens’ later ideas on the consequences of modernity. Moreover, the study demonstrates how one can combine theoretical lenses with different ontological perspectives, to develop better understanding of social problems. By combining these two theories, a stronger but more parsimonious model of implementation was developed.

Using ANT and ST jointly also offers an assessment of which theory is more powerful in developing and understanding of the SST implementation process. Since there are numerous debates in the IS literature as to which of these theories is more suitable for IS research, this thesis compares them in an actual case. While it is my contention that the two theories are equally valid and somewhat compatible, other researchers can review the findings offered here to clarify their own thoughts on the ST vs ANT debate (Whetten, 1989). To a certain extent, this thesis has responded to Monteiro and Hanseth’s (1996) call to be more specific about technology, and Orlikowski and Iacono’s (2001) concerns about the under-theorisation of the IT artefact.

Previous conceptualisations of IS implementation failed to provide a ‘socially rich’ view of the user. In this study many user social groups emerged, based on their differing interpretations, varied access to channel resources, and norms that legitimated various ‘orders’ of use. The analysis revealed social practices of four user segments, specifically polygamous users, low servicing need users, interpersonal users, and the ideal type user, thus addressing calls by Lamb and Kling (2003) for a ‘socially rich’ perspective of the user. This research also addresses the lack of attention paid to contextual and historical reasons outside the firm by focusing on the context of interaction and differentiating between the firm and the healthcare environment.

In summarising, the way for academics to analyse future self-service implementation is by taking account of the interconnected perspectives of meaning, context, process, and technology.

10.3.2 Methodological contributions

Only a few studies have attempted to appropriate and assess structuration and ANT in the same study. This study promotes a pluralistic theoretical approach to understanding macro- and micro-level social contexts of SST implementation. In addition, the application of a case study strategy may be useful for other studies attempting to gain an in-depth understanding of the implementation of self-service technologies. Furthermore, the study combined quantitative and qualitative data to describe the case, a rare encounter with interpretive research.

The empirically rich insight provided by the case study is another major contribution of this study. Other researchers who wish to employ a case study strategy may be able to glean knowledge into how to apply an interpretive approach in data collection and analysis procedures. The use of the website feedback was shown to be a very innovative and useful approach to collecting and analysing information to understand user perception and evaluation of Internet-based self-service technology. Website feedback data retains information about the user and the date of the feedback. This then gives us a historical perspective of user experiences. Users are expressing themselves in a ‘real context’, and not an artificial context created by researchers. Consequently, future researchers intending to understand Internet-based self-service technology should consider website feedback as part of their data collection strategy.

To structure the analyses, major shifts in the enactments and translations of the SST were presented as cognitive and technological frames. These shifts were understood as a series of episodes involving the various actors, and proved to be a useful method for overcoming the complexity of presenting the longitudinal process information of the case.

10.3.3 Practical contributions

The study's in-depth analysis of broader social and organisational issues will resonate with practitioners. Most implementation studies, even case studies, tend to neglect these broader issues within which the technology is implicated, and overemphasise the technology and user dimensions. The main practical contribution of this study is the finding that in this particular healthcare insurance services context, self-service technologies are most appropriately positioned as a complementary service channel. The study showed that existing embedded relationships between stakeholders such as the health insured member and the call-centre agent were in the main irreversible or resistant to change. Many health insured members prefer to use the human interface, as opposed to the Web interface, to manage complex or sensitive queries. Therefore practitioners should not underestimate institutionalised features of social practices like the use of the telephone or intermediaries such as brokers. The study therefore provides an understanding of current routines and practices, and how these routines may remain stable or change. In this way, the study draws the attention of practitioners to focus on relational aspects to the same extent that they emphasise rational and economic goals of self-service technology implementation.

For instance, the study showed that inter-organisational relationships between brokers and health insurance partners can be strained if attempts are made to remove the broker from the health insured member / health insurance organisation relationship. It was also found that most private healthcare insurers should preserve their work practices. For instance, the manual submission of claims that has become well routinised could not be easily replaced by electronic submissions by health insured members. Neither can the multiple roles played by the wellness practitioner in a face-to-face encounter be easily delegated to a self-service technology. Generally, the study confirmed that embedded relationships in the healthcare insurance context remain important, despite the introduction of self-service innovations.

The case study points out that firms attempting to implement SSTs should adopt a holistic approach that includes social and technical factors. Apart from developing a complex data infrastructure to support a comprehensive online self-service strategy, firms must seek to understand what technologies are most appropriate and applicable in which situations, and how these technologies can be effectively and efficiently utilised, based on decisions supported by external and internal information as well as improvisation. Certainly, practitioners need to balance their perspectives of efficiency and effectiveness with perspectives such as appropriateness and applicability. Furthermore, it may be wiser to work as a collective and combine skills to work on and improvise on new-age futuristic service designs.

Firms should accept that for low-involvement products like health insurance, most customers in the post-purchase phase will not find the product interesting (unless they are very ill). Firms should also note that most customers are only interested in ‘grudge purchases’, like healthcare insurance products, when they encounter an event (eg visit the doctor) which implicates the product. Therefore practitioners should tailor services around customer events instead on products and piecemeal processes, across multiple channels. Moreover, unlike in the online banking context, the call-centre consultant cannot be substituted by technology in the healthcare insurance context. Whereas concepts in banking are well routinised in a user’s day-to-day practice, concepts promoted in consumer-driven health plans are often unfamiliar, thus influencing a higher servicing need. Instead of having an actuarial bias in the design of product concepts, health insurance firms should identify what language and terminology will make the most sense to their members.

This study showed how reward schemes can artificially inflate registration numbers of users, but observed no major effect on their ability to retain users or sustain usage. It also showed how the use of loyalty schemes can lead to unintended consequences. Many users used the SST to gain loyalty incentives – ‘point chasers’. Therefore there was no change in behaviour towards adopting the online channel. Instead, the loyalty scheme had the unintended effect of increasing the use of the traditional channels. Firms should exercise caution when implementing a loyalty scheme.

Furthermore, the study highlighted how internal definitions of the user that are based on a policy perspective are deficient at enabling use of the self-service channel. For instance, the firm had shifted from a policy-driven approach to access control and failed to consider the social practices of users such as the spouse. Practitioners should also pay attention to social roles in establishing the rules for identity management.

The study contributed by observing other contexts in which particular self-service functionalities work and provided an analysis and explanations for those outcomes. For instance, from a globalisation perspective, the case study highlights the differences and idiosyncrasies that are concealed beneath apparent homogeneity between the local and international contexts. In the case of the online nutrition tool, the designers had to modify and adapt the tool to accommodate another set of social practices. In implementing SSTs globally, the assumption that ‘one size fits all’ can certainly be a misnomer, and therefore adaptation to the local social context is crucial. Therefore understanding diversity and the interplay between local and global practices is crucial. Practitioners also need to reflect more actively on the contradictions inherent in introducing a new channel such as an SST. An eclectic of ideas is needed through more intense collaboration with potential users. It calls for brave management to create more discourse on ideas that are alternatives to presiding ‘regimes of truth’. It calls for management to understand the limits of their changing organisational metaphors. In the case, the shift from ‘dazzle the customer’ (innovative) to ‘nuclear power plant’ (bureaucratic) created a new focus on change with unanticipated consequences. The paradox of SST implementation is that convincing users to use impersonal technologies for servicing calls for closer collaboration internally among management, designers and other systems areas and staff members.

From another practical standpoint, the findings emphasise the priorities for practitioners, in the context of competing and alternative channels, of assessing where to focus their development efforts and on what end-user requirements. For instance, since firms can be more prescriptive with their partners than with consumers, prioritising the implementation of B2B practices may be more appropriate than B2C initiatives.

Therefore this thesis argues that a narrow focus on the expected outcomes of self-service initiatives such as productivity gains and increased service responsiveness is misplaced without the necessary sensitivity to existing embedded relationships within the different contexts. Other

instrumental objectives such as use and critical mass should also be complemented with notions of appropriateness and applicability. Therefore relying on Internet self-service technology alone to improve healthcare service delivery is a channel strategy fraught with hazard.

Consequently, many late implementers of SSTs can benefit from considering the implementation of the SST within a broader framework that focuses on the convergence of multiple channels. Since convergence represents a unified goal, as opposed to, say, a divisive ‘channel of choice’ goal, apart from ensuring tighter integration between systems implicated in the process, a convergence approach may lead to lower resistance, and hence the mobilisation of multiple interest groups within the organisation. More importantly, this will enable consumer empowerment in a true sense of the word, since customers can ultimately choose to use the channel that best suits their circumstances at a particular moment. In summarising, the way for practitioners to introduce these self-services – in other words, how to do it better than in the past – is by taking the interconnected perspectives of meaning, context, process, and technology into account during the SST implementation.

10.4 Assessing the contributions

Atkins and Sampson (2002) developed critical appraisal guidelines for assessing the validity of the interpretive research findings for single case studies through a synthesis of existing best practices (Klein and Myers, 1999; Walsham, 1995; Yin, 1984). The guidelines are organised in a framework which suggests five classification elements: way of thinking; way of working; way of controlling; way of supporting; and way of communicating. Using the evaluation criteria established in chapter 3, this section attempts to demonstrate that this research fulfils, at least to some degree, competent interpretive case study research (see table 10.1).

Table 10.1

Some key examples of compliance to the Atkins and Sampson (2002) guidelines for undertaking case study research

Element	Evidence of compliance
Way of thinking	<p>In chapter 1, the intent to use an in-depth case study approach was signalled to the reader. Chapter 2 provided an appropriate argument for a case study being the most appropriate research strategy. The strengths and weaknesses of a case study approach were also elucidated in chapter 3. In the early parts of chapter 8, the reasons for success of the case study approach were highlighted by summarising some of the rich insights gained from this research</p>
	<p>Chapter 2 also reflected on the philosophical stance adopted in the thesis, and demonstrated how these assumptions affected every other facet of this study, from how the evidence was collected to how it was interpreted. Chapter 2, Chapter 7 and chapter 8 also took into account bias when performing data analysis. The principle of suspicion (Klein and Myers, 1999) was applied when biases from interviewee narratives became apparent. For instance, some participants regarded the ‘streamlining’ of the e-commerce department as a cost-cutting initiative, while others viewed it as a performance improvement initiative. Since these opposing interpretations influenced the day-to-day practices of individuals, as a researcher I sometimes had to be faithful to both stories. To overcome other forms of bias, I often had to cross-reference the information. For instance, the respondent perceptions of usage statistics were compared with results recorded in the management reports</p>
Way of controlling	<p>Chapter 2 defined the form of quality-control measures implemented during this research. These included different sources of evidence including documentation, archival records, interviews, focus groups, management reports, direct observations, and physical artefacts. Software tools such as Microsoft Office and ATLAS.ti were used to store and protect the data</p>
	<p>To ensure that the results were credible, a case study database was created using Microsoft applications in conjunction with ATLAS.ti. For instance, this was used to cross-reference documents during the analysis phase. Furthermore, I discussed the case study narratives with some of the key participants for confirmability and with academics to get a view of their interpretations of my interpretations. Moreover, throughout the case study narrative in chapter 6 and analysis in chapter 7 and chapter 8 all quotes were indexed and given appropriate descriptions, so that they could be easily traced. In appendix C, a detail list of all the interviews and source documents is outlined. Furthermore, a sample transcript is provided in appendix C, illustrating how the transcripts were captured and documented to support the analysis process. In drawing conclusions from the data I collected, I was continually aware that the analytical frameworks I was using, while providing rich insights, were creating potential blind spots. In some instances, the initial conceptual framework had to be revised to account for new ideas</p>



	<p>The study included finer-grain conceptual elements from ANT and structuration theory to develop a broader level conceptual framework for self-service technology implementation. The network representation in ATLAS.ti was used to handle the complex relationships between concepts. By using codes, this facilitated the retrieval of quotations and other information related to the key concepts (see figure C1). In doing this, I drew attention to the fact that the distinctive ontology and epistemological underpinnings of ANT and structuration means that they are not strictly compatible. Nevertheless, it was argued that certain conceptual elements of ANT, for instance, could be appropriately used with structuration theory to give greater prominence to the technology artefact (Walsham, 2001)</p>
	<p>There is a lack of in-depth case study material that provides rich insights into e-commerce implementation phenomenon. In chapter 1, I constructed clearly formulated questions that other eminent researchers in the IS field have confirmed to be important issues or problems of interest in the area of e-commerce (Walsham, 2001). The research questions, which deal with contemporary issues, were devised to appeal to the interests of practitioners just as much as academics. They were shaped by issues that are managerial as well as academic, behavioural as opposed to merely technical. It is envisaged that exploring high-order constructs such as meaning, process, context, technology artefact and social actors will be of particular interest to other researchers attempting to understand the implementation phenomenon</p>
<p>Way of working</p>	<p>To avoid information overload, specifically since using grand social theories such as ANT and structuration theory can be overwhelming, chapter 4 created first-cut conceptual frameworks for ANT and structuration separately in the form of illustrations, accompanied by brief explanations of their key conceptual elements. These were revised many times. The initial conceptual frameworks were later extended in chapter 7 and chapter 8. For instance, particular concepts from Giddens' later works on the consequences of modernity were deemed relevant to this study, hence the extension to structuration concepts. In chapter 9, a synthesised framework is presented which includes ANT and structuration concepts. A table is used to briefly demonstrate how the implementation conceptual model can be applied. Throughout this process I was supported by the network representation in ATLAS.ti to handle the complex relationships between concepts</p>



	<p>Interview questions were initially devised from the research proposal and the first-cut research questions. The emphasis was to understand the day-to-day practices of designers. The initial fieldwork was limited to discussions with business analysts as a form of a pilot case study to test the initial research instrument. This was later refined, based on lessons learnt from the pilot study (see appendix B). These questions served as a guideline during the interview as often I had to respond to the situation at hand, to the emerging worldview of the interviewee. For instance, many of the respondents were keen to discuss the restructure/streamlining initiative because it was the most pressing issue at the time. Since these issues were of relevance to the study, I often had to be more flexible in the asking of questions. Furthermore, one of my objectives was to get divergent viewpoints on the implementation phenomenon. Therefore I engaged with various groups of designers, including business analysts, systems analysts, architects, marketing representatives, community heads and other senior managers. I also made specific attempts to interview the nutrition and stress experts to get a first-hand view on the implementation of wellness tools. Press releases and annual reports played a significant role in providing the background information for the case. Using the ATLAS.ti knowledge workbench and the directory structure created in Windows Explorer facilitated access to the large quantities of unstructured qualitative data. Using coding methods derived from the initial conceptual frameworks also facilitated this process</p>
<p>Way of supporting</p>	<p>As mentioned in chapter 2, interviews were the primary data source used to elicit accounts from those responsible for implementing the technology. A detail record of interviews conducted appears in appendix C, table C2. I also examined the firm's financial reports, press releases and internal magazines as alternative sources of data. A detail inventory of this documentation is recorded in table C1. The use of the website feedback in chapter 7 and chapter 8 was shown to be a very innovative and a useful approach for collecting and analysing information to understand user perception and evaluation of Internet-based self-service technology. Since the website feedback retains information about the user and the date of the feedback, this provided a historical perspective of user experiences. Users were expressing themselves in a 'real context', and not an artificial context like the interview process created by researchers. A sample of key internal reports that were used and ad hoc studies that were conducted appear in appendix D</p>

<p>Way of communicating</p>	<p>The design of the final report was established in chapter 1. The report started with an introduction of the research problem and aims and objectives of the study. This was followed by the philosophical assumptions underpinning this research, as well as the research strategy and research approach followed as described in chapter 2. The reasons for selecting the healthcare insurance organisation, data sources, units of analysis, data collection and analysis are discussed. In chapter 3, a literature review on IS implementation, specifically self-service technology implementation, was conducted. Building on this, chapter 4 was devoted to describing the theoretical frameworks that guided the analysis of this research. Chapter 5 presented the first set of empirical data central to this research by describing the broader social and organisational context of the case, while chapter 6 provided a description of the case organisation with the thrust of this chapter being devoted to describing the events related to the implementation of the Internet-based self-service technology. Chapter 7 and chapter 8 analysed and discussed findings from the case study, using the initial conceptual frameworks. Building on these discussions, chapter 9 presented a parsimonious model for understanding SST and IS implementation (Whetten, 1989). This framework may be applied in other settings in which researchers wish to understand IS implementation. Finally in chapter 10, I discuss some of the limitations of the study. Thus, throughout the chapters I have attempted to provide a logical chain of evidence. It is envisaged that a number of academic papers or articles will be derived from this thesis so that this case study can be made accessible to a broader audience of academics and practitioners</p>
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10.5 Related publications

Some parts of the literature review, specifically the discussion of variance-based theories such as service quality, relationship marketing, technology acceptance model (TAM) and theory of reasoned action (TRA) in chapter 3 and loyalty-based incentives in chapter 7 to understand the continuance behaviour of users using Internet-based self-service technologies, can also be found in Naidoo and Leonard (2007).

10.6 Limitations and suggestions for future research

In empirical terms, insufficient time was spent with actual users, despite the use of online feedback as well as internal surveys and reports as an appropriate surrogate for the user. Directly interacting with the users might have enlivened the accounts of the users, and possibly have led to added interpretive depth.

A theoretical limitation is the converging of two different theories with different epistemological and ontological perspectives. It was not the intention of this research to reconcile these discrepancies, but to allow the different theoretical ‘flowers to bloom’, so as to contribute to the development of the conceptual framework (Walsham, 2005).

Furthermore, critical researchers may argue that this thesis was not sufficiently critical in its interpretation. For instance, in this study the systematic exclusion and systemic neglect of the poorer population became institutionalised in the new consumer-driven healthcare economic system. Ironically, trends in private sector healthcare driven by profits continue to reinforce and deepen certain apartheid ideologies in the South African healthcare context, even though the apartheid system has formally ended. Many IS researchers examining the South African context tend to ignore the historical context and the impact of apartheid in the implementation of IS. Thus critical researchers may want to challenge the use of the Web as a rhetorical device to drive the ‘consumer-driven healthcare movement’ and the inscription that individuals should be responsible for their own healthcare, especially in a developing country context. In this thesis, I chose to adopt more of an amoral and passive view while making these findings explicit. Critical researchers may want to take a strong value position and follow up on the potential false illusions perpetuated by ideologies such as consumer-driven healthcare and the complicity of information systems in enabling these ideologies.

On the other hand, positivist researchers may claim that the evidence for this thesis is not credible from an objective standpoint. They may dispute that facts are distinct from the ideas, values and theories held by participants in the research process. However, in interpretive research, understanding of a phenomenon is achieved by interpreting how people conduct their daily lives and not by a maze of interconnected causal laws. Instead, patterned and regular social behaviour is created out of evolving meaning systems that social actors generate as they interact. Perhaps it may interest the positivist researcher to derive low-order constructs from the conceptual framework to test different interactions between such variables.

10.7 Conclusion

There is one facet of the Internet-based technologies where consensus can be shared: it is growing rapidly. Each day, corporations are expanding their online products and services, governments are disseminating information to citizens; academics are publishing their lecture notes and working papers; and surviving dotcom companies are enticing users to purchase their products online. Albeit more measured nowadays, firms are still making substantial investments to create a presence online to link to their network of customers, suppliers and other partners. Internet-based self-service technologies in particular are now starting to change the way customers interact with firms. The increasing depersonalisation of services through self-service technologies – as with all human designs – is prone to errors and failures. Despite the inevitable malfunctions and unintended consequences of SSTs, as the case illustrated, this new channel has showed a high degree of robustness and sustainability. It is rooted in inscriptions and values that are fundamental yet alarming features of our society and economy. The SST's resilience, despite its vulnerability, is rooted in an interwoven social web of politics and values that are beyond the Internet or the user (Introna and Whitley, 1999). Therefore, instead of trailing in the shadows of superfluous notions such as success or failure, social scientists should pursue those social webs that often elude us in order to develop a better understanding of SSTs.

'But I will stop here. The ongoing dialogue permits no final conclusion. It would be a poor hermeneuticist who thought he could have, or had to have, the last word' (Gadamer, 1975:581).



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APPENDIX A

Excerpt from Research Feedback Report to eHIC Management

Table A1

Constraining influences in the implementation of the Internet-based self-service technology

Organisational environment	Broader context	Individual level
Alignment of priorities	Growing popularity of consumer centred healthcare	Perceived effort
Conflicting priorities	Poor bandwidth and connectivity	Habit
Database readiness	Exorbitant costs of access	Awareness
System integration readiness	First world management philosophy in a developing country context	Type of event
Business readiness	Institutionalised roles like call centres and telephones	The low need to interact
Innovation spiral (despite somewhat low competitiveness space)	Turbulent regulatory changes	Competing websites
Technical skills and process skills	Traditional roles like brokers	Span of attention
Legacy systems	Trust and security	The relative low involvement of the medical aid company in his/her life
Traditional channel emphasis	Grudge purchase product	Individual apathy towards adopting wellness programs
Lack of CRM and marketing skills or emphasis	dotcom bust	
Political issues over system territory	General social apathy towards health and thus the partial failure of wellness to enlist majority of customers towards active participation in health programs	
The current inscribed role of the channel and its perceived threat to paper-based initiatives and the call centre environment	Alignment of browser standards	
	Web server standards	
	Demand for technical skills	
Divided support at strategic level.	Rising costs of healthcare finance	
	Consumer centred healthcare under scrutiny	

Source: Feedback to Organisation (2005)

For simplicity and expediency, I listed a few categories or themes as feedback to eHIC's management – either historical or current – that appear to have acted as constraining forces in the implementation of the SST.

Excerpt from Feedback Presentation to eHIC Management

- Project centric Process centric
- Mechanistic Romantic
- Science Art
- Organisation User
- Efficiency Appropriateness
- Effectiveness Applicability
- Registration Adoption & use
- Registration Retention
- Usage Routines
- Reductionist (piecemeal) Holistic
- Gross Income Net income
- Cost per Call Cost per customer
- Gut feel Gut feel + info
- Internal focus External
- Generic services Tailored services
- Incremental improvement Breakthru'

Note: A presentation to the H-World department where I discussed various dichotomies and recommended a balanced approach towards implementation.

APPENDIX B

Interview Letter

Dear <Interviewee Name>

My name is Rennie Naidoo. I am a PhD (Information Technology) student at the University of Pretoria.

Information Technology students are often unable to research sticky, practice-based initiatives such as the implementation of self-service technologies, specifically where the experiences of the systems staff, business staff and users are critical and the business context important. In fact, instead of providing the initial wisdom for novel ideas such as self-service channel implementation, we often have to learn by studying the innovations put in place by organisations such as UAG.

My research thesis is on 'the implementation, adoption and use of self-service technologies (SSTs)'. In this regard, UAG's online self-service channel www.H-World.co.za makes for an extremely interesting case study and <Name of Department Head> has kindly endorsed for such a project to be undertaken.

Your participation and perspectives are extremely important to the success of this project. Please make yourself available for a round of semi-structured interviews. If possible, can you make the above date and time?

I estimate that the interview process will consume less than an hour of your time. For the interviews, I will be using open-ended questions that focus on your everyday work experiences, and how these experiences inform your understanding of self-service technology in the UAG Health context.

All interview sessions will be audio recorded – these recordings and their transcripts will be treated with the strictest of confidence.

I am optimistic that your participation will provide useful insights so that we can increase our understanding of self-service technology implementations.

Regards,

Rennie

Interview guide

An Internal view on the implementation, adoption and use of online services		
Semi Structured Interview With	Names(s)	Titles(s)
Phone number	Address	Date Time
Interviewer		File PhD/interview guide
1. Basic Questions		
Who is the interviewee?	<ul style="list-style-type: none"> • What department/section are they in? • What do they do there? • What is their relationship with the rest of the department and organisation? • What is the person's educational/experiential background? • How long have they been working here? • What are their roles and responsibilities? • What have been the most significant changes in their roles and responsibilities over the years? • How do they feel about these changes? • What type of skills are essential in your role? • Describe the development process and relationship with the team? 	
What is the major focus/service of their area?	<ul style="list-style-type: none"> • To their department? • To their organization? • To the industry? 	
What is the general technological orientation of this firm?	<ul style="list-style-type: none"> • Technophobic/technophilic? 	
What is the role of the online channel?	<ul style="list-style-type: none"> • Compare with other channels, other online services? 	
2. Types of Online Services/Functionality		
What types of services do you offer your online customers?	<ul style="list-style-type: none"> • Name some of them? • To what extent are they informational and transactional? • Which of your services do users use the most? 	
Which of these services are most important to them?	<ul style="list-style-type: none"> • Why? • Is there a shift towards transactional type services? 	
3. Perspectives on Users and Usage?		
Who are the different types of users of your system?	<ul style="list-style-type: none"> • Name them? 	
Which of these users use the system regularly and why?	<ul style="list-style-type: none"> • Generally describe users and their usage behaviour? • Why do other types of users use the online services less frequently? 	

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	<ul style="list-style-type: none"> • Does usage change over time? If so, in what way? And why do you think this is? • When are your online services used the most? • What events appear to trigger more use? Describe the patterns of these events?
What type of users should you target to create the critical mass and appropriate levels of usage?	
To what extent are your end users involved in the development process?	<ul style="list-style-type: none"> • Directly/indirectly?
Aside from the end users, who are the other stakeholders, both internal and external, to your online service offerings?	<ul style="list-style-type: none"> • What interest do they have in what you do? • How do they influence what you do?
How do users use your online services? For what purposes?	<ul style="list-style-type: none"> • Have there been any surprises in terms of how they use the system compared with its intended purpose? Clarify by means of an example?
What are the biggest benefits for your users to use your online services?	
What are the biggest benefits for the firm for users to use your online services?	
4. Alternative and Competing Channels?	
What are the biggest obstacles to increasing use?	
Prior to online services, what did users do?	
How do these other relationships influence the use of these online services?	<ul style="list-style-type: none"> • Call-centre consultants, scheme administrators, intermediaries such as brokers, what about employees?
Who are the channels competitors	<ul style="list-style-type: none"> • Other people, channels, other online services?
What types of services are appropriate for online use?	<ul style="list-style-type: none"> • Why do other types of users use the online services less frequently? • When do you think is the online service channel use most appropriate? • What are the advantages of the online services
What types of services are inappropriate for online use?	<ul style="list-style-type: none"> • Context? • Give examples? • Why?
What types of services are best left for traditional channels?	<ul style="list-style-type: none"> • Do you think that this trend will change over time? • What needs to happen for this shift to take place?
What types of actions have been put in place to stimulate and maintain use?	<ul style="list-style-type: none"> • What types of tactics will be

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	effective?
What needs to be done or changed to make DW just as effective as traditional channels?	<ul style="list-style-type: none"> • Is it possible in this context? • Internally • Externally
What do you think the ideal online service will provide or look like?	
Do you use banking services? What are the major differences between online health services and banking services?	<ul style="list-style-type: none"> • Why do you think this is so?
5. External & Internal Environment?	
Describe the external factors that influence the use of DW	<ul style="list-style-type: none"> • What are the constraining as well as enabling factors? • What needs to change? • Who needs to change these?
Which areas in your development team can/do contribute the most to increasing use?	<ul style="list-style-type: none"> • Why? • Where is the most room for improvement? • What impact can initiatives like usability have on the usage problem?
What is the role of the management of the online service?	<ul style="list-style-type: none"> • Does this differ from your expectations?
Which areas in your organisation can/do contribute the most to increasing use?	<ul style="list-style-type: none"> • IT, marketing, messaging? • Why? • Where is the most room for improvement?
Which areas external to the organisation can/do contribute the most to increasing use?	<ul style="list-style-type: none"> • Why? • Where is the most room for improvement?
6. Intended/Unintended Consequences?	
Can you think of some of the key things that the online services organisation set out to achieve and have achieved wrt to online services?	<ul style="list-style-type: none"> • By way of example?
What are some of the unintended consequences of introducing these online services?	<ul style="list-style-type: none"> • By way of example? • What has the impact been?
7. Strategy?	
What were the major drivers for the implementation of the online services?	<ul style="list-style-type: none"> • Goals, objectives
Have these changed or been altered over time? Why?	<ul style="list-style-type: none"> • What factors contributed to changes to strategy?
What are the critical success factors for these online services?	<ul style="list-style-type: none"> • From a project perspective? • From a business perspective? • What measures are in place to review this? • Have these measures changed over time? Are there new measures or change in emphasis?
What will make this channel for self-	



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servicing more successful?	
What are the future challenges for DW?	<ul style="list-style-type: none">• With respect to staff, end users & organisation?

APPENDIX C

Inventory of Interviews

Table C1

Detail record of interviews conducted

Nature of Group	Number of Interviews				Audio Transcript Code	
	Field trip 1	Field trip 2	Field trip 3	Other*	Code set 1	Code set 2
Business Analyst	1		1		01	55
Business Analyst	1				02	
Business Analyst	1		1		03	41
Systems Analyst	1				04	
Usability Analyst	1			2	05	
Architect	1				06	
Business Analyst	1				07	
Business Analyst	1				08	
Business Analyst	1				09	
Developer	1				010	
Business Analyst	1				011	
Business Analyst	1				012	
Business Analyst	1				013	
Business Analyst	1				014	
Marketing	1				015	
Developer	1				016	
Architect	1				017	
Developer	1				018	
Developer		1			018	
Architect	1				019	
Developer	1				020	
Architect	1				021	
Operations	1				022	
Architect	1				023	
Graphics		1			024	
Graphics		1			025	
Graphics		1			026	
Web designer		1			027	
Graphics		1			028	
Developer		1	1		029	053
Graphics		1			030	
Developer		1			031	
Marketing		1			032	
Project Manager		1	1		033	
Head – H-World		1		2	034	
GP – Stress		1			035	

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CIO – Health Systems	1				036	
Program Manager	1	1			037	042
PA	1		3		038	
Community Head	1	1			039	053
Community Head	1	1			040	054
Architect		1			043	
Community Head		1			044	
Community Head		1			045	
Nutrition Expert		1	1		046	
Business Analyst		1			047	
Architect		1	1		048	
Community Head		1			049	
Community Head		1			050	
Senior Business Analyst		1			051	
TOTAL	23	17	15	9		

Note: The category ‘other’ refers to progress and clarification meetings and email correspondence. The team responsible for ‘Customer intelligence’ assisted in the coordination of the interview process. A total of 55 interviews were conducted over three field trips spanning from February 2004 and ending in November 2006. Notes were made by me during the interviews and many transcripts were made of the audio-recorded interviews.



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Sample Interview Transcript

Interview #:	047
Interview Date:	1 December 2006
Tape ID:	047-A1
Respondent Name:	Kathy Murray
Respondent Role:	Business Analyst
Interviewer Name:	Rennie Naidoo

<i>Tape Position</i>	<i>Interviewer/ Respondent</i>	<i>Comments</i>	<i>Researcher's Notes</i>
000	I	Your name is	
	R	Kathy, Kathy Murray	
	I	Okay at UAG. What did you do?	
	R	I was a Business Analyst for the UK Health I was responsible for the employer zone, the registration process and the company administration. I was involved in the Nutrition centre, the stress centre, pretty much everything on the Wellness side of the members' pages	
016	I	Okay talk about your day-to-day experience. How did a typical day start?	
	R	A lot of the time I was receiving queries from the call centre because the users did not understand the concept of the site. So, yes, we had a continual cycle of fix, redesign, develop, fix, redesign, develop, fix. And, yes, we had a lot of that going on.	
	I	It sounds like there was a lot of maintenance to be done. Why was that?	
	R	First of all, you can't just plug and play it from one country to the next. Because what they, what one marketing team wanted, this or another. So, it started of saying, oh, yes, we are going to use this concept, and the more and more you delve into it, the more and more it moved away. So, a specific, a specific example was the, the Wellness Risk Assessment. We were going to now do this for both. And they just, we started off together and ended up, as I can see, very far apart.	Review globalisation concepts. Local-global dialectic
023	I	What were the main differences of that particular application?	
	R	Obviously, the requirements. How it was going to, linking into the system and what it was going to achieve at the end of the day. Different approaches.	

Inventory of Documentation for Analysis

Table C2

Detail inventory of documentation

Document Number	Description
DN01	July 1998; Publication: InformationWeek, Southern Africa; Title: Intranets, extranets
DN02	February 1999; Publication: The Cover; Title: Medical rate increases for '99
DN03	February 1999; Publication: Business Day; Title: Hi-tech centre handles medical aid queries
DN04	HIC's Health Plans brochure, 1999
DN05	June 1999; Publication: The Cover; Title: Leadership through innovation
DN06	August 1999; Publication: Business Day; Title: Health care gets an injection of e-commerce
DN07	September 1999; Publication: Sunday Times, Business Times; Title: HIC finds its destiny in US
DN08	October, 1999; Publication: Business Day; Title: Govt warns HIC
DN09	October 1999; Publication: Sunday Times, Business Times; Title: HIC's plan gets health warning
DN10	October 1999; Publication: Sunday Times, Business Times; Title: Inventor of the impossible medical aid dream
DN11	October, 1999; Publication: Business Day; Title: Health-care schemes enlist internet help
DN12	November, 1999; Publication: Business Report; Title: New ideas in financing health
DN13	May, 2000; Publication: Press Release; Title: UAG embraces e-commerce
DN14	UAG's Audited Interim Results for the six months ended 30 June 2000
DN15	ATG Dynamo Suite brochure-ware, 2000
DN16	January, 2001; Publication: Sowetan; Title: New set of codes for medical aids
DN17	January, 2001; Publication: Financial Mail; Title: UAG Holdings in a complex and risky industry
DN18	October, 2001; Publication: Moneyweb's Boardroom Talk; Title: UAG - Innovator or lawbreaker?
DN19	October, 2001; Publication: Business Day; Title: KPMG report slams UAG
DN20	November, 2001; Publication: Business Report; Title: There may be more than two sides to the story of UAG
DN21	November, 2001; Publication: Business Day; Title: How UAG broke its own rules

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DN22	November, 2001; Publication: Business Day; Title: Tricky sector, health
DN23	December, 2001; Publication: Business Day; Title: Survey finds medical schemes battling to stay solvent
DN24	December, 2001; Publication: Personal Finance; Title: Open medical schemes on the losing end
DN25	UAG's Unaudited Interim Results for the six months ended 31 December 2001
DN26	HIC's Health Plan Guide, 2002
DN27	January, 2002; Publication: Inform Magazine; Title: Quizzing the registrar
DN28	February, 2002; Publication: Moneyweb; Title: Debunking HIC horror stories
DN29	UAG Magazine, Autumn 2002
DN30	April, 2002; Publication: Business Day; Title: Social health insurance could ease load on state
DN31	September, 2002; Publication: Personal Finance; Title: Can the private healthcare sector cut it?
DN32	H-World/HIC Data Analysis, October 2002
DN33	October, 2002; Publication: Iafrika.com; Title: HIC increases rates, targets poor
DN34	December, 2002; Publication: The Sunday Times; Title: State healthcare plan shakes up industry
DN35	H-World brochure-ware
DN36	UAG's Annual Report 2002
DN37	January, 2003; Publication: INET; Title: Hefty private healthcare costs in 2003
DN38	January, 2003; Publication: Business Day; Title: Staying alive in SA is a costly business
DN39	Call Centre Focus Group Session I, Fact File and Online Claim Services, April 2003
DN40	July, 2003; Publication: Personal Finance; Title: The wellness plan philosophy
DN41	July, 2003; Publication: Business Day; Title: Reforms could dramatically boost private health care
DN42	UAG's Intermediary Publication, July 2003
DN43	User Validation Workshop Findings for H-World, July/August 2003
DN44	Markinor Customer Relationship Assessment, September 2003
	UAG Magazine, Summer 2003
DN45	UAG's Annual Report 2003
DN46	H-World Strategy Presentation 2003

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DN47	H-World: Web Strategy Reality Check, 2003, Wits Business School, WBS-2003-13
DN48	Unpublished master's dissertation based on H-World users entitled: Extending the technology acceptance model for electronic commerce service continuance: Effects of perceived usefulness, service quality and loyalty incentives. Submitted to the University of Witwatersrand, December 2003
DN49	January, 2004; Publication: Femina; Title: How to get the most out of your medical aid
DN50	January, 2004; Publication: Cape Times; Title: Medicine costs to be slashed
DN51	March, 2004; Publication: Business Day; Title: State prescription for chaos?
DN52	Presentation: Analysis of components of buzz in UAG's health membership base, April 2004
DN53	Report: Analysis of components of buzz in UAG Health membership base
DN54	May, 2004; Publication: Citizen; Title: UAG makes it into the Als 40
DN55	Customer Intelligence Strategy, June 2004
DN56	Initial approval to conduct study granted verbally by the head of customer intelligence, June 2004
DN57	Submitted research proposal for research methodology course, June 2004
DN58	H-World Customer Retention Analysis, July 2004
DN59	August, 2004; Publication: Business Day; Title: Members gain as HIC rides a wave of fortune
DN60	Analysis of H-World Customer Profile, August 2004
DN61	UAG Magazine, Spring 2002
DN62	PhD research proposal approval presentation to University of Pretoria, Informatics Department, 15 September 2004
DN63	September, 2004; Publication: Business Times; Title: Health giant joins long line of loyalty clubs – but who pays?
DN64	Bataleur, H-World Customer Satisfaction Survey, September 2004
DN65	October, 2004; Publication: Business Day; Title: HIC takes first step into UK market
DN66	October, 2004; Publication: Business Report; Title: Hospital association leaps to the defence of private hospitals in 'super-profit' debate
DN67	November, 2004; Publication: Business Day; Title: Explorer fails to halt HIC credit card
DN68	November, 2004; Publication: The Financial Mail; Title: Critics keep an eye on savings
DN69	H-World Income Statement 2001 – 2004
DN70	UAG's Annual Report 2004

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DN71	January, 2005; Publication: City Press; Title: Putting employees in charge of their own healthcare costs
DN72	February, 2005; Publication: Business Day; Title: Cheaper medical schemes to cover more members
DN73	March, 2005; Publication: Business Day; Title: UAG considers investment products
DN74	June, 2005; Publication: Business Day; Title: Global credit ratings upgrade UAG's health medical scheme
DN75	June, 2005; Publication: The Financial Mail; Title: State's plan for poorer patients gets thumbs-down
DN76	Re-negotiate approval to pursue study with new head of H-World. Received principal approval via email confirmation, June 2005
DN77	Send introductory email to begin field trip 1 interviews, mainly with business analysts, July 2005
DN78	Site feedback, 360 storyboard, July – August 2005
DN79	Email received by business analyst for intermediary zone, providing a graphic description of broker environment, August, 2005
DN80	Submitted Research Feedback Report for head of H-World and Usability team – August 2005
DN81	Send introductory email to begin field trip 2 interviews, mainly with Java developers and architects, August 2005
DN82	September, 2005; Publication: Internal Press Release; Title: UAG brings in strategic empowerment partners
DN83	September, 2005; Publication: Press Release; Title: HIC delivers single digit increase to its 1.8-m members
DN84	November, 2005; Publication: Press Release; Title: Management re-organisation at UAG Holdings
DN85	UAG's Annual Report 2005
DN86	H-World Management Report 2001 – 2005
DN87	Send introductory email to begin field trip 3 interviews, November 2005
DN88	Email received by developer outlining frustration over department structural changes, November, 2005
DN89	UAG Magazine, Summer 2005
DN90	Email report submitted by business analyst on webtrends, 01 December, 2006
DN91	Health Plan Guide, 2006
DN92	Email report submitted by nutrition expert addressing the challenges with UK application, 18 January 2007 in response to my follow-up questions



APPENDIX

DN93 Met with three members of H-World management to present chapter 6 and minuted a discussion on my interpretation of events in chapter 6, 30 September 2007

Exploring Conceptual Structures using Network Representations

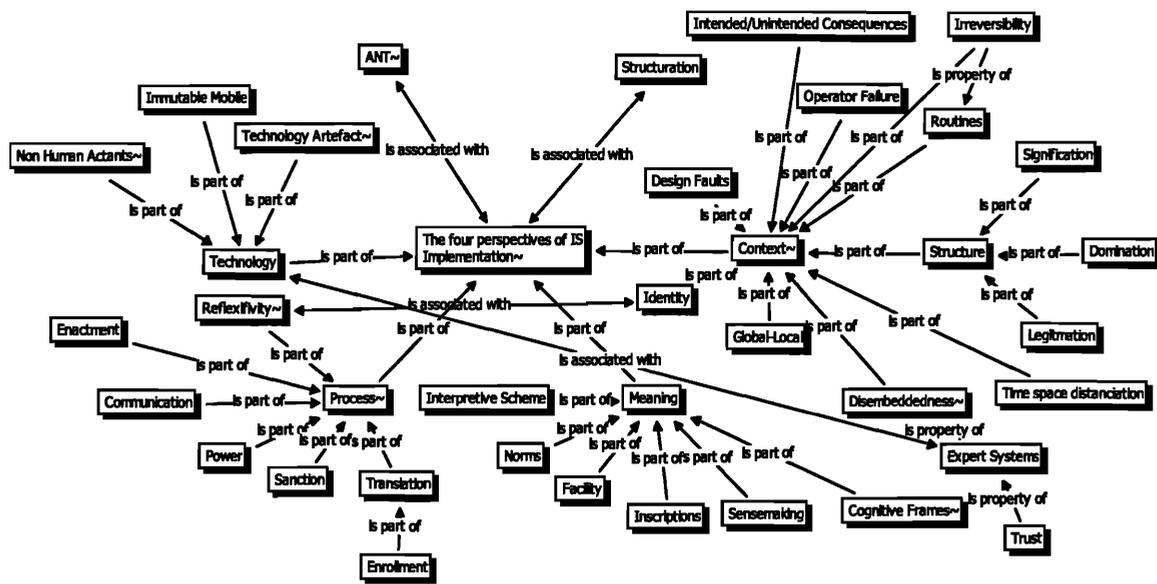


Figure C1 Exploring conceptual level structures using network representations

Note: The network representation in ATLAS.ti was used to handle the complex relationships between concepts. By using codes this also facilitated the retrieval of quotations and other information related to the key concepts.

APPENDIX D

Sample View of Key Reports

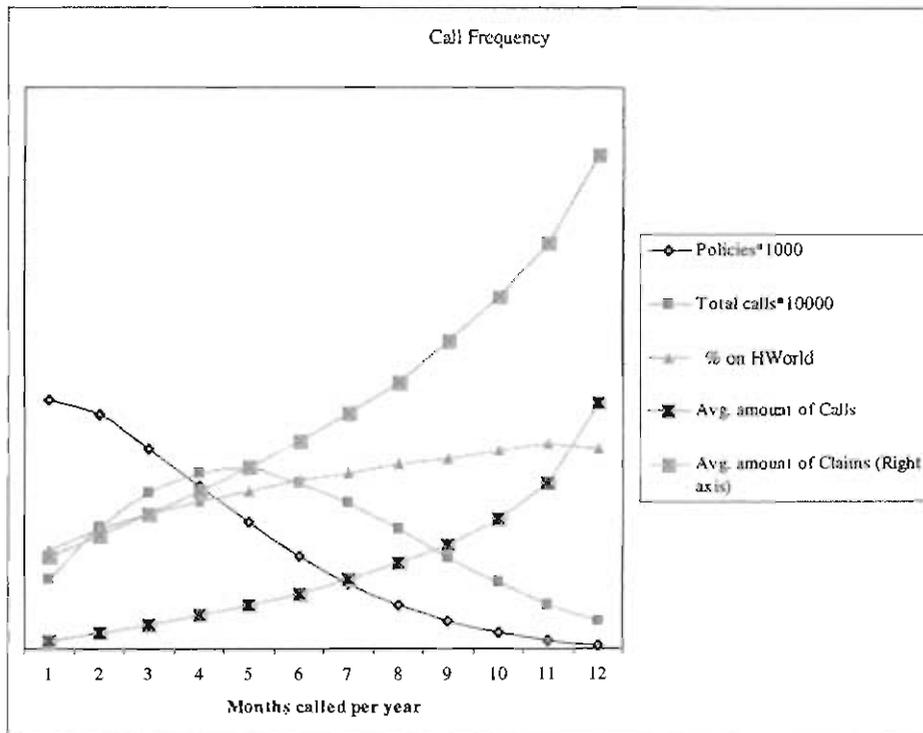


Figure D1 User profiling using calls and claims frequency

Source: Customer Intelligence Report, July 2004

Note: The x and y axis information have been removed to respect the confidentiality of the organisation's information. The graph illustrates that the critical mass of calls are made by those who use the SST less frequently than the 'loyal' users of the SST. Higher claims are associated with higher servicing need via multiple channels.

APPENDIX

<i>Source: Client Services Nov 01 data</i>	Reasons	% of Total
Claims	10	20%
Product information	11	20%
Communication issues	9	11%
Member Administration	4	8%
Chronics	3	6%
Transfer (MMD, Wellness, Debit)	3	3%
Provider Services	2	1%
Medical Management Division (MMD)	1	1%
Broker Commissions	1	1%
Money Market withdrawal	1	1%
CRM campaign	1	1%
Total - Top 46	46	71%
Total - 687 Reasons		

Figure D2 Major call reason categories

Source: Online claim services presentation, May 2002

Note: The statistic depends on the input of the call-centre consultant. Calls may have been related to one or more reason codes.

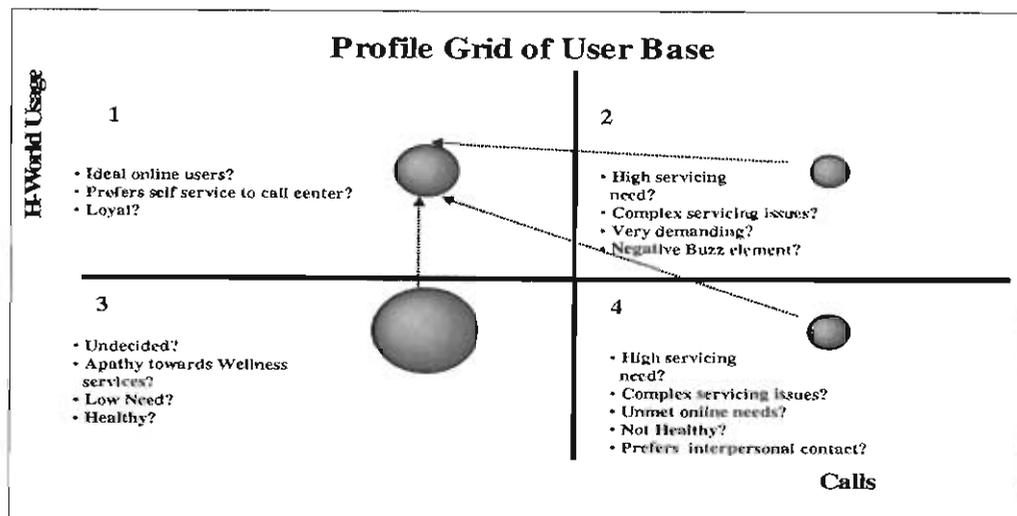


Figure D3 Profile grid of user base by call and login patterns

Source: H-World User Profile Report, 31 August 2004

Note: This analysis was based on the call and online usage behaviour of over 70 000 users assessed over a similar period, using recency and frequency of channel interaction as the key measures.

APPENDIX

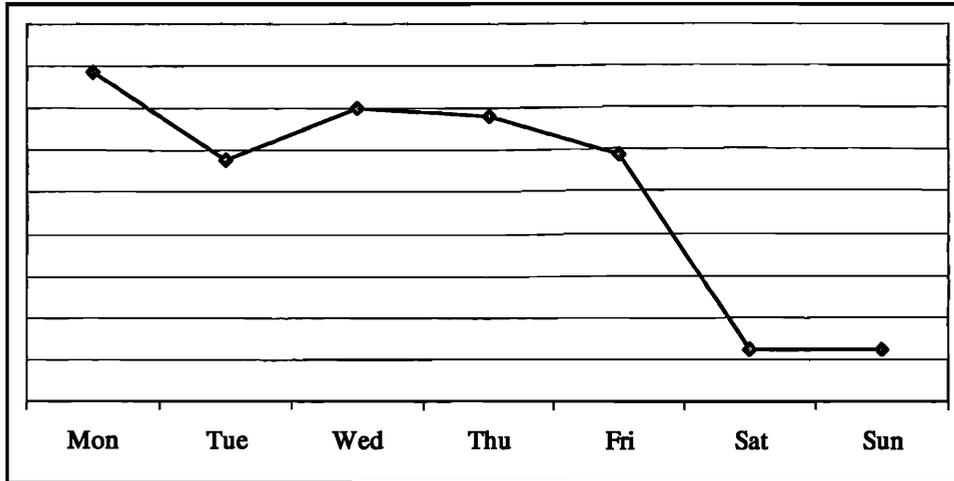


Figure D4 Login trend by day of the week

Source: H-World Ops Management Report, July 2003

Note: This analysis points out the pattern of use for the SST. The SST was used more often during the work week, despite the convenience aspect. This trend also confirms that most users were accessing the SST from work.