



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.

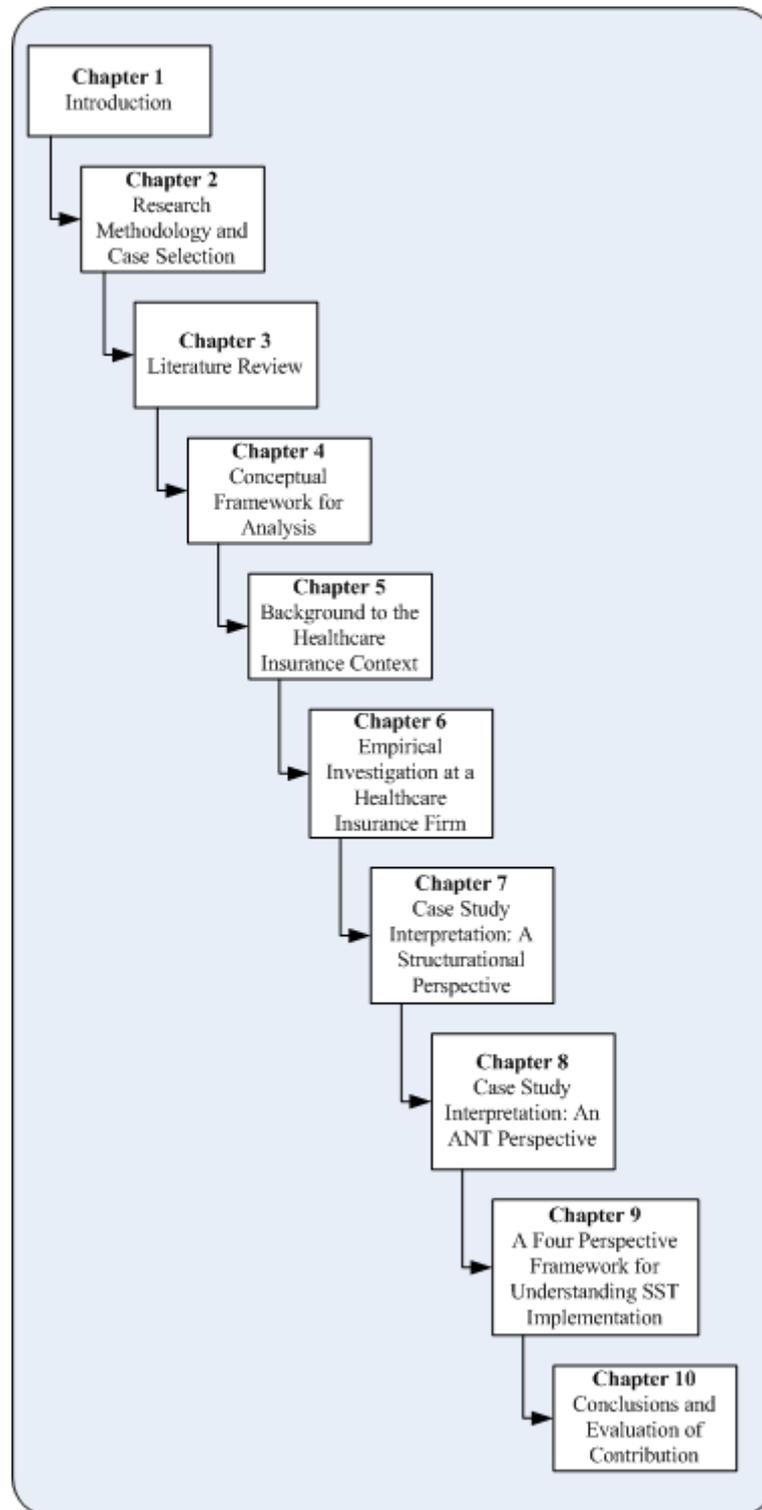


Figure 1.1 Structure of the thesis

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.

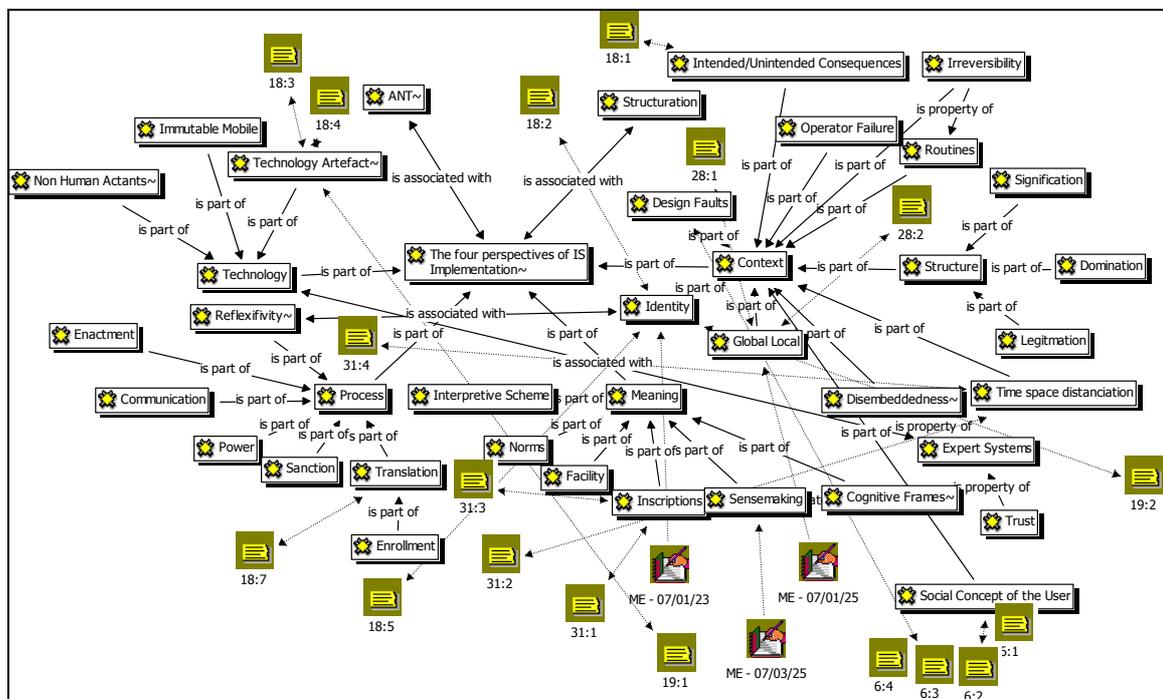


Figure 2.1 A snapshot of a conceptual network with nodes of memos and quotes

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 (Bassegy, 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.

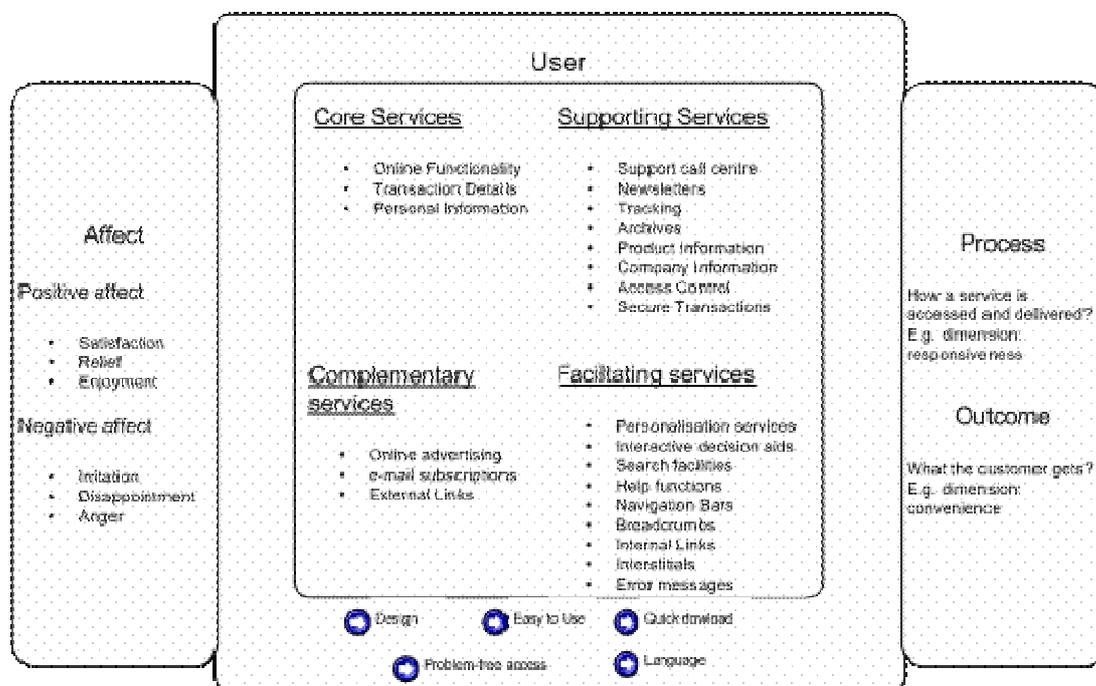


Figure 3.1 Conceptualisation of an online self-service technology

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.

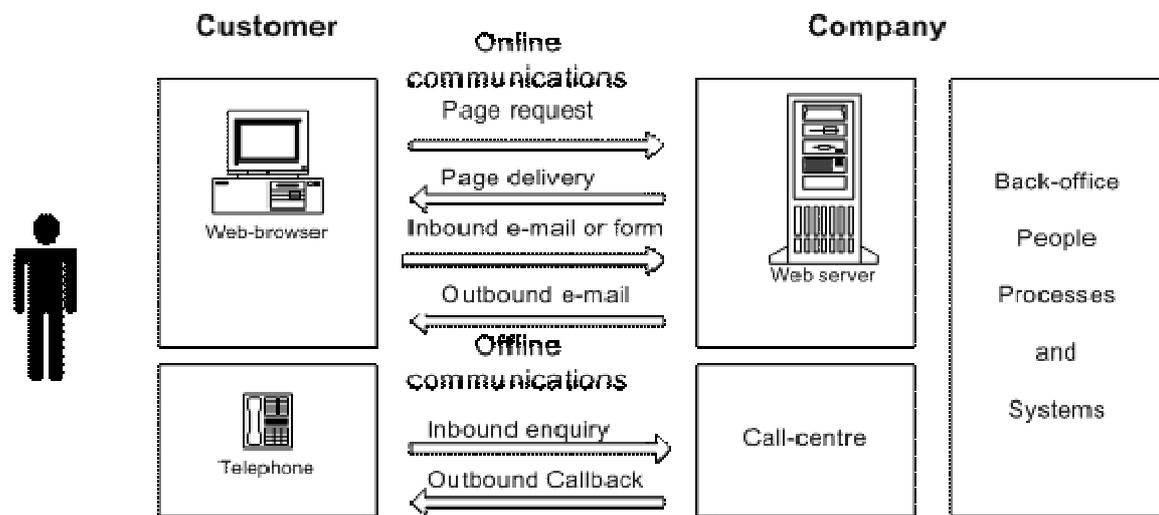


Figure 3.2 Communication techniques that shape service levels

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’.

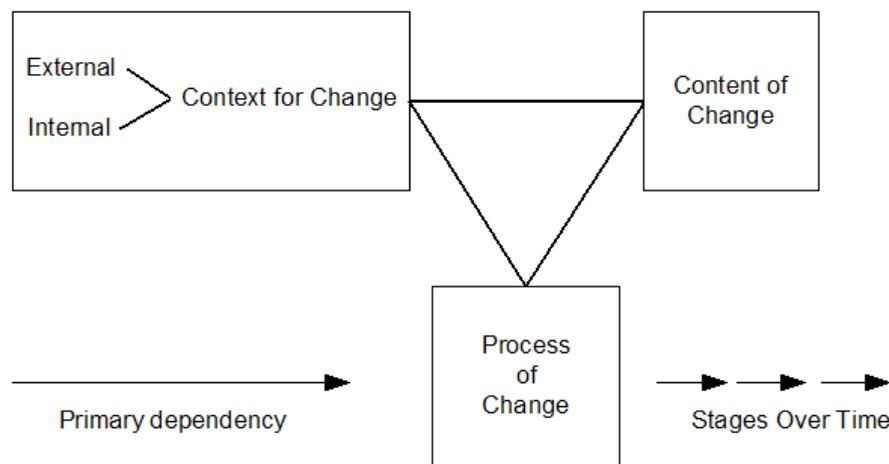


Figure 3.3 A framework for understanding organisational change

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.

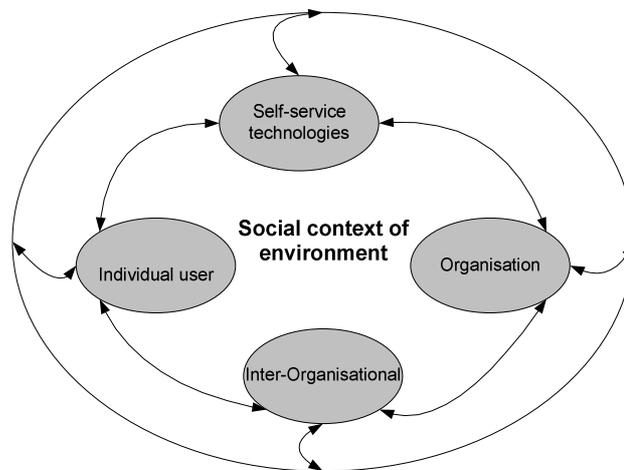


Figure 3.4 Aspects of the research problem²

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 Schefter, 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.

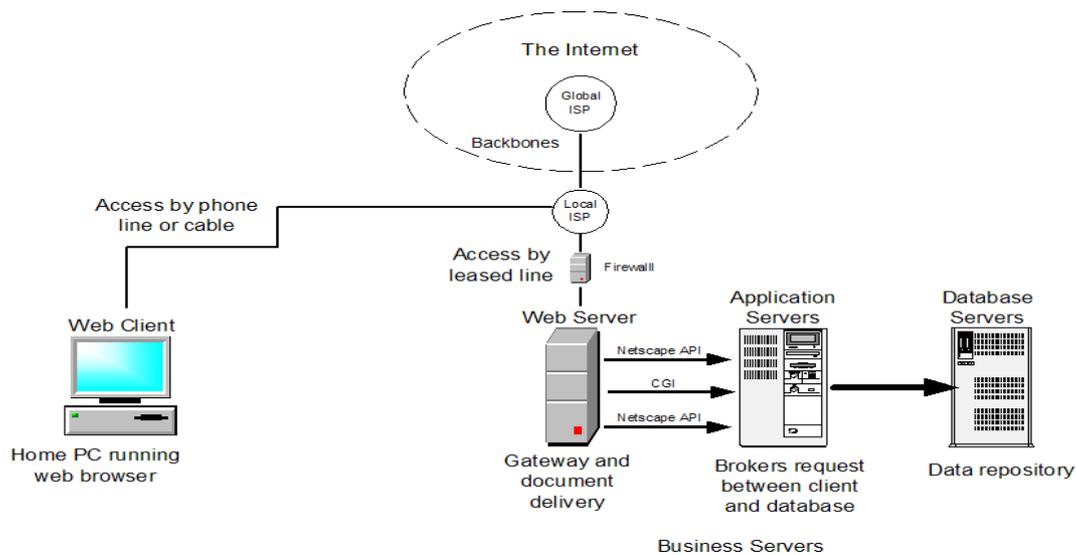


Figure 3.5 Internet-based SST infrastructure components

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.

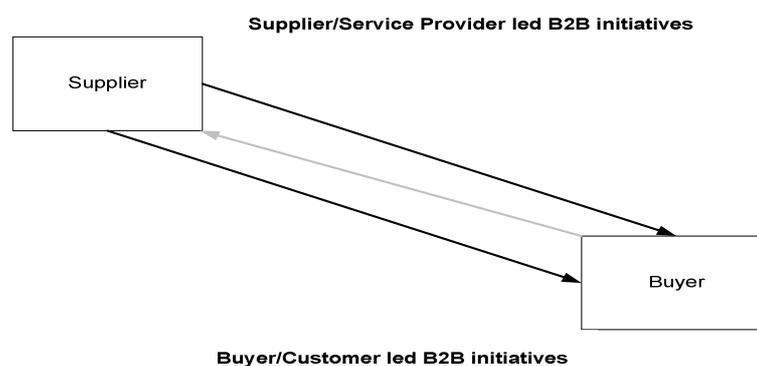


Figure 3.6 Market exchanges: traditional and reverse

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'.

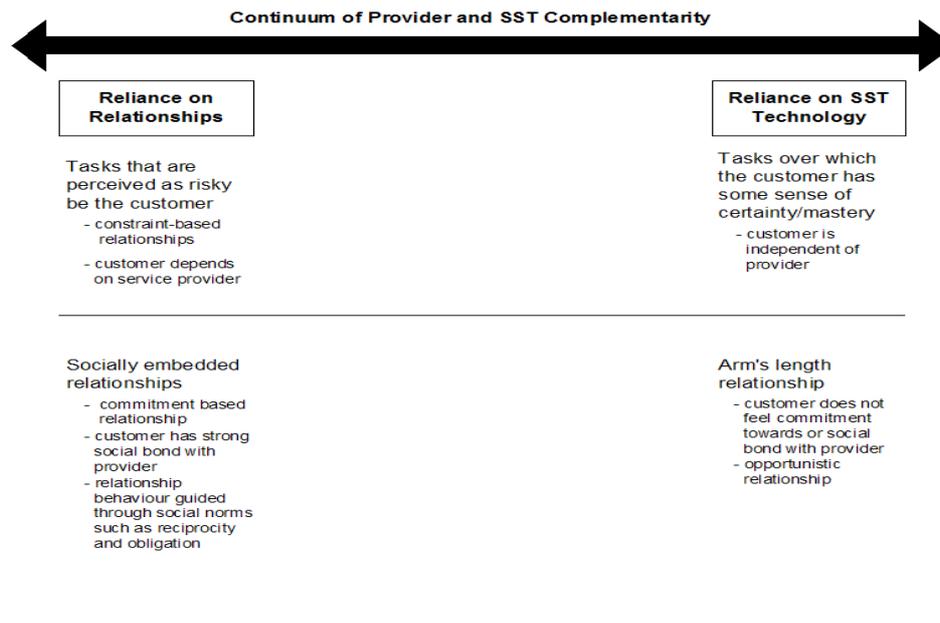


Figure 3.7 Continuum of SST and relationship complementarity

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.

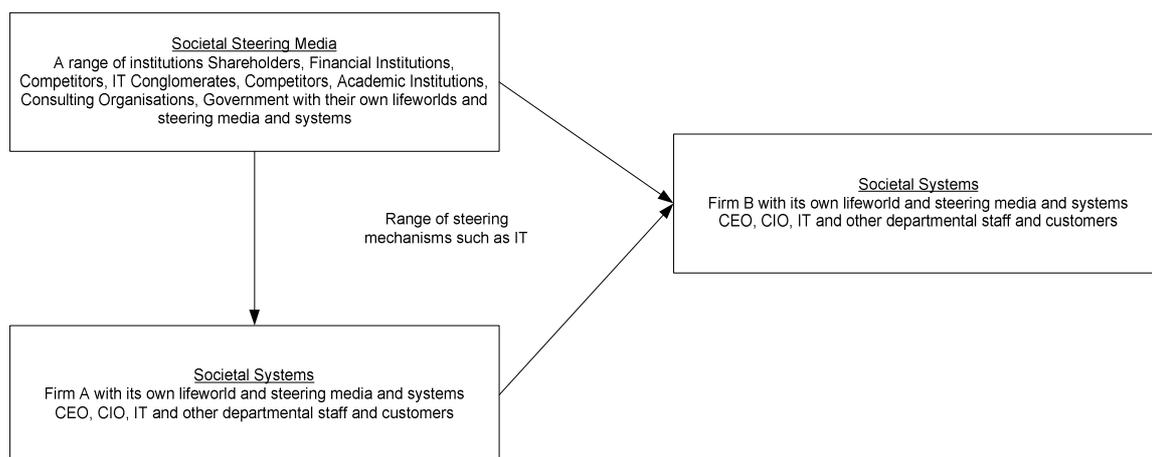


Figure 3.8 The nature of the relations between firms contemplating B2B implementation

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.