Chapter 3
Developing intellectual capital

In the modern business world, worthwhile ideas that you don't harness end up in your competitors' hands (Brown and Duguid, 2000, p 74).

Creating a workplace where knowledge is shared and where people are encouraged to learn and to take action on those lessons learned is the surest way to compete in a market-driven economy (Hackett, 2000, p 14).

3.1 Introduction

In Chapter 2, three of the available knowledge economy era management philosophies were identified and discussed briefly. The philosophy found most suitable for the purpose of this research was intellectual capital management. As was mentioned in section 2.4.3.4 on page 2.43, besides financial capital the three aspects of intellectual capital development that were implemented within the context of this research are:

- human capital (with some focus on innovation capital development);
- structural capital; and
- customer capital.

This chapter defines the selected 'capitals', identifies the phases associated with the development of intellectual capital, lists the questions to ask before implementing development initiatives and then discusses the means through which intellectual capital can be developed.

3.2 Defining the capitals

Given the advantages of the personal mastery discipline, as discussed in section 2.4.1.3 on page 2.12, it was possible to reach the conclusion that the most important mind shift, when thinking of human capital development in contrast to staff training, occurs when an employer stops viewing the employee as an instrument to get work done. Such a mind shift allows both the employer and the staff member to see that a relationship exists between each person and the organization. This relationship rests on a shared commitment to ideas, values, and goals and to management processes. A successful social relationship is not a one-sided affair. Similarly, the key to a successful work relationship requires commitment to the relationship from both parties. Before human capital can be developed, an understanding of what is generally regarded as human capital is needed.

3.2.1 Human capital and innovation capital as subset of human capital

Three of the most prominent authors consulted (Bontis (1998); Edvinsson (1997); and Sveiby (2000)) see human capital in a very similar light. Human capital can be defined as the competence and capabilities of the employees. A logical deduction is that when an enterprise educates its employees, it increases its human capital. This does not mean that the company will have more control over its assets. As Edvinsson (1997, p 369) states *in a free society the enterprise cannot own, only rent, its human capital*. Sveiby (2000a) reiterates that people should be seen as *the only true agents in business; all tangible physical products, assets as well as the intangible relations, are results of human action and depend ultimately on people for their continued existence*. Bontis (1998, p 65) prefers to see human capital in terms of the contribution at an individual level. He defines human capital as a combination of the following four factors:

- genetic inheritance;

- education;
- experience; and
- attitudes about life and business.

Bontis (1998, p 65) sees human capital as a source of innovation and strategic renewal (*whether it is from brainstorming in a research lab, daydreaming at the office, throwing out old files, re-engineering new processes, improving personal skills or developing new leads in a sales rep's little black book*). He continues by stressing that the essence of human capital lies in the sheer intelligence and ingenuity of the staff members.

Hines (2000, p 2-3) confirms this description of human capital by defining it as the combined knowledge, skills, innovativeness and ability of the company's individual employees to meet the task at hand. It obviously includes intangibilities such as the company values, culture and philosophy. To further develop the concept of human capital, it is useful to consider the similarities between human and physical capital as identified by Parnes (1984, in Zickner, 1996, p 39-40). He is of the opinion that:

- it is a costly process to acquire either;
- both use resources that could have been utilized for other purposes;
- the acquisition is usually motivated by a desire to improve productivity;
- both types of investment can be private or public; and
- either can be evaluated from individual, societal or a combination of both perspectives.

Interestingly it was also reported, in 1993 already (Hudson, 1993, in Zickner, 1996, p 16), that in high income countries:

- return on investment (ROI) on human capital has exceeded ROI in physical capital;
- the rate at which human capital increases exceeds that of non-human capital; and
- the most important issue is the increase in the economic value of human time.

In contrast to physical capital, human capital cannot be owned by anyone other than the individual in whom the capital resides. At best the company can only rent the human capital and therefore it cannot be relied upon in the same way as could physical capital.

For the purpose of this study human capital is defined as the competence and capabilities of the employees. From this it can be concluded that the value of human capital is increased when:

- staff members are continuously educated and trained;
- the potential of individuals is harnessed and guided;
- opportunities are created where people can learn from each other; and
- learning is captured for the benefit of those who are not part of the initial learning process.

Also for the purpose of this study it was decided to include innovation capital as part of human capital. The main reason for this is that, in line with the definitions provided above, it is possible to say that all innovation stems from the motivation and intellect of the individual employees. Innovation capital is described in more detail below.

Innovation capital as subset of human capital development

The fact that innovation capital should be seen as human capital is supported by WIPO's (1997, p 47) statement that *Inventiveness and creativity are features, which have favoured the differentiation of mankind in the course of evolution from all other living species*. It is also said that *inventions and innovations are the most important and specific and least predictable of the intellectual creations of man, but that they make development and progress possible*.

Authors such as Sveiby (1998a) and Edvinsson (1997, p 369) see innovation capital as a subset of structural capital. In this study it is regarded as part of the human capital structure as human intellect ensures innovation and inventiveness, even at the lowest levels of the organization. It is true that innovativeness will result in an increase in structural capital but is initiated through human capital. Demarest (1997, p 381) states that all studies of innovation in the previous 20 years came to a relatively similar conclusion: *Innovation begins with the construction of a new kind of knowledge within the firm … and the knowledge is based on not repeating mistakes of the past which is stored in captured information*. No proof was found that Demarest was mistaken. He continues by saying '*In all cases, one can assume that innovation will occur without the support of formal knowledge management systems. It is therefore logical to ask why it is necessary to bother to formalize knowledge if innovation will occur anyway?* (Demarest, 1997, p 382). Studies of the factors affecting technological innovation have shown that the great majority of successful innovation is demand-led. Put differently, successful inventions are made 'just-in-time' to meet a specific market demand (WIPO, 1997, p 51). Innovation is therefore largely a collective process because technological innovation occurs when current information is augmented by new information. Because markets have become more fragmented and sparse, and market windows open for increasingly briefer periods of time, the key to economic viability is not innovation as such, but repeated innovation with increasingly high levels of reuse. A company will have to continuously innovate and do so within increasingly short spans of time if it wants to stay relevant. In this regard, Arora (2002, p 243) is of the opinion that companies need to make provision for innovation at two levels. Small innovations lead to incremental improvements while breakthrough innovations are mainly the outcome of cross-functional teams. Both these types of innovations should be encouraged and the knowledge created by the innovations should be captured within a company's well-developed structural capital.

Even within enterprises such as information services, the key strategic question is not 'Will we innovate?' It is rather 'Will we innovate fast enough, often enough and efficiently enough'? Smith (1998, p 8) confirms that rapid technological innovation is

narrowing the differentiation gap between competitors. He reports that companies are viewing the collective knowledge of their employees as a key competitive tool from which innovation can emerge, and are encouraging, supporting and rewarding the collaboration between people. Information staff members are not excluded from that process. Sveiby (1995) warns that, although innovation and inventiveness can be seen as key elements in developing both technologies and strategies that will ensure future survival, it should be remembered that in business *creative problem solving and routine production must co-exist side by side*. This advice is of course also applicable within the context of this study.

It is said that innovation occurs when a group of people face a complex problem and the group is forced to come up with an answer (Arora, 2002, p 244). Although human creativity tends to flourish in chaotic surroundings, creativity is not an unproblematic concept. To illustrate this Sveiby (1995) asks *Who is for instance interested in encountering a creative surgeon on a chaotic operation table? Or a judge interpreting the tax law in a new creative way*? Unbridled creativity is therefore not necessarily always good for business. On the contrary, business success is often firmly attached to the ability to repeat successful patterns over and over again. Providing room for creativity, innovation and incremental improvement implies that there is room for the business to grow and prosper. It does not imply that discipline and sound management practices should be ignored. Part of the discipline and good management practice is ensuring that structural capital is developed at every conceivable instance. The next section provides insight into what is regarded as structural capital.

3.2.2 Structural Capital

In Skandia they believe that *structural capital is what is left after the employees have gone for the night*. Skandia therefore sees structural capital as the results of all intellectual activities as captured in data and knowledge bases, documents, models and drawings (Edvinsson, 1997, p 368). Structural capital refers to the infrastructure that allows knowledge to be captured and shared. Structural capital provides the means to measure and build intellectual capital at an organizational level. Therefore structural capital is identifiable through the embedded knowledge that the organization owns. Knowledge is embedded in obvious media such as documents and databases but it is also within the routines of an organization, within the products and services of the organization and within the product innovations.

Bontis (1998, p 66) defines structural capital as *the mechanisms and structures of the organization that help support employees in their quest for optimum performance and therefore overall business performance.* He warns that *an individual can have a high level of intellect, and be motivated to deliver products and services of outstanding quality, but if the organization has poor systems and procedures by which to track his or her actions, the overall intellectual capital will not reach its fullest potential*. He is of the opinion that an organization with strong structural capital will have a supportive culture that allows individuals to try out ideas, to fail, to learn, and to try again. The crux is that the effort is captured so that it is not repeated at another stage, in exactly the same format by the same or another

employee. Obviously the experience, when structured within information systems, turns individual know-how into group property. In this regard Lank (1997, p 411) is of the opinion that, to ensure effective retrieval of information and knowledge, the structural capital systems and technologies need to make provision for access to information at three levels at least. These levels are:

- Retrieval for **referencing** purpose: this requires repositories of typically explicit information found in full text, electronic documents that vary from proposals to contracts to reports to lessons learnt. This type of knowledge ensures that efforts are not duplicated and that employees can leverage the learning curves of their colleagues.
- Retrieval to **establish expertise**: gaining access to tacit knowledge through expertise databases or lists, competency profiles and curriculum vitae (CVs). This allows employees to find the necessary expertise within the organization when it is required.
- Retrieval for **networking** and just-in-time feedback: staying in contact with customers and global experts through e-mail, video conferencing, telephones, and chat facilities. Here the idea is to overcome the barriers of time and geography.

All three levels of information retrieval are important because the codification of knowledge alone does not guarantee efficient dissemination nor does it necessarily result in more effective storage. Being able to gain access to expertise is perhaps the one aspect that needs attention. Nonaka and Takeuchi (1995, p 21) warn that: *knowledge, expressed in words and numbers, only represents the tip of the iceberg. Knowledge is not easily visible and expressible*. They also pointed out the difference in value perception between Western and Eastern cultures. Whereas Westerners tend to emphasize explicit knowledge, and the Japanese tacit knowledge they feel it is necessary to understand that human knowledge is created through social interaction between the tacit and the explicit. It would have been interesting to establish how Africans perceive knowledge but no reference to that was traced.

Jordan and Jones (1997, p 397) are of the opinion that explicit systems tend to record what was done but not why it was done or the context in which the action took place. They feel that explicit knowledge also has a tendency to gain a kind of legitimacy that tacit knowledge does not. If it is written down it is assumed to be correct and less open to challenge. Taking cognisance of Jordan and Jones' opinion and the fact that not all knowledge can be or should be captured, Lank's (1997, p 412) opinion is shared that an effective organizational knowledge base should enable employees to:

- waste much less time looking for information and expertise that exists somewhere within the organization;
- improve their own performance and employability through access to a wide knowledge and expertise base;
- lessen the personal stress levels caused by the last couple of decades of having to do so much more with far fewer resources.

In this sense knowledge base is not equated to database. It is interesting to note that web portal technology provides a very usable interface to gain access to both database and full text information.

For the purpose of this study, structural capital will include any capturing mechanism that enables employees to learn from each other. The actual infrastructure and platforms necessary to develop structural capital will not be discussed in detail as these are part of the enterprise-wide infrastructure and need no further development within the boundaries of this study. Structural capital provides a very strong link in support of the development of the last of the capitals to be addressed within this study. The next section provides clarification as to what is meant by customer capital.

3.2.3 Customer capital

A world where competition is limited and known and where the client's options are easily definable no longer exists. The age we live in requires that the relationships with clients go much further than the notion of 'the customer is always right' or even the later version 'the customer is king'. *Today the challenge is to really get to know your customers, which goes far beyond knowing about them, and to assess what contribution this relationship is making to the achievement of your corporate goals and objectives* (Duffy, 2000, p 14).

To establish the worth of one's customer capital, it is necessary to consider the value of the knowledge embedded in customers, suppliers, and associations with industry. These are all intangibles that are outside the formal structure of the firm. According to Bontis (1998, p 67) *the knowledge of marketing channels and customer relationships is the main resource for customer capital*. He maintains that managers often do not recognize that they can tap into a wealth of knowledge from their own clients. It is however not as easy as it may sound. He warns that, because it is the most external to the organization's core, customer capital is the most difficult 'capital' to develop. Fortunately, the client is much closer to the firm than ever before and, as Bontis (1998, p 67) also mentions, customer capital becomes more valuable as time goes on. The bottom line is that, in terms of the 'client's worth', it is good to know that the lifetime value of a client is of much value to a company as it is much more expensive to acquire a new client than to tend to an existing client. The knowledge workers who take care of these lifetime customers also need special attention because if they leave the possibility exists that their customers will leave with them (Ramosedi, 2000, p 18). These knowledge workers have special skills and traits. One cannot simply move another employee in to take over the responsibilities and assume that all will go well.

Fortunately, according to Sveiby (2000a) *knowledge-focused companies select their clients rather than the other way round. Such clients are selected not necessarily for the amounts of money they spend with the company but also for their contribution at an intangible level*. If the interaction with clients is to be turned into an asset or customer capital, attention needs to be paid to both the processes of collecting and maintaining information about the customer as well as the processes in engaging the

customer. Collecting and maintaining information about the customer is closely linked to the development of structural capital, but not exclusively so, while engaging with the customer rather refers to co-development of products and services as well as successful marketing to and building the relationship with the customer.

If it is such a difficult 'capital' to develop, it is essential to understand what is regarded as customer capital. The *Society for Management Accountants of Canada* (in Robson, 2000, p 22) sees the following (in alphabetical order) as customer capital:

- Brands
- Business collaborations
- Company names
- Customer loyalty
- Customers and the associated relationships
- Distribution channels
- Favourable contracts
- Franchising agreements
- Licensing agreements
- Value chains

Considering the literature available, any one of the items listed above could become a study in its own right. It is the intention within this research to gain an understanding of all of the above rather that to acquire in-depth knowledge about any one of these. The specific actions to develop customer capital are discussed in more detail in section 3.4.3 on page 3.44. The following serves as general background information about each of the components of customer capital.

(a) Brands and company names

Brand and company name are receiving much attention due to the fact that, in contrast to the speed at which global business develops, brand name establishment takes considerable time and a huge investment in marketing resources. However, taking into account the large number of choices available to consumers, it is predicted that branding will become more important than ever before. In this regard it is especially family and company branding that needs serious attention. This is not only true for consumer goods as is evidenced by the large consulting groups such as KPMG or McKinsey and the value that is associated with the De Beers name. Within the context of this research the value of the CSIR brand name also needs to be taken into account. As Rowley (1997, p 244), in a very comprehensive overview article, reports, branding allows producers to differentiate their product from that of their competitors and assists customers in their selection of an appropriate product or service. She describes branding as the seller's promise to deliver a specific set of benefits or quality or service consistently. Neal (1997, p 63) supports this and continues to include the idea that brand is about the way in which a company does business. A brand is of course identifiable as a logo (Nike), as distinctive text (Coca Cola) or both (Sasol). Brands usually have most of the following characteristics:

- easy to say, spell and recall;
- indicative of major benefits;
- distinctive;
- compatible with all products in the line;
- suitable for use on all media;
- can be legally protected; and
- difficult to counterfeit and copy.

It is perhaps obvious but necessary to say that brand goes hand in hand with the corporate identity and image. In the context of this research, the advantage and privilege of using the CSIR's brand has an impact on the way in which marketing material is designed for the external market, as it is an extension of the CSIR's identity and has an impact on the CSIR's image. The difference between identity and image is relatively easy. Identity is the way an organization sees itself while image is the way the customer or potential customer perceives the organization (Rowley, 1997, p 245; Neal, 1997, p 63). As was mentioned above, the customers have the advantage of guaranteed quality and easy recognition.

Obviously there are major benefits to the company when it brands its products and services. These advantages are listed in Table 3.1 on page 3.10. Neal (1997, p 64) warns however, that the virtual environment will in all probability change brand identity. This opinion is accepted but not necessarily shared. It is rather suspected that new brands will appear and that companies will do much more to try and protect their brand than is currently the case within the physical business environment. To illustrate this opinion one needs to look no further than the e-commerce arena to see the importance of brand as far as verification goes. It is anticipated that brand names will in all probability not survive as long as they have done in the physical environment.

As is listed in Table 3.1, there are also disadvantages to brands. The following is an adaptation of the advantages and disadvantages of branding as identified by Rowley (1997, pp 246 and 249):

Table 3.1: Advantages and disadvantages to branding

Advantages	Disadvantages
Seller: • Allows differentiation of products from that of competitors. It gives competitive advantage. • Provides an opportunity to do brand promotions. • Almost guarantees an increase in sales and business; also known as repeat business. • Maintains and improves market share. • Creates a favourable climate for future sales. • Can be used to inform and educate the market. • Creates competitive differences. • Improves promotional efficiency.	• Expensive to establish. • Difficult to change the attributes of a product. • Has costs associated with maintaining and protecting a brand. • Difficult to calculate the asset value of a brand.
Buyer • Reduces risk. You know what you are buying. • Saves time. It is easy to pick what you need off the shelf.	• Unwarranted loyalty. • Dubious perception of quality. • Integral part of the cost of the item. Sometimes the brand name represents the largest component of the cost.

The ways in which branding is developed is discussed in more detail in section 3.4.3 on page 3.45. The next section takes a brief look at customers and customer loyalty.

(b) Customers and customer loyalty

Jones and Sasser (1995, p 99) advise that *the Company that will survive and flourish in the long term is the one that continually works to understand the relationship between satisfaction and loyalty for each of its customers, for each of its business units, and for each of the industries in which it competes*. Harari (1999, pp 124-128) identified six trends that could indicate that a service company will lose its ability to create value for the customers:

1 Managers learn to become emotionally and analytically detached from their business. Here employees have a job not a calling and there is no 'love and passion' for either the customers or the company's products and services.
2 Managers become obsessed with short term financials, or 'meeting their numbers'. Regular cost cutting exercises and an inability to acknowledge customer complaints, employee frustrations, shifts in the market and new competitors in the field typify this trend.
3 Managers become overly cautious and conservative. They are not prepared to take risks and make investments in improving quality or developing new products and services.

4 Buying success becomes preferable to earning it. This trend is typified by the acquisition and merging of companies. Acquisitions and mergers are not an indication as such. It is rather when these activities are used as a smoke screen to hide internal inefficiencies that the customer loses out.
5 To boost sales and revenues, the organization victimizes salesmen and tries to buy customers. Here the sales force is removed from the operations and strategy of the business. They become less efficient and are also not able to assist with market-driven innovations. 'After sales service' is de-emphasized and therefore customer loyalty as well as word-of-mouth marketing are affected negatively. To 'buy back' these customers there are often 'sales' where prices are slashed. The warning is that no cheap price can buy back reputation.
6 The 'heroes' become the wrong people. Staff members who are not directly involved in operations and development such as financial or legal advisors dominate the management team. These managers will not be inclined to encourage risk nor will they inspire other staff members to try new avenues.

In contrast Harari (1999, p 128) lists the top-ranked assets and skills to obtain sustainable competitive advantage within the modern organization, in order of priority, as:

1 reputation for quality;
2 customer service and product support;
3 name recognition; and
4 the ability to retain good management and engineering staff
5 low cost of production;
6 financial resources; and
7 technical superiority

This list is of specific interest because of the prevailing perception that customers will always buy the product or service that is the cheapest.

(c) Value chains and distribution channels

When working with products the value chain refers to how goods move from one place to the other between the place(s) where they originated and the consumer. At each 'stop' (or sometimes detour) on the journey, the customer expects some value to be added. The more value is added, the more expensive the product becomes. Therefore, if it can be established where most value is added and intervene at that point while eliminating other unnecessary stops, both the customer and the supplier company could benefit. Put slightly differently: the one who owns the information about the value chain controls it. Stewart (1997, p 152-153) advises that to really understand what drives modern economy, the intangible value chains need to be considered rather than the tangible chain. Putting this into the information services context: a variety of distribution channels and value chains have been established between authors and consumers. Thinking logically where the most value is

perceived, it is not at the point where a paper document is handed over the counter. It is presumed that it is at the point when the researcher finds the reference and is able to link to the full text. This presumption obviously needs to be tested. It will therefore be necessary to investigate the variety of distribution channels and value chains that are available to customers and to then find the intangible value of each of these before a viable business can be built. This is because the shorter the value chains, the better the distribution channel and the more affordable the products and services become.

(d) Business collaborations, licensing agreements, favourable contracts and franchising agreements

The concern here is with partnerships, alliances, associations and convergence agreements. The reason to establish any one of these should be to enlarge the products or skills base made available to the customers of either party. It is however, not the number of alliances and associations that is of value: it is the quality and the range of services and products. Each of the methods to enlarge the company's skills base or product range could again be a research topic in its own right. None of these have reference value for the purpose of this study. Suffice to say that within the knowledge economy these aspects of intellectual capital development cannot be ignored but will not be discussed in any further detail.

Section 3.2 was utilized to establish what is meant when the term intellectual capital is used. The next section will be used to address the issue of developing each of the capitals associated with intellectual capital.

3.3 Developing intellectual capital

In terms of developing intellectual capital, the most important question is in all probability: where does one start? Several authors were consulted and, as could be expected, a variety of opinions could be identified. Dearlove's (2000) four phases model is just one example. He reported that the following phases in the development of intellectual capital could be identified:

- Phase one is to visualize intangibles from a reporting perspective.
- Phase two focuses on human capital where the search for talent, brainpower, and competencies is added.
- The third phase is the systematic transformation of human capital into structural capital. This focuses on the packaging of knowledge into recipes to be shared globally and rapidly. It is a shift of leadership focus from human capital to structural capital as a multiplier for human talents.
- The fourth phase is when structural capital can be manipulated to solve needs within the market. This is when the organizations can combine different types of structural capital to create new value constellations. At that point, the marginal cost is zero while the revenue potential is exploited.

Authors, such as Bontis (1998), Edvinsson (1997), Roos and Roos (1997), and Stewart (1994, in Zickner, 1996, p 20), reported slightly different phases or steps to

expect. Their opinions were distilled and reported. Table 3.2 on page 3.14 identifies the:

- requirements to adhere to;
- the steps to take;
- a strategy to follow; and
- the phases to expect when developing intellectual capital.

In terms of the prerequisites it was established that top management vision and commitment is not enough to ensure successful intellectual capital development. The organization as a whole needs to be at a stage mature enough to realise that the 'bottom line' is not the only measurement for success. The steps to take start with the process of setting a strategy to follow. It includes an analysis of your own and your competitor's skills, products and services. The audit then becomes input or guidance in terms of the investment required. This process of course gives rise to a 'continuous loop' activity. With the initial audit as the base line, setting strategy further involves setting roles and responsibilities for each and every member of staff. Here again one can identify a continuous cycle of audit, identification of gaps, investment in improvements and evaluation of success.

In terms of the phases to expect, the process may appear clinical and structured logically within Table 3.2. In reality, as Edvinsson (1997, p 370) warned, it was established that the development phases overlap and that they do not necessarily occur in the sequence reported here. This issue is again addressed in section 6.2 on page 6.4 when the process within the case study (reality) is measured against what was expected from the theory.

Recognizing that there are several steps and stages prior to achieving a perfectly functioning intellectual capital management initiative, the next step was to implement development initiatives. This is discussed in detail in section 3.4.

Table 3.2: Overview of what selected authors see as the process of developing intellectual capital

Requirements to adhere to	Steps to be taken	Strategy to be followed	Phases to expect
The overall objective of Roos and Roos's study (1997, p 414-417) was to develop and later test a process model of intellectual capital. By process model they meant a model that takes a dynamic view of intellectual capital that shows how intellectual capital grows/declines over time. From their research they were able to conclude that there seems to be **three prerequisites** before one should embark on developing an intellectual capital system: 1 The company/unit must be mature enough to have gone beyond the stage of discussing business performance solely in financial terms. 2 The company/unit must have a clearly defined business idea or direction. 3 There must be a clear operational commitment to moving ahead - which is visibly supported by top management.	Stewart (1994 in Zickner, 1996, p 20) identified a **six** step process for developing intellectual capital: 1 Set strategy, define the role of knowledge in the organization. That is the importance of intellectual investments to develop new products vs brick and mortar spending. 2 Access competitor's strategies and knowledge assets. 3 Classify your own portfolio (what do you have, what do you use and where does it belong). 4 Determine what your assets are worth (that is what do they cost, how much will it take to maximize their value and should you keep/sell/abandon them). 5 Invest. Based on the evaluation of your knowledge assets, identify the gaps that need to be filled in order to exploit knowledge and the holes that you need to plug in order to fend off rivals. 6 Assemble your knowledge portfolio and repeat the process ad infinitum.	Bontis (1998, p 70-73) developed Stewart's idea further and suggested that managers who are interested in strategically managing intellectual capital for their own organizations should follow the following **10** steps: 1 Conduct an initial intellectual capital audit. 2 Make knowledge management a requirement for evaluation purposes for each employee. 3 Formally define the role of knowledge in your business and in your industry. 4 Recruit and hire a leader responsible for the intellectual capital development of your organization. 5 Classify your intellectual portfolio by producing a knowledge map of your organization. 6 Utilize information systems and sharing tools that aid in knowledge exchange and codifying. 7 Send employees to conferences and trade shows and have them spy. 8 Consistently conduct intellectual capital audits to re-evaluate the organization's knowledge accumulation. 9 Identify gaps to be filled or holes to be plugged based on weaknesses relative to competitors, customers, suppliers and best practices. 10 Assemble the organization's new knowledge portfolio in an intellectual capital addendum to the annual report.	Edvinsson (1997, p 370) identified **six major phases** as a pattern for the development of intellectual capital. He, from the start warned, that although these phases may seem sequential they usually happen in parallel: 1. Missionary phase or the phase when the idea is sold - which compares to the first and second requirements identified by Roos and Roos. 2. Measurement phase when the appropriate language is developed and data is collected. Bontis refers to conducting an audit and creating knowledge maps - which seems to stop short of what it actually needs to be done for. 3. Leadership phase when it is time to learn from insights. It is also the nurturing phase. This phase again correlates with Roos and Roos' third requirement and Bontis feels this will be addressed by hiring a leader. 4. Technology phase when focus is placed on developing technology-based tools that will enable packaging and the fast delivery and communication of knowledge. This correlates with Bontis' knowledge codification step. 5. Capitalizing which deals with re-packaging and formalizing intellectual property. 6. Futurizing where the focus is continuous renewal and innovation. Bontis also puts emphasis on this during steps eight and nine.

3.4 Implementing intellectual capital development initiatives

Through their research Bontis and Girardi (1998) found that only a small number of authors (Bontis, Covin and Stivers, Dragonetti, Edvinsson and Malone, Jacobsen and Roos and Sveiby) provided practical advice and strategies for implementing intellectual capital management initiatives. Sveiby's Tango Business Simulation game is perhaps the most well known tool that provides participants with an introduction to the concepts of valuing and managing intangible assets. The Tango experience provides participants with an opportunity to rehearse novel approaches to managing intellectual capital. It provides for a low risk, learning environment. It is therefore possible to say that the Tango simulation can be used to achieve a mind-shift but, ideally, all managers and if possible all employees should achieve this 'shift' together, to affect real change. It is believed that the observations about the parallels between their simulated and real worlds prepare participants to transfer learning into practice (Bontis and Girardi, 1998). However, this tool is meant for use in areas where both knowledge work and intellectual capital are of high value. The CSIR IMPS environment does not fall into that category of business and developing intellectual capital cannot be seen in the same light as the high-end intellectual capital development simulated through the Tango game. It is therefore necessary to say that the intention of this study is to look at more traditional initiatives that focus on the development of:

- human capital (including innovation capital);
- structural capital; and
- customer capital.

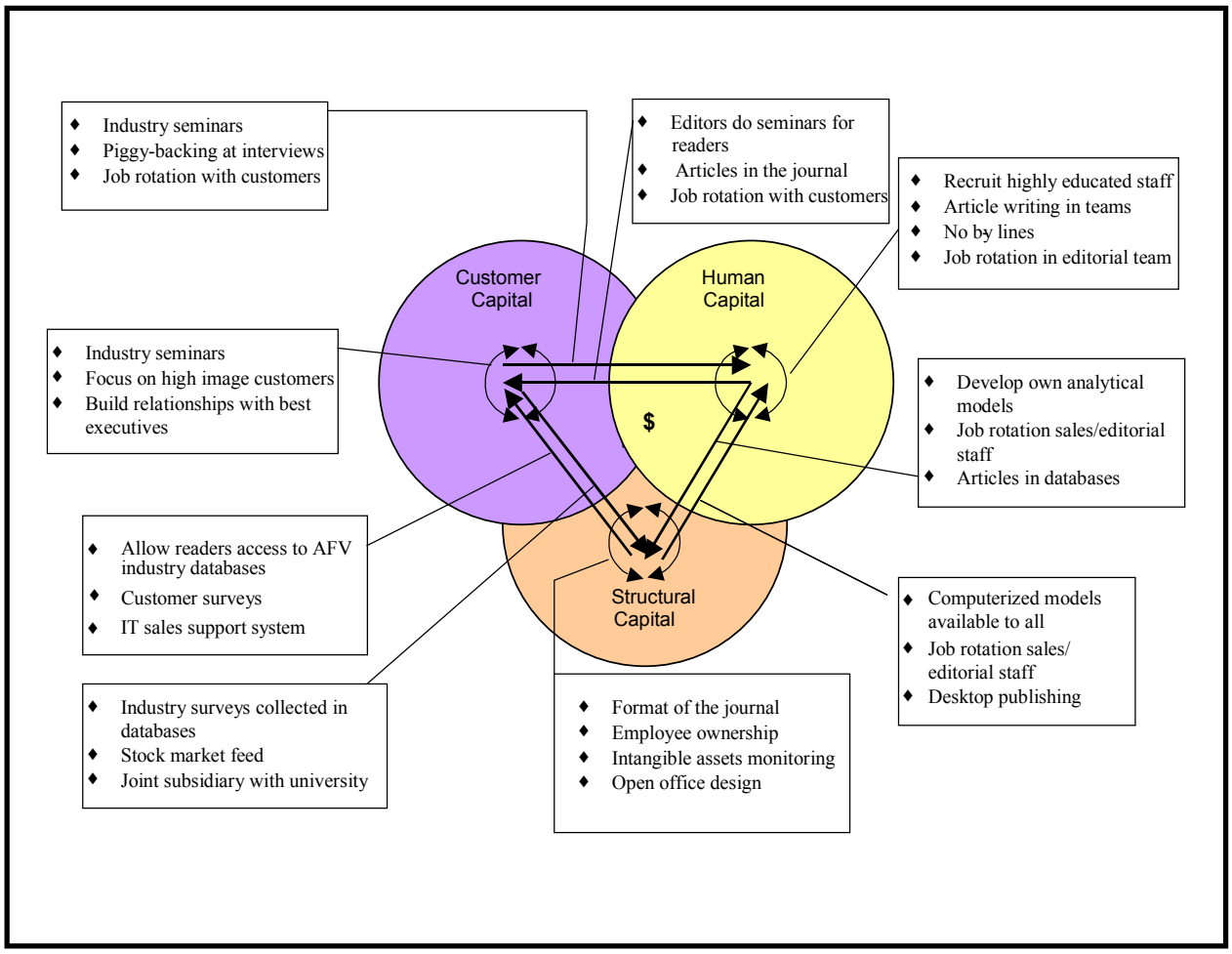
It is accepted that there has to exist a constant interplay amongst human, structural and customer capital in order for an organization to leverage off its knowledge base. In an effort to establish what initiative to take, Sveiby's (2000b) guideline was found to be very valuable. The guideline is based on the experience gained at Affärsvärlden, which was discussed in section 2.3 on page 2.7. In the guideline he suggests that nine questions are asked when considering implementing intellectual capital development initiatives. Figure 3.1 on the next page provides examples of the implementation initiatives taken at Affärsvärlden in response to each of these questions. The questions are the following:

1. How can we improve the transfer of competencies between people in our organization?
2. How can the organization's employees improve the competence of customers, suppliers, and other stakeholders?
3. How can the organization's customers, suppliers and other stakeholders improve the competence of the employees?
4. How can we improve the conversion of individually held competence to systems, tools and templates?
5. How can we improve individuals' competence by using systems, tools and templates?
6. How can we improve the conversations amongst the customers, suppliers and other stakeholders so they improve their competence?

7. How can the competence of the customers, suppliers and other stakeholders improve the organization's systems, tools, processes and products?
8. How can the organization's systems, tools, processes and products improve the competence of the customers, suppliers and other stakeholders?
9. How can the organization's systems, tools, processes and products be effectively integrated?

In analysing these questions it is possible to say that questions one, two and five refer to the development of human capital, questions four, eight and nine point to developing structural capital and questions three, six and seven deal with the development of customer capital. The intention with these questions is to focus development efforts but also to ensure that all three aspects are addressed. It stands to reason that, when measuring the success of initiatives taken, the questions would again be taken into consideration.

Fig 3.1: Affärsvärlden knowledge focused strategy (Sveiby, 2000b)



Kaplan and Norton (2001a, pp 99-101) identified that the constraints of service organizations called for an alternative measuring model (see Figure 4.5 on page 4.31). For the purpose of this study and with their advice as background, it was decided to augment Sveiby's model with a stakeholder section. In practice it has

become increasingly clear that the divide between the customers and stakeholders of information services needs to be bridged. It is also clear that information services have a definite role to play in facilitating the bridging process. The realistic focus area where such a bridge should be facilitated is in the area of financial capital. To test the workability of this idea, seven more relationships were identified and added to Sveiby's model. The associated questions to ask were identified to be the following:

10. How should we measure success and invest strategically to ensure that we are able to ensure access to important information?
11. What should we communicate to assist our stakeholders in making decisions with regard to continuous development of our infrastructure and finding alternative funding models?
12. What should we communicate to assist our stakeholders to make the right decisions with regard to human capital development?
13. What is our responsibility with regard to setting standards, participating in workgroups and utilizing infrastructure for the services' customers?
14. What can we do to ensure that human capital development is possible?
15. What is our responsibility with regard to investigating technology alternatives, financial support and technical expertise to ensure the development of an effective infrastructure?
16. How can we assist the stakeholders to make the right decisions in terms of our need to gain access to global information?

Fig 3.2: Information services' knowledge focused strategy – adapted from the Affärsvärlden model

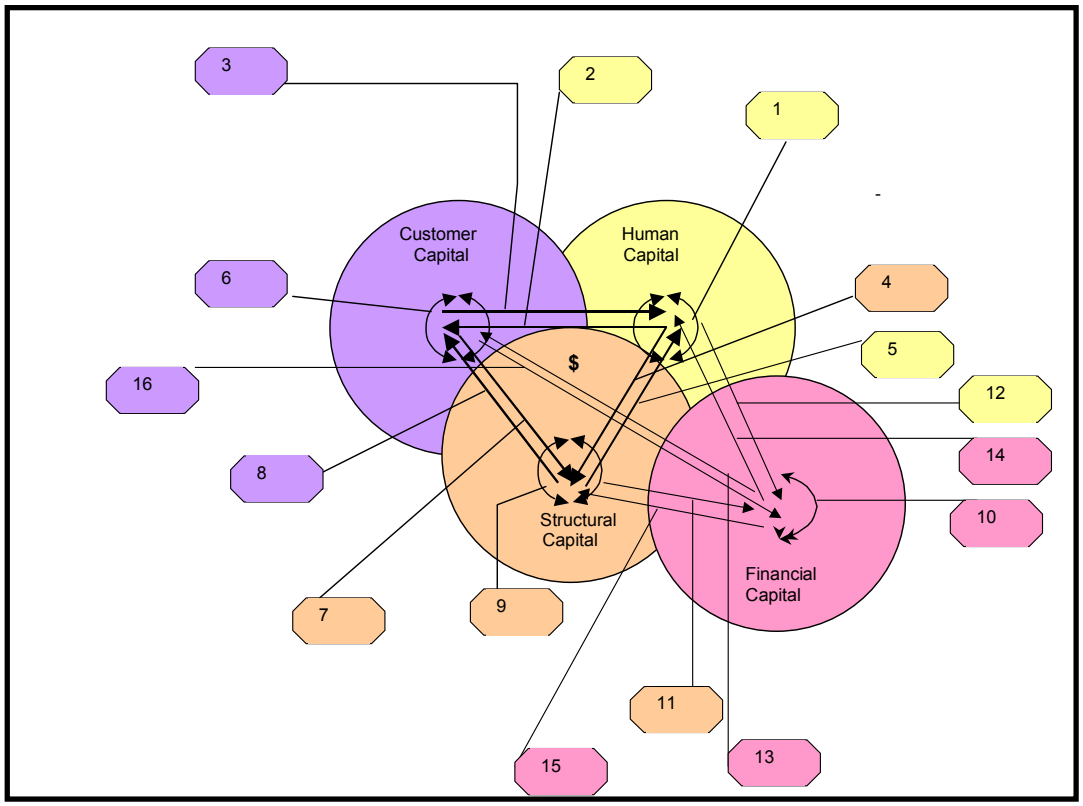


Figure 3.2 displays the various actions necessary within this adapted model. The numbers relate back to the questions identified within this section. The model, as well as the way in which these questions were addressed, was developed further in Chapter 5 or more specifically in Table 5.2 on page 5.16 and onwards.

Except for the interdependence amongst the various capitals, it is especially the communication activities within and between the sectors that provide for communication challenges. Because the communication starts and ends with humans, human capital was again seen to be the most important capital to develop. For that reason it was chosen as the topic to address first within the next section.

3.4.1 Developing human capital

It is not enough to hire, train and promote the brightest individuals. Organizations must also support and nurture bright individuals into sharing their knowledge and ensure organizational learning. Unlike physical inventory in traditional manufacturing settings, individual knowledge stocks that reside in human capital become obsolete. This obsolescence is not necessarily due to outdated knowledge. There is a behavioural explanation instead. *Human beings become unmotivated when they feel they are not being utilized or challenged* (Bontis, 1998, p 71). Fortunately Groth (1994, p 26) does remind the reader that greater increments or even quantum increases in value often stem from:

- finding a better way to do the same thing;
- developing a different way to achieve the same end; or
- discovering a new end.

Add to this Jordan and Jones's (1997, p 393) opinion that *if the specialist skills and knowledge of individuals can be efficiently accessed and harnessed, then it is possible to develop a sustainable position that is extremely difficult for competitors to imitate*, and it is soon clear what it involves to develop human capital.

Some may think that human capital development implies that everything possible should be done to foster invention and creativity only among highly paid, elite workers and ignore those whose work practices are thought of as purely routine. Brown and Duguid (2000, p 76) are of the opinion that this compartmentalization does not reflect the real way most businesses operate. Senge (1990, p 66) expresses a shared opinion when he warns against the compartmentalization of functions such as marketing or research. Information services or the library, as many still prefer to call it, fall into the same category. It is sometimes the people involved in seemingly routine work practices who have to be most inventive because the world they are working in changes so quickly.

In his research Ramosedi (2000, p 81) established that developing human capital requires an understanding that:

- knowledge workers require more flexibility and independence at work;

- organizations need to develop appropriate policies to retain and develop their knowledge workers; and
- people management strategies are more important than technology strategies when implementing management of tacit knowledge strategies.

It appears that in order to successfully manage and develop human capital, certain fundamental strategic changes are required. A strategic human resources development plan should therefore be developed to enhance the company's business plan. Hines (2000, pp 1-17) recommends that such a strategic plan should make provision for:

1. Motivation: companies need informed, loyal and motivated employees: employees who will not only incorporate their intellectual property but who will also be inspired to develop innovative and creative thinking to develop products that will exceed customer expectations.
2. Leadership: to employ the best skills available and to create systems within the organization, which will support the development and retention of these skills.
3. Human resources planning: where the focus of the plan is on the development of effective and competitive human capital but still ensuring that there has to be a strong link between these efforts and the organization's strategic objectives.
4. Career management: where the focus is shifted from 'employment for life' to 'employability for life'. Each employee needs to take responsibility for his/her own career while the company provides the tools, environment and opportunities for the development of the employee's skill.

In order to pay attention to the core business, Hitt (1994, in Zickner, 1996, p 23-24) advised that it may also be necessary to, through the strategic plan, make provision for:

- outsourcing divisions that are not part of core business;
- putting strategies in place to retain valuable employees during restructuring;
- creating an emphasis on human capital. This implies
    - participative management;
    - tenured employment;
    - job rotation;
    - on the job training; and
    - shallow hierarchies of authority;
- cultivating an effective corporate culture. This could be achieved through:
    - developing an entrepreneurial spirit among employees;
    - reducing the fear of failure; and
    - increasing the desire to pursue opportunities;
- promoting a long term vision;

- instilling a learning-oriented culture;
- focusing on high quality products and services; and
- investing in new technologies.

The aspects identified by Hitt were incorporated when the human capital initiatives, identified for the first developmental phase within the case study, were identified and implemented. More detail about the initiatives is provided in section 5.4 on page 5.16.

In terms of the actual activities to develop human capital, it is necessary to mention that the workforce as a whole should embrace change as a constant and that they should proactively take charge of their own situation. It is believed that part of the reason why routine work inventions are not recognised is because the changes, especially those in processes, are not recorded. Therefore, a dilemma that all managers grapple with is the organizational tension between processes: the way matters are formally organized; and practice: the way things actually get done. However, successful companies are not those that work around the problem, they are those that turn it to their advantage. *For in the delicate art of balancing practice and process lies the means both to foster invention – by allowing new ideas to spark – and to further it – by implementing those same ideas* (Brown and Duguid, 2000, p 74). Along the same line Groth (1994, p 25) is, for example, of the opinion that rather than training to fulfil the need for 'current demand' simple tasks, people need to be educated so that each is capable, prepared, easily adaptable, and willing to accomplish a variety of emerging tasks essential for extracting value from a changing environment of opportunities.

A wide variety of methods through which human capital can be developed were identified. Training courses, seminars, conferences and other formal learning activities are obvious. Amongst the not so obvious, establishing communities of practice (CoPs) was seen as very promising. This conclusion was reached due to the following two reasons:

- Reading about the development of human capital and the sharing of knowledge led to the conclusion that learning needs to occur throughout the organization. All staff members therefore need to align to the idea of teaching (and learning from) each other if human capital development is to reach its full potential. Because effective teams learn faster than individuals, a second step would be to ensure that staff members belong to and actively contribute to team learning. The most obvious way in which that can be achieved is through CoPs. To balance the investigation, other methods of enhancing learning were also researched. It is acknowledged that traditional management practices will not change any organization into a learning organization. It is also understood that, when developing a learning organization, both the learners and the leaders have to understand that one can only create the environment in which learning efforts can be nurtured. Leaders cannot instruct learning to take place. Each learner has to take ownership of his own learning activities.

- The CoP environment encourages discussion and interchange of ideas. If nurtured properly it is predicted that the language barriers between individual professional White staff and Black para-professional staff could perhaps be bridged due to the fact that community members help each other understand and learn. Interpretation problems may therefore be addressed much earlier. It should also reduce the stress on an instructor to ensure that learning is taking place. As additional advantages the:
    - financial investment required would be minimal;
    - level of intellectual interaction in the staff room during tea and lunch breaks would rise; and the
    - cultural divides may be bridged.

As a result CoPs are discussed in some detail below.

3.4.1.1 Communities of practice

There are a variety of definitions for CoPs. De Bruijn's (2001, p 2) definition is based on a combination from literature researched and practical experience gained at the CSIR. His definition is as follows *Communities of practice are knowledge sharing groups in or between organizations. They consist of groups of people who are interested in and passionate about certain knowledge, which they use for their job. By sharing their experiences, insights and understanding with peers they develop new approaches and a better understanding of how the job should be done. They are organic structures that need a definite nourishing approach if they are to flourish.* It is the emphasis on the purpose, namely to do a better job, which is especially relevant. The fact that communities of practice need to be nourished and not managed was also useful to note.

Wenger and Snyder (2000, pp 140-141) identified a number of ways in which CoPs add value to the organization. The advantages are that they:

- drive strategy;
- start new lines of business;
- solve problems quickly;
- transfer best practices;
- develop professional skills; and
- help companies to recruit and retain talent.

Even though CoPs have proven to be one of the most valuable forms of knowledge sharing, De Bruijn (2001, p 7) remarked that it is important to realise that they:

- lack a formal structure;
- are not standardized, although they can choose to set and follow standards for themselves;
- are hard to locate and define;
- have an exclusive membership defined by the community;
- are early warning systems and drivers of changes in the organizational ecosystem if properly cultivated and not managed; and

- break apart as easily as they are established.

Because they are not managed, more often than not, the value of CoPs can go unrecognised by senior and middle management. However, CoPs have most value when they are accepted as part of a systematic learning effort. Companies can provide resources, such as free time and meeting spaces, to support CoPs. They can also provide opportunities for bridging across communities or even to customers or suppliers. Infrastructure, such as Intranets, e-mail, and/or video conferencing, further ensures the probability that the benefits gained from an active CoP are reaped.

Hackett (2000, pp 25-26) identified more methods of aiding CoPs. These methods include:

- recognizing, acknowledging, and training the key support roles, such as facilitators, knowledge stewards, and knowledge/relationship brokers;
- helping to identify communities of practice that do or could exist in the organization and supporting their attempts to cultivate an effective group with visible commitment and extra resources;
- building the cultivation and nurturing of communities into business strategies;
- leading the cultivation and nurturing of external communities, including customers, suppliers, and the investment community;
- tapping a community's knowledge and potential for key projects; and
- leveraging the power of communities in terms of driving organizational change efforts.

As further background, Brown and Duguid (2000, pp 76-77) established that the notion of a CoP came from research at the Institute for Research on Learning and Xerox PARC in Palo Alto, California. The researchers there discovered that learning took place in and around communities of practice. As people find a reason to work together, they share stories and lessons learnt. In short, they teach each other the practice. At Xerox it was established that a quick breakfast could be worth hours of training. While eating, socializing and gossiping, the technicians continuously talked work. They posed questions, raised problems, offered solutions, constructed answers, laughed at mistakes, and discussed changes in their work, the machines and customer relations. Both directly and indirectly, they kept one another up to date about what they knew, what they had learned, and what they were doing. The technicians' group breakfast showed that work went on that formal processes did not capture. It also demonstrated that a job that seemed highly independent on paper was in reality remarkably social.

The research also showed that the technicians used one another as their most critical resources. In the course of socializing, the technicians developed a collective pool of practical knowledge that any one of them could draw upon. The pool transcended any individual member's knowledge, and it certainly transcended the corporation's documentation. Much of the knowledge that existed within working groups like the one formed by the Xerox technicians came from their war stories (Brown and Duguid, 2000, p 77). Storytelling is a technique used extensively by members of a

CoP. The constant storytelling about problems and solutions, about disasters and triumphs over breakfast, lunch, and coffee, serves a number of overlapping purposes. Stories are good at presenting things

- sequentially (this happened, then that); and
- causally (this happened because of that).

Thus stories are a powerful way to understand what happened (the sequence of events) and why (the causes and effects of those events). Storytelling is particularly useful for technicians for whom 'what' and 'why' are critical but often hard matters to discern. Storytelling helps to discover something new about the world. It allows the passing on of discovery to others. And finally, it helps the people who share the story to develop a common outlook.

A variety of other methods to develop human capital exist. Some of these are discussed in the following section.

3.4.1.2 Other methods and activities to develop human capital

The most important issue is to get colleagues to talk to each other for, of all the techniques discussed below, the crux of the success of each lies in the fact that the people who participate actively contribute to the discussion. The discussion can of course be based on the past, as with learning histories, or on the anticipated future as in futurizing. The tools and methods discussed below are only a few of those available. The intention is not that a company should use each and every one of these. It is rather desirable that staff members make use of those techniques that best assist them in spreading learning throughout the organization. It remains important in any of these activities to acknowledge the cultural, educational and vocational backgrounds of employees. Provision should be made not to allow these differences to interfere unnecessarily with communication. At the same time, though, communication should not be forced before addressing root problems in a sympathetic manner. Lastly, the most important rule to keep in mind is that it is the spontaneous, unstructured knowledge transfer that is vital to a firm's success and not the systems or the techniques that the firm deploys to facilitate the knowledge transfer (Davenport and Prusak, 1998, p 89).

The first of the alternative learning activities addressed is the creation of a learning history.

(a) Learning histories

It appears that in contrast to what occurs on the personal level, organizations do not learn from experience. To make matters worse: when organizations do try and establish learning opportunities but do not take cognisance of the organizational culture, management may think that the organization is learning when it is in fact not. When the culture rewards those who report on the victories and punishes those who report on failures, the smart decisions are recorded and never repeated while the mistakes are hidden and repeated often. Kleiner and Roth (1997, p 137-138) are

of the opinion that managers have too few tools that will assist staff members to capture experience, disseminate the lessons learnt and then translate the lessons into effective action plans. In their opinion learning histories provide for a narrative format, based on the ancient practice of community storytelling, to capture events that could then be utilized by trained outsiders and knowledgeable insiders to identify recurrent themes, pose questions, and raise 'undiscussable' issues. The most important value from learning histories are that they provide a mechanism through which the lessons of the past are turned into effective action (Kleiner and Roth, 1997, p 140).

In essence a learning history is a two-column document. The purpose of the document is to, in the one column, reflect the thoughts, opinions and factual recollection of events that took place as told by those who were directly involved and affected. The other column reflects the analysis and commentary by the external or independent historian/facilitator as well as the knowledgeable insider. This document is then used as the basis for group discussions. The discussion group is usually the group wanting to do the learning. So, for example, a successful marketing campaign would be recorded and when another group plans to do its own marketing campaign it would read the previous learning history (a product recorded within the organizational memory system) and discuss the recorded history. It does not become a blind action of copying the lessons learnt from the previous group. It is more a process of finding the reasoning behind certain actions and then discussing the validity of that action within the new circumstances.

Kleiner and Roth (1997, p 143-144) regard the following as the most important advantages of learning histories:

- They build trust because all opinions are taken into consideration. They provide the opportunity to clear the air and the process facilitates a 'confidence in each other's attitude.
- Issues that would ordinarily not be discussed in the open are discussed.
- Knowledge is built successfully because lessons are not just transferred. The process allows for objective reasoning prior to adopting new tasks or projects.
- A general body of management information is built. From this knowledge it is not only possible to establish what works and what does not but also the reasons why success is attained or not.

There is however one concern. The process of establishing the learning history is time consuming and as a result a company would have to employ a member of staff to create the record. The job of analysing the information collected also needs to be done at a senior level and preferably by an outside consultant. In total, although it would not be difficult to prove its value, those who have to ensure that the process gets implemented may regard the creation of learning histories as too costly an exercise. Within the context of this research, this is unfortunately also the case. This lead to an attempt to establish the viability of knowledge fairs as another alternative to develop human capital.

(b) Knowledge fairs

Here the specific purpose is to create the space and the opportunity for staff to share knowledge across the lines of departments and business units (Davenport and Prusak, 1998, p 93). Although the purpose of the activity is very well defined and the occasion itself should be well organized, the actual interaction should be unstructured. The function usually works in much the same way as fairs where physical goods are sold (in South Africa the flea markets could serve as example of what is meant). Although the idea is not to sell but to share knowledge, a 'stall keeper' would need to understand that he is essentially still busy with a selling exercise. Staff members are able to wander from one stall to the other and engage in conversation in an unplanned and informal way staying longer. Although this concept seems very inviting, it is definitely not suitable for the environment in which the CSIR IMPS functions. It was thought that actions pertaining to the tearoom would be more appropriate.

(c) Tea rooms, water coolers and collaborative conversations

Many managers have in the past seen and still see staff room chats as a waste of time. According to Davenport and Prusak (1998, p 90), it has been scientifically established that, although some conversation may be about sport and the weather, most of these conversations could be classified as efforts at transferring knowledge. They warn that the value of face-to-face contact is being underestimated and that it is time to redefine 'productivity' so that it can include productive yet casual conversation and periods of reflection and learning. So, for example, they argue that a company, which claims to value knowledge but then discourages reading and talking on company time, sends mixed messages. They see the availability of slack time for reading and discussions as a very reliable metric of a firm's knowledge orientation (Davenport and Prusak, 1998, p 93).

It was therefore interesting to establish how effective this mode of knowledge transfer is in the case of a less knowledge intensive environment. What is of concern is that as a generalized perception, Blacks are said to culturally prefer narration as a mode of learning and females are perceived to enjoy working while talking. These groups should therefore be excelling at knowledge transfer and yet, within the given environment, this is not the case. A variety of reasons could exist (jealousy, a lack of learning challenges are but two). It was unfortunately not the purpose of this study and should be investigated as a separate issue.

(d) Futurizing and anticipatory action Learning

Action learning is about understanding the circumstances within which one finds oneself, to identify possible future outcomes, deciding on the best course of action to improve the situation and to then take action to reach a new set of circumstances. The purpose of action learning is to empower all members of a discussion group with the ability to participate in discussions about their common future. The opinions of all participants (irrespective of their hierarchical status within the company) have equal standing. It therefore allows all participants to anticipate but also make the

future happen. It is not as easy as it may sound. Stevenson ([2002?], p 4-6) reports that there are three major obstacles in making action learning work efficiently. In addition, there are also a number of practical issues that need to be considered. It is difficult to:

- identify participants who are willing and able to participate;
- establish a communication framework when both experts and laymen participate; and
- distinguish between action for action's sake and action that opens enquiry and influences decision-making.

In addition the following need to be noted as well:

- More vocal, experienced or articulate participants may inhibit those who may feel lesser skilled.
- It is difficult to balance expert and layman opinions.
- When group members get to know each other too well the group can easily fall into convergent thinking or groupthink.
- Different cultures value verbal communication differently. Care has to be taken when group members come from a variety of cultural backgrounds.
- It is difficult to, during conversation, challenge prevailing wisdom. Groups are surprisingly effective at silencing anyone going against what is acceptable norm.

Action learning differs from scenario planning. (Stevenson, [2002?], p 5) is of the opinion that scenario planning builds on the past and explores a number of future options whereas the goal with anticipatory action learning is to explore all future options, to identify the most appropriate outcome and to plot the route ahead. It is also taking deliberate actions to avoid unwanted future outcomes. Seen within the context of this study, the technique was thought to have definite advantages and its use was explored. However, because of the size and expertise levels of the group, the technique was not found to be useful, although it should be useful whenever a number of staff members from sister institutions are invited to participate in learning events.

The next technique explored, workplace storytelling, was to some extent addressed as part of communities of practice. More detail is provided below.

(e) Workplace storytelling

Storytelling is a fundamental part of human nature. It is the way that historic knowledge, culture and social values are transferred from one generation to the next. War stories and workplace storytelling have most probably been part of how humans learn from before management authors realised it was possible to capture knowledge. Brown and Duguid (2000, p 78) are of the opinion that most of the knowledge within any group can be traced through the group's war stories. The reason they give for this is that the *stories provide insight into both triumphs and disasters from the sequential (this happened and then that) and the causal (this*

happened because that was done) angles. Stories therefore provide the worker with a powerful tool through which to understand complicated technical sequences. Storytelling also allows for knowledge to be passed on to others while the group as a whole develops a common understanding. Pedler, Burgoyne and Boydell (1991, p 125) assure the reader that stories can produce the unexpected, illogical jumps and transformations that do not appear reasonably possible while Brown (1991, p 166) goes as far as to say that successful team learning only comes about as a result of using the storytelling technique. This type of learning could be seen as gaining access to the ultimate 'expert system'. A system that provides *a storehouse of past problems and diagnoses, a template for constructing a theory about the current problem, and the basis for making an educated stab at the solution*.

The storytelling technique was initially not encouraged formally as it was known to be used extensively. As could be expected, when this behaviour was rewarded usage easily increased. Digital storytelling, the next technique mentioned, provides for a technological format through which storytelling can take place. Even though it was found not to be suitable for this study, it was worth investigating.

(f) Digital storytelling

With digital storytelling, the power of modern technology is used to enhance the storytelling technique. Digital storytelling is based in the artificial intelligence and virtual reality domains. Ordinarily it offers the author(s) of a story a variety of options and by choosing these options a unique story evolves. There are, however, three role players in developing successful digital storytelling software: the authors of the story, the writer of the software and the domain specialist – the person who can be regarded as the expert in the training subject. It is only when the domain specialist is involved that the technique has true training value (Dörner, Grimm and Abawi, [2002?], p 2).

The most important difference between conventional storytelling and digital storytelling is as follows *In traditional storytelling the listener just listens and occasionally asks questions; in digital storytelling the listener is not passive. He can participate and actively shape the way in which the story develops* (Dörner, Grimm and Abawi, [2002?], p 1). Obviously also technology allows for animation. Participants experience the adrenalin and the positive feelings associated with experiencing 'real' situations. They also see themselves as playing rather than learning. But the most important stumbling block in using this learning technique is the technical skill level of the participants. It is anticipated that as the capabilities of the software are developed and enhanced, the technique's popularity will grow.

Digital storytelling can, with right, be seen as a subset of storytelling because the principles are much the same. The difference lies not so much in the fact that technology forms an integral part of the technique, but rather that the stories are imaginary and one has control over the inputs and the outcomes. As with any simulated, high technology learning technique, both the learner and the tutor stand in danger of allowing technology to overshadow learning. It is foreseen that this technique will grow in popularity because it fits in with the growth in digital or

computer games and it also takes care of the need to be entertained and to be active while learning. Dörner, Grimm and Abawi ([2002?], p 9) admit that users find the complexity or 'mightiness' of the systems daunting at present. As such, this may be a useful development to track in future but at present, within the environment and background of this study, traditional storytelling would be of more use. The storytelling technique was not tested formally within the research period and is therefore not discussed any further. It was, however, observed on a variety of occasions after the introduction of the IMPS personal monitor where staff members were rewarded for training each other (see Attachment 2).

There is often the impression that only traditional formal training builds human capital. The fact that different techniques could be used to ensure that workers share their knowledge and learn from each other is encouraging. When intellectual capital activities were introduced within CSIRIS IMPS, the growth phase of the group required that much of the attention be focused on skills development – see Table 5.2 on page 5.16. As a result activities such as the items listed above did not play any significant role. It could be expected that these would become more important as staff members grew and developed their own intellectual capital further. Besides the growth phase of the group, there are a number of other obstacles to face while implementing human capital development activities. Some of these are mentioned below.

3.4.1.3 Obstacles to the successful implementation of human capital development activities

The implementation of organizational learning on an organization-wide basis can be expensive and politically sensitive. Making long term investments and being politically sensitive are not difficult concepts to grasp, especially if the payoff is considered *building deeper customer relationships with a fully engaged workforce. A workforce that will use knowledge to adapt quickly, seizing opportunities and improving products and services, and of course, just as important, to renew the way workers define themselves, think, and operate* (Hackett, 2000, p 5-7). It is not very difficult to convince staff members to attend formal training activities during work time, yet it is very difficult to set human capital development activities into motion. The question is what then are the real obstacles?

It was no surprise to establish that most of the major obstacles to successful human capital development are not issues of budget, the market, customers, suppliers or competitors. Hackett (2000, p 47), for example, found that every major study on knowledge management or organizational learning indicated that the lack of a knowledge sharing culture is the key barrier to success. The development of a knowledge-sharing or learning culture relies on:

- shared vision;
- value-based leadership at all levels;
- open and continuous communication; and
- rewards and recognition.

A poorly developed knowledge sharing culture is, according to Hackett (2000, pp 7-8), due to some or all of the following reasons:

- The fact that the **need** to manage knowledge is not clearly articulated or understood is seen as the most important stumbling block. It is anticipated that this lack of understanding will decrease over time. However, when top leadership is not 100 % in support of identified human capital development activities the situation is aggravated. Cynicism of fads most often contributes to the fact that leadership is reluctant to support the activities. Some managers still perceive the knowledge economy as a fad.
- A culture of hoarding knowledge is the second biggest barrier to successful knowledge management efforts. This includes a lack of trust amongst colleagues and a workspace that tolerates such behaviour.
- Developing functional silos is the third most frequently cited obstacle to sharing knowledge. Very often these silos can be associated with a tolerance for internal politics. The way to get around this obstacle is to actively work at breaking down divisional barriers. It is suspected that the primary reason knowledge management has grown so quickly is that it offers the means to work across functions, business units, as well as regional, and hierarchical boundaries. Knowledge management tools and techniques work well to break down the walls and ceilings that often limit communication and knowledge flows. Some firms deliberately establish their strategic knowledge management teams with representatives from the human resources department, the information technology department and at least one strategic business leader.
- Not rewarding and recognizing knowledge-sharing behaviours is another major barrier. Not only the sharing but also the adoption of knowledge needs to be rewarded.

From the obstacles mentioned above, it can be seen that investing in a sophisticated information technology system for knowledge sharing could, for instance, be a waste of money if the organization's climate is highly competitive. In such circumstances only low value information will be shared. Similarly, a reward system that encourages individual competition will effectively block efforts to enhance knowledge sharing.

Lank (1997, p 410) also mentions the importance of the appropriate reward and recognition systems but expands Hackett's list of obstacles by saying that contribution to the organizational knowledge base will depend upon the:

- approaches to personal recognition;
- integration with key business processes; and
- information technology infrastructure and training to familiarize people with the relevant information technology tools.

In terms of a technology obstacle, it is necessary to state that when it is difficult or cumbersome to contribute to a knowledge base, people are discouraged to contribute. Similarly Hackett (2000, p 23) reports that if sharing efforts arrive as a

pre-defined package from the centre, where the organization culture is more autonomous, any possible positive result is supplanted by the following negatives:

- psychological ownership is rejected ('this-is-your-system-not-mine' syndrome);
- the system may fall to the classic problem of a technology in search of a problem ('now-that-we-have-it-what-should-we-do-with-it' syndrome);
- the taxonomy of best practice may not match the local needs and common language ('but-we-are-different' syndrome); and
- the platform imposed from the top may not match local history, preference, or outside sharing potential ('they-don't-know-what-we-really-do' syndrome).

Two further obstacles identified by Hackett (2000, p 23) relate to the reward system. Firstly he is of the opinion that a centrally led effort often looks to financial incentives to spur use and overcome resistance. (When the effort is local and contribution is entirely voluntary, contributors are motivated by intrinsic rewards such as professionalism, the ability to contribute, peer recognition, and being part of something larger than yourself.) Not only do cash incentives cost money, they appeal to the wrong sort of drivers for knowledge workers who should be the biggest contributors, users and beneficiaries of knowledge stocks. It leads to *everything needs to get rewarded or it does not get done* behaviour. Intrinsic rewards are deeper, more lasting, and less open to manipulation and gaming behaviours. Secondly, he feels that when sharing knowledge carries more weight than using the shared knowledge, systems are flooded with information that is often of low value. It is therefore not only the sharing but also the receiving and implementation of knowledge that must be understood or the actual sharing becomes just as big an obstacle. On a slightly different vein, it is necessary to mention that Ramosedi (2000, pp 70-71) found significant differences in perceptions around knowledge sharing between higher and lower qualified staff members. During his research, he established that lower qualified staff did not perceive the organization to be encouraging staff to share their knowledge. He assumed that this is because higher qualified staff members have better ways of accessing data and that different levels of information at different levels of complexity are required in the organization.

A last serious obstacle was identified through the work of Lank (1997, p 410). The issue here is job-security or rather the lack of it. Employability is now seen to be a desirable goal, leading to employees' expectations that their organizations will invest in their personal development. If part of employability is the knowledge and experience that you hold, the motivation to share that knowledge with someone else within your organization is at threat!

Human capital development is a long term investment and should not be seen as a magic wand that will increase the bottom line immediately. Once that is acknowledged, the chances of success and sustainability in the long term increase exponentially. It is especially at individual level that workers can gain tremendously, providing it is possible for them to overcome the cultural barriers and providing management does not inadvertently, through the reward and recognition programme, encourage competition and adolescent behaviour.

As is becoming clear, there is a close relationship between developing human capital and providing the infrastructure that allows for easy sharing of acquired knowledge. The next section takes a closer look at developing the appropriate systems and infrastructure to ensure that the company's structural capital develops at the same pace as it human capital does.

3.4.2 Developing structural capital

Because it is tangible, it may seem like an easy task to create and maintain structural capital, but as Sveiby (1998b) reminds the reader - *In our mass media rich societies, information is – from the receivers' point of view – more like chaos than facts. The receivers have to make a choice not between amounts of information but between information channels in an information rich chaos*. This in itself provides major opportunities for information specialists but it is a topic that should be addressed in further research, as it is not the intention to do so here.

What it really means to build and develop structural capital is perhaps best explained by providing a working example. Brown and Duguid (2000, pp 79-80) tell of the Eureka project launched at Xerox. Eureka refers to a database of tips and best practices established to assist especially the remotely located technicians. Instead of managers 'managing' the database, responsibility was handed to the technicians themselves. Similarly to a scientific writer's peer review process, the tips and best practices entered into the database are calibrated, tried and tested to reflect true best practice. Technicians are not rewarded in monetary terms. Reward is rather in terms of the recognition given by fellow technicians. At one level the individual employee is a winner: what they know is taken seriously, codified and rewarded. However at another level, personal knowledge has become a valuable corporate resource and assists fellow workers to deliver faster and more efficient service. Xerox, according to Brown and Duguid (2000, p 80), estimates to have saved at least $100 million as a result of the Eureka content.

The lesson of the story is that should an organization make its entire knowledge base available to its employees, they are able to serve the customers to the best of their ability and achieve personal growth and development. It remains the obligation of every employee to contribute aspects of their know-how to the organization, thus converting some of their personal learning into structural capital for the organization. Linking back to the obstacles identified when developing human capital, employees must feel there is something in it for them to contribute to an organizational knowledge base. Similarly, managers must feel that they will gain from investment in knowledge management processes. Trained in the tools for the industrial era, managers are often uncomfortable with things that cannot be measured and as a result the development of structural capital is very often neglected (Lank, 1997, p 408).

Krogh, Ichijo and Nonaka (2000, pp248-258) also provide an example of what is involved when building structural capital. In a case study of the Gemini consulting group, they describe efforts to ensure knowledge sharing. It was established that

the following barriers first had to be addressed before the company could capitalize on its knowledge sharing activities:

- strategic barriers, which was done by creating and communicating a strategic view of knowledge throughout the company;
- organizational barriers, which was addressed by establishing a supportive reporting structure and building an enabling IT infrastructure;
- process barriers, which was done by standardizing knowledge capturing and knowledge access processes;
- infrastructure barriers, by ensuring that both the hard- and software within the company is standardized;
- cultural barriers, by concentrating on establishing a shared corporate culture and a common language amongst employees;
- individual barriers, which was addressed by teaming beginner consultants with experts and ensuring that the environment is non-threatening in terms of experimentation with new ideas.

It is fair to say that these barriers are not unique to Gemini consulting. Individual barriers, for example, appear to be a common concern for all. The best advice in this regard is probably to design system usability around the requirements of the users (both managers and employees) and then to adapt the reward system to encourage acceptable behaviour. Lank (1997, p 410) is of the opinion that if the knowledge-sharers become the heroes in an organization, then the value of knowledge will be recognized not just at a business level but by every individual. It also does much good if the needs of these heroes were used to fine-tune systems. It is taken for granted that Lank, as was suggested by Hackett in the previous section, by implication includes knowledge users in the group of heroes. Fine-tuning systems and rewarding the right heroes will however not by itself ensure the development of valuable structural capital. Finding the time to create and develop structural capital is a next important issue to address. Lank (1997, p 411) warns that if building structural capital is seen to add a further load to already overloaded people, then even the prospect of significant reward and recognition may not suffice to encourage the required behaviour.

When structuring, creating and maintaining structural capital, it is useful to remember the four key elements of information ecology as identified by Davenport and Prusak (1997, pp 28-33). They suggest that one should make provision for:

- The integration of diverse types of information. A system should be able to fully service the needs of any client. It should not only direct the client to one type of information. It should rather integrate and package the information to address the personal need of the client.
- An evolutionary change both in terms of the need for and the information itself. The information management system should therefore be able to address both these aspects.
- Observation and description as a first step. Overwhelming as it may be, it is essential to describe 'who' has 'what' information, the various information

sources, how information and knowledge are used in work processes and the organization's intentions and objectives for information.
- An ability to focus on people and information behaviour. Information behaviour is a vast untapped dimension of information management. It is no use introducing or changing a system if it is not going to change the behaviour of the people who are required to make use of it.

From the issues raised above, it is clear that developing structural capital is not just a question of creating a database and then sitting back while all staff members automatically and enthusiastically start using and building the company's valuable structural asset. Continuous and deliberate attempts have to be made to structure, maintain and develop the structural capital. The next section addresses some of the techniques that could be implemented to do so.

3.4.2.1 Structuring organizational knowledge into useful entities

It is not good enough if structural capital is developed primarily to serve only those aspects that have been completed (also known as organizational memory). Malhotra's (1996) point of view is that information systems should also serve the processes of:

- knowledge acquisition;
- information distribution; and
- information interpretation.

This point of view is shared. Knowledge acquisition is of course not only the procurement of books, journals, articles and e-products. It also includes capturing market research and competitive intelligence in appropriate systems. In addition, the effective use of technology such as groupware tools, Intranets, e-mail, and bulletin e-boards can facilitate the processes of information distribution and information interpretation. Some of the activities to ensure that structural capital is developed are the following:

- collecting lessons learnt;
- establishing best practices;
- creating corporate memory systems;
- doing competitor analyses;
- establishing benchmarks; and
- experiencing simulations and microworlds.

Each of these is discussed in more detail below.

(a) Lessons learnt

The true value of a lessons learnt system is sharing experiences with others. The bottom line is that it is too costly today to learn only from personal experience. A person not only learns faster, but it is also much cheaper to learn from other people's experiences as well. Mowry (1999) states that the lessons learnt process is

a systematic approach for identifying, validating, resolving, closing and sharing both positive and negative experiences or feedback. A lesson learnt is knowledge or understanding gained by experience. The experience may be positive, as in a successful test or mission, or negative, as in a mishap or failure. Lessons learnt include any information (e.g. causes of variances, reasoning behind corrective actions taken) gained during an activity that would be useful to others for their completion of a similar activity. A lesson learnt issue is a significant specific event that occurred during a project, that had an effect – and the effect could be either positive or negative. Issues that need to be captured include operating costs, internal/external customer relations, inter/intra departmental procedures, and how project planning/scheduling/execution were impacted. Again this appears to be a daunting task but Mowry (1999) also stipulates that a lesson must be:

- **significant** in that it has a real or assumed impact on operations;
- **valid** in that it is factually and technically correct; and
- **applicable** in that it identifies a specific design, process, or decision that reduces or eliminates the potential for failures and mishaps, or reinforces a positive result.

Capturing the lessons is the most crucial portion of the 'lessons learnt' model. Unfortunately the cliché that 'without input there is no output' remains true. As is reported in section 5.4.1.2 on page 5.24 the lessons learnt while this research was conducted were captured and made available via the Intranet interface.

Mowry (1999) recommends that valuable sources for 'lesson' identification are:

- progress meetings;
- status and completion reports;
- requests for feedback;
- customer satisfaction surveys; and
- lessons learnt/post mortem meetings.

Because lessons learnt and best practice identification go hand-in-hand, these sources are also useful to identify pockets of best practice activity.

(b) Best practices

Best practice theory stems from the notion that when there is no effective method of capturing and making available the best practice, world-class and mediocre performance co-exist within the same company (Davenport and Prusak, 1998, p 167). Identifying a company's best practices is not easy. Firstly, there is a large gap between what a task looks like in a process manual and what it looks like in reality. Secondly, there is often a gap between what people think they do and what they really do. Therefore, managers who want to identify and foster best practices need to pay very close attention to practices as they occur in reality rather than as they are represented in documentation or process designs. It also needs to be accepted that even when one does pay close attention, it still is possible to miss the tacit knowledge produced during improvisation and innovation. Shared learning that

comes about as a result of storytelling and which is embedded in the communities that form around activities is virtually impossible to capture. This is however not a totally lost case for, as Brown and Duguid (2000, p 79) assure the reader, when he is at least armed with a sense of what really happens on the ground, it is possible to design processes that prompt improvisation rather than ones that are blindly prescriptive.

Because there was no doubt that capturing best practices would be of real value within the CSIR IMPS situation, the option was pursued. When efforts did not have the desired results, it was possible to link the cause of failure back to Hackett's (2000, p 11) warning that current efforts focused on repositories of best practice may become less and less important for the following four reasons:

- best practices are very specific to context (most learning may be learning from mistakes);
- the repository is easier to fill than to access and reuse, for both technical and psychological reasons;
- in a world of greater speed, firms need to look to knowledge flows more than knowledge stocks, and therefore more toward linking of people (e.g. employees, customer, and suppliers); and
- repositories almost by definition do not link to end-to-end processes, where managers and employees can see the impact and integrate them.

Through the work of Senge (1990, p 11), a further warning was identified. He is of the opinion that *the practice of 'best practices' can lead to copying and the art of playing catch-up and in the process more harm than good is done*.

(c) Corporate memory systems

There are several well-acknowledged reasons for the development and maintenance of a corporate memory system. The most important of these were identified by Demarest (1997, p 383) to be the following:

- Experienced staff leave firms or retire and take along their know-how when they do so.
- Work sharing is expanding and as professions get more specialized, work is tending to be more co-operative. It is becoming more difficult to establish conventions between people if they do not have access to the same information.
- Companies have notoriously poor memories. The problem with this forgetfulness is that staff members are unable to learn from the past mistakes and neither are they able to build on previous successes.

The reasons for establishing a corporate memory system are valid. The question as to how to go about building such a memory system is more difficult to answer. Establishing a memory is seen as a daunting task. As a result, there are several opinions as to which is the best route to follow when establishing a memory system. In the words of CSIRO (2000) *What is needed is the technology to support sufficient*

automation for corporate memory systems to yield enough benefit to justify their implementation. In the long run, an effective corporate memory would capture information automatically and in the background from tasks and other work activities. The information (records) would be structured and kept permanently in a way that would support a systemic generation of answers to the questions. A corporate memory could also construct explanations and synthetic presentations as part of answering questions. Similarly Mowry (1999) advises that a corporate memory system be designed to facilitate an understanding of how things were done. Employees should be able to ask various questions about the company and its processes and obtain answers and stories from experts ranging from the most senior to the most junior members of staff.

On the other hand, authors such as Euzenat (1997) see corporate memory as a repository of knowledge and know-how from a set of individuals working in a particular firm. This does not imply that stating knowledge in an electronic medium is sufficient. The information available should promote communication among individuals. It should also allow for confrontation against standard or analysis tools. Euzenat (1997) claims to have based his opinion on numerous experiments with knowledge bases in the domain of molecular genetics. These experiments led to the identification of four types of knowledge, which need to be represented:

- descriptive knowledge;
- methodological knowledge;
- behavioural knowledge; and
- non-formal annotations.

As a result he advises that corporate memory:

- must be formalized to the greatest possible extent so that its semantics is clear and its manipulation can be automated;
- where it cannot be totally formalized, formal and informal knowledge must be organized such that they refer to each other; and
- in order to be useful, it must be accepted by the people involved (providers and users) and thus must be non-contradictory and consensual.

It is useful to remember that neither organizational nor individual learning develops from capturing information but rather from distributing the captured information to others. Information is of no value unless others can use it and therefore any effective corporate memory system should ensure that information is reliable, available and searchable. Within the context of this research, it was found that deliberate actions were initially necessary to ensure that corporate memory was built. Once some staff members were able to identify the benefits of having the memory in place, it was much easier to convince them and others to contribute.

(d) Competitor Analysis

In the words of the expert Porter (1998, p 47*) the objective of a competitor analysis is to develop a profile of the nature and success of the likely strategy changes each competitor may make, each competitor's probable response to the range of feasible strategic moves other firms could initiate, and each competitor's probable reaction to the array of industry changes and broader environmental shifts that might occur*. Gathering intelligence about competitors is not a new idea. The systematic study of competitors and other firms is a recommended first step for new ventures, change projects or strategic planning (Drew, 1997, p 428). Yet Porter is of the opinion that few companies do truly reliable analyses due to the fact that it is very difficult to gather appropriate information. His book *Competitive strategy: Techniques for analyzing industries and competitors* provides extensive practical advice to do comprehensive competitor analyses. In short he suggests that one looks at the competitor in terms of its current strategy, its current skills and capabilities, its future goals and the assumptions about the competitor within its own company, the industry and the customers.

Porter (1998, p 50) advises that one not only looks at the current competitors but also at possible new competitors. It is also useful to consider possible mergers as mergers can suddenly make fairly small competitors formidable or strengthen an already large competitor. For the purpose of this research, Porter's model for competitive intelligence was re-visited and slightly adapted to make provision for technological advances since the model was developed in 1980. The augmented model is reflected in Figure 3.3 on page 3.38. (Items added are indicated in red.) Step one is obviously to identify all possible competitors keeping in mind one's own company's vision and strategic direction. The next step would be to collect data and information about these competitors in a systematic and comprehensive way. The information is then compiled in a uniform way to allow an analyst to compare 'apples with apples'. The system should obviously make provision for the uniqueness of each of these competitors.

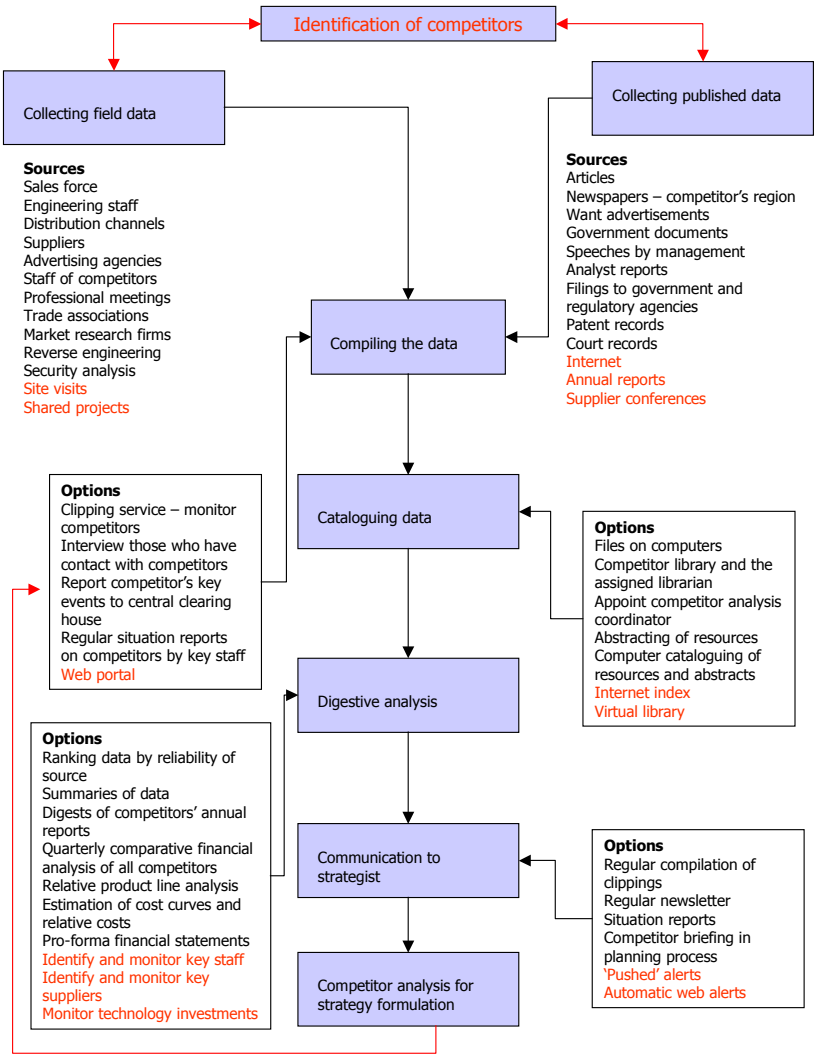
The next step is to 'catalogue' information so that it is retrievable. It is clear that structural capital not only supports the 'cataloguing of the data' part of the process but it is also at this stage that the structural capital is expanded. When competitor intelligence is done as part of the routine information services provided to clients, this is usually where the information workers' contribution stops. It was found that, when gathering competitor intelligence for information services, the skills to progress to the next stage in Porter's model had to be developed.

During the last phase of the analysis process, the information collected is digested and analysed. As the last step, the analysed information is communicated to appropriate staff members within the organization. When looking at building structural capital, it is essential to add the analysed information as well as the reasons for reaching certain conclusions to the database so that they too becomes part of the next cycle of analysis.

The ethics involved when collecting competitor intelligence are not addressed as part of this research. However, the most important aspect to remember, while doing competitor analysis, is that information that is available from the public domain must be made use of. As indicated in Figure 3.3 the following were identified as the most obvious sources for competitor intelligence:

- reports filed publicly;
- speeches by management;
- the business press;
- salesmen;
- customers;
- inspection of products;
- analysis and estimates of the firm's human capital; and
- the company's web site.

Fig 3.3: Model for competitor intelligence (an augmented version of Porter's (1998, p 73) model)



Within the context of this study and given the nature of the information services industry, it is highly unlikely that an in-depth analysis, such as that discussed by Porter, would be necessary or completed for the CSIRIS IMPS competitors in the foreseeable future. The real value from the process came from evaluating and correlating e-journal suppliers and their products (see section 5.4.2 on page 5.24.)

When comparing other company based information service providers, it appears appropriate to make use of benchmarking to establish what possible 'competitors' are providing in terms of similar and enhanced products and services.

(e) Benchmarking

Drew's (1997, p 428-429) work was essentially used to gather basic information pertaining to benchmarking. He defines benchmarking as the art of finding out, in a perfectly legal and above board way, how others do something better than you do so you can imitate and perhaps improve upon their techniques. He also reported that benchmarking has become one of the most popular tools for strategic management and that almost every type of organization now engages in some form of benchmarking study. Not all of these are doing so with the same degree of rigour and formalism. Therefore, before embarking on a benchmarking exercise, Drew (1997, p 429) advises that it is necessary to understand that:

- benchmarking is not, in itself, a strategy for achieving competitive advantage in product or resource markets;
- although the maxim adopt, adapt and improve is often advocated, benchmarking is not, *per se*, a technique of organizational creativity;
- benchmarking is much more than merely gathering competitor intelligence.

Again from the work of Drew (1997, p 428) three types of benchmarking were identified. These are:

- process benchmarking, which is used to compare operations, work practices and business processes;
- product/service benchmarking, which is used to compare product and/or service offerings; and
- strategic benchmarking, which is used to compare organizational structures, management practices and business strategies.

All three of these were found to be appropriate and applicable within the context of this study. Benchmarking was found to be a fairly objective way in which to measure to what extent your customers and the customers of sister organizations are provided with similar services and products. More importantly though, benchmarking gives an indication of processes that need to be re-engineered and strategies and practices that need to be adapted. The details of the activities and outcome of one such a benchmarking exercise are reported in Attachment 1, section 3.4 on page A1.27.

(f) Micro-worlds or simulations

Traditionally, the classroom has been a dominant method of transferring knowledge. Today, with global operations, widely dispersed workforces, and the continuing need for instant access to updated knowledge, the classroom has to be supplemented, perhaps supplanted, by a much more diverse range of knowledge-transfer methodologies (Hackett, 2000, p 17). When investigating the use of technology to build structural capital and transfer knowledge, it was useful to look at the progress in virtual reality and artificial intelligence systems. Simulations and computer-based training can today be utilized for almost any training need. They are especially useful when students choose to study at their own pace or in instances where the risk associated with the training needs to be reduced. The most important aspect is that they provide an alternative to the traditional classroom style of learning. With micro-world technology, the aim is to give both trainee and more experienced leaders the ability to simulate real life situations and to gain immediate feedback on their actions. In real life it is often the case that the delay between the action taken and the result of that action is so far removed in time that most leaders fall into the trap of treating symptoms rather than root causes. Because classroom and the actual environment have so little in common in the business world, Bontis and Girardi (1998) question if managers actually learn any practical skills if they are only exposed to a classroom environment.

Senge (1990, p 315) also sees the use of micro-world technology as critical for implementing learning organization disciplines. He regards the technology as an ideal medium through which to re-discover the power of learning through play. Micro-world games provide leaders with the opportunity to identify a variety of paths to reach organizational goals rather than being bogged down by a single route that is not achieving desired results.

Although a variety of artificial intelligence programs are available to use as micro world training media, not all micro worlds are computer based. As far as non-software games are concerned, it is especially Sveiby's Tango game that is seen as a very useful training tool within learning organizations. Bontis and Girardi (1998) established that, after completing the Tango 'training', participants were more favourably disposed to intellectual capital than ever before. The candidates were also more aware of the skills that were lacking within their leadership fraternity.

The value of micro-world creation as a technique to build structural capital is perhaps obvious but, within the context of this study, it was not a feasible option as it requires more time and effort than what was available within this limited research period. It was therefore not investigated any further but it should be considered for a later stage. There is no doubt that the effective use of technology, in general, is essential. Creating 'micro-worlds' is but one way in which to do so. The next section addresses, in broader terms, the role that technology plays in developing intellectual capital.

3.4.2.2 The role of technology as enabler in developing structural capital

It is obvious that knowledge economy business and knowledge economy work is technologically dependent. Davenport and Prusak (1997, p 78), however, see *technocratic utopianism* (thinking that technology will be a quick fix to all weaknesses) as the biggest crime to distract managers from the real issues of information governance. They (1997, p 184) are of the opinion that the latest technology is not necessary for a strong information environment. Arora (2002, p 240) supports these opinions. Smith (1998, pp 8-9) goes as far as to warn that, without active oversight, Intranets may just add to the information glut that the knowledge worker has to cope with. These opinions are supported. In this regard Smith's (1998, p8) point of view captures the sentiment. He remarked that *knowledge sharing technology does not equate knowledge sharing, for the same reason that an exercise machine does not equal exercise. Knowledge sharing is something that people 'do'. Machines help, but the programme is doomed to fail before it is initiated if it concentrates on the machines and ignores the necessary changes in*

- *business processes (which must change to incorporate activities for harvest and leverage);*
- *organizational roles and responsibilities (who captures and who maintains the information); and*
- *incentives (why should anyone contribute their knowledge)*.

Even though it is a major misconception that there is a specific panacea technology on the market that addresses all information and knowledge management needs, there are many available and emerging technologies that will address at least part of the challenge. Everyday life has been changed by the introduction of the Internet, e-mail, discussion lists, chat rooms, virtual communities, electronic shopping (or e-commerce), online banking, and organizations' home pages. These communication technologies have generated new social forms and new ways of communicating with others (Chase and Alvarez, 2000, p 357). Intranets, for example, mean that employees can now, by using simple and effective search and retrieval mechanisms, easily access the entirety of their organization's electronic information and knowledge store. Web technology is not the only technology tool that supports knowledge sharing. Hackett (2000, pp 25-32) in his research identified eight technologies that assist in sharing knowledge. Shanhong (2000) felt there were several more. From their work it was established that the technologies in question are essentially the following:

- electronic mail and messaging, group calendaring and scheduling software;
- skills inventories, yellow pages and subject expert lists;
- electronic meetings;
- virtual communities;
- document management and creation/workflow systems together with storage architectures which enable information resources sharing and on-line analytical processing;

- workgroup utilities and groupware development tools;
- data visualization and knowledge mapping tools;
- Internet, Intranet and Extranets;
- database management systems which include metadata, information retrieval, data acquisition and gathering as well as dissemination through push and pull technologies;
- middleware;
- multi-dimensional analysis; and
- data mining tools.

In the year 2002 many of the technologies listed above have become so much a part of the daily life that they are almost taken for granted. Smith (1998, p 9) identified 'spin-offs-from-university-research-programme' technologies that are perhaps less known but which should also become increasingly more essential. Some examples are:

- Collaborative filtering: facilitates the sharing of information between people with similar interests.
- Semantic modelling: charts the relationship between various concepts and enables users to access a range of information with the entry of search terms.
- Passive group memory: eases the process of placing information that is produced by an employee in a place where it can be accessed by the enterprise.
- Content extraction: analyses text and boils it down to a core meaning for use in summaries or as answers to questions.

With such an array of technologies available, it is not surprizing that executives find it difficult to know what to implement. Hackett (2000, p 21) advises that the technology should fit the work, not vice versa. Technology does not eliminate the need for people to meet. Workers will continue to need face-to-face contact to build trust and freely interact in problem solving. Old methods, such as teamwork, process management and benchmarking, are more effective to create and build knowledge than is technology. Balance between technology and personal contact is perhaps the issue for, as Lank (1997, p 410) cautions, the opposite of *technocratic utopianism, technophobia*, can be a significant obstruction in shifting to a knowledge-based organization.

It is not only identifying the correct technology that is problematic. With all the benefits provided through the proliferation of Internet and Intranet technologies, as well as other advanced information sources, many employees are drowning in a sea of information. If employees are struggling to locate the information that is applicable to their jobs, too much information can become an even bigger barrier in business than not having direct access (Smith, 1998, p 8). Quintas, Lefrere and Jones (1997, p 388) assure the reader that the metaphor of the computer as a filing cabinet, text processing or calculating tool is being replaced with the metaphor of the computer as a communications device - a window, a channel, or perhaps a lens that may be focused, through which to access information. Information and communication technologies are therefore seen to support *the emergence of new*

organizational forms and working patterns that are in many ways transforming the ways in which organizations function, and especially the ways in which they interact and communicate.

With the spread of technology infrastructures and the move to globalisation, the roles of headquarters and common workspace have been greatly reduced as the repositories of knowledge. Cross-functional teams and cross-organizational projects are an increasing part of how work gets done. Fortunately, today's workers are more technology-literate than any previous generation. There are now powerful information technology tools for sharing knowledge on a global scale. However, the success of a knowledge-based organization will always depend on the willingness of its people to share their knowledge and expertise (Lank, 1997, p 406). Because the way people work has and is continuously changing, ever-present and portable communications technology has become a necessity rather than a 'nice-to-have'. Staff should be able to communicate anytime, almost anywhere, and at a relatively low cost. Work groups are entitled to capture communication in simple-to-use but sophisticated databases. The information collected should be available for data mining so the right people can use it when they need it (Hackett, 2000, p 13). The technology that allows people to share knowledge has of course also put more information into the customer's head. Companies can no longer compete primarily on price. Real growth and real profit are coming from deepening customer loyalty. One way to ensure that loyalty is by providing connectivity and reliable information to the customer when he needs it. If the customer is also able to contribute to the system it makes the system so much more valuable!

As a last comment on the role of technology in developing structural capital, it is useful to take note of Smith's (1998, p 9) categorization of the way in which organizations use technology for the management of their knowledge. He identified three types of organizations:

- Type A companies, commonly known as the innovative organizations that view IT as the basis for success, rely on tacit knowledge as the basis for new idea generation. Type A enterprises will justify knowledge management by emphasizing the importance of sharing and reusing information and the relation of the information use to reducing cycle times.
- Type B companies seek efficiency and effectiveness via investment in IT. Therefore, these enterprises will justify knowledge management through the realization that competitive advantage comes by way of knowledge reuse.
- Type C companies invest in IT largely to reduce risk and costs. They will balk at implementing a knowledge management process regardless of the technology involved. The likeliest approach for a Type C enterprise is to use external content providers (they outsource knowledge management).

It is believed that the Type B sentiments are relevant and applicable to this study. Arora's (2002, p 248) statement that *a good technology infrastructure is not a sufficient condition for success of knowledge management activities but a necessary condition for it*, confirms this opinion. Technology is therefore definitely viewed as an enabler rather than the core of the business. No single technology is seen as the

ultimate answer to all challenges. It is rather the skilful combination of the appropriate technology from all that is available that makes most sense. In sections 5.4.1.2 on page 5.24 and 5.4.3.2 on page 5.41 more attention is given to the way in which especially web technology was used in conjunction with workflow and groupware. In this regard it is perhaps fair to say that it is a common belief that the key to the success of developing structural capital is to make both the individual and the organization win. Web technology provides the means to democratise the workplace and the marketplace. It has the potential to provide visibility for an individual and the artefacts of their work and their knowledge, as well as the accessibility to the knowledge they need to do their jobs without having to go through traditional hierarchies. The Web has become the place of business. It is the place for people to connect, communicate, relate, share, work, and learn (Hackett, 2000, p 56).

Section 3.4.2 was utilized to address the development of structural capital. A variety of methods through which knowledge could be collected and structured so that it could be made available to the full staff complement were referred to and, lastly, the role of technology in providing the infrastructure to capture knowledge was discussed. The next section will be used to discuss the development of customer capital in more detail.

3.4.3 Developing Customer Capital

Ramosedi (2000, p 79) established that the key issues in managing customer capital are the following:

- knowledge sharing should be part of the employee's performance evaluation;
- informal forums where employees can share ideas need to be implemented;
- rewards should be aligned with the knowledge sharing practices;
- senior management should be involved in sharing knowledge; and
- staff members should be encouraged to record experiences while implementing projects.

These pre-requisites are much the same as those needed for the development of human and structural capital. The difference therefore lies in the methods used to develop this very important 'capital'. The section below is used to discuss some of these methods.

Methods through which to develop customer capital

The methods to develop customer capital were identified as branding, customer relationship management, marketing, which of course includes 'e' marketing, service, and supplier relationship management. More detail on each of these is provided below.

(a) Branding

Knowing that branding has definite value, it is necessary to understand how to develop a brand. A number of different approaches to branding were established. Rowley (1997, p 245) identified five of these:

Table 3.3: Approaches to branding

Approach	Description	South African Examples
Individual branding	Each product has its own identity	Omo Castle Lager
Family branding	A family of products use the same brand name	Koo Ouma Cadbury's
Company name branding	Branding happens on the basis or reliability of the company's name	Sasol De Beers Nederburg
Supermarket or retailer own label products	The manufacturer is not identified. The retailer accepts responsibility for the quality and often rivals known brands.	Pick 'n Pay No Name Woolies Babes
Generic brands	This is an extension of own label products. No brand is clearly visible and differentiation is based on price.	Asprin Mealie meal

Very often the brand name of one product is used to launch a second onto the market. This is known as either brand extension (for example when well known sweets also become ice creams) or brand licensing (when a manufacturer of stationery may use the name of a new film to promote and sell his products).

For the purpose of this study, Rowley's list should be augmented with an industry or 'knowledge worker group' branding approach. Lawyers, doctors and accountants are associated with certain characteristics, both positive and negative. Similarly, there are definite established connotations associated with libraries and information services. As far as information services are concerned, this 'brand name' can be associated with both image and identity perception problems. There is no doubt that this needs to be addressed but it is not the intention to do so within this study. It too should be researched further in a separate study.

If the purpose of a brand is to make it easy for the customer to identify a product or service, one of the biggest challenges for the CSIR's information services was to decide which strategy to follow when branding the service inside the CSIR. Within the CSIRIS context of this research, it was also important to look at the role supplier brands (for example Sabinet Online, ScienceDirect and EbscoHost) could play in

developing the services' image. This is not discussed in much detail, as the impact on the IMPS section specifically was relatively inconspicuous.

Branding for the external market, did not present any problem as the CSIR's approach to branding is monolithic. This makes matters such as chosing logos and deciding on image an easy task. The associated responsibilities when using the company brand, as well as ensuring that all promotional material adheres to the set standards, then became the biggest challenges.

(b) Customer relationship management

One could ask why customer relationship building has become as important as it has. The answer most probably lies in the change in the nature of business in general. Harari (1999, p 122) quotes several authors who, logical as it may seem, deliberately remind the reader that a business is only in business because customers have a need for their products or services. Therefore, everything possible needs to be done to get and keep customers. Fortunately, pinpointing actual behaviour, in contrast to reported behaviour, has become very easy and cost effective by utilizing technology effectively. This is a major benefit as there can be an enormous disparity between the information given verbally by the client and his actual behaviour. Rather than asking customers about their behaviour when using your products and services, information should be gathered from information systems where and whenever possible. For example, rather than asking a person how long he visited what country the last time he travelled overseas, his ticket purchase record could be utilized to gather the same information (Postma, 1999, p 10). Caution is required, however, as it is anticipated that increasingly more pressure will come from consumers regarding their privacy and the use of their personal information. This anticipation is supported by preliminary research done by KPMG (2000, p 3).

Gathering information from systems may lead to the view that customer relationship management is about putting another software application into place. Fortunately the experience with knowledge management software and applying common sense shows that relationships are about people and machines just make managing that relationship easier; they are not the crux of the relationship. Although software and particularly database software has a very important role in effective customer relationship management, there is more to it than using efficient technology. Customer relationship management is about building long term relationships between people as individuals. It is about ensuring that a customer stays a customer and it is about increasing customer share (in contrast to increasing market share). An example when this is not the case is when efforts to use ex-employees for building marketing relationships lose value because alumni programmes are delegated to an administrative function. The secret is that a data repository only improves an individuals' capacity to act when the database is made to be highly interactive and because it holds meaning for the individual using its content (Sveiby, 2000a).

Therefore, as was mentioned, it is in the first instance important to remember about customers that one is dealing with humans and not with companies or machines.

Customers cannot be owned and neither should they be flooded with attention the one instant and neglected the next. They want to be seen as individuals and their individual needs have to be addressed in a personalized fashion. Collecting and maintaining intellectual effort so that it can be packaged to meet the needs of the whole range of clients and ensuring that staff members have the capabilities and motivation to package 'market units of one' for the customers is therefore the crux of current business. The customer needs to experience that his service or 'package' is unique but that does not necessarily require that the individual components are also unique. This flexibility allows not only for internal efficiencies. It also ensures that the client feels appreciated and understood. Put differently, the most important aspect of building a positive relationship with a customer is that the focus of your energy goes into understanding how the customer's needs (both known and unknown to him) can be satisfied. The focus of the energy is not on improving sales targets. To be able to be of real use to the customer, it is essential that one becomes 'obsessed' with the customer (again - rather than obsessing about the profit). This means that the service company understands the customers' needs, wants, experiences, challenges and businesses. Harari (1999, p 113) expresses the intention clearly *it is necessary to 'hang out' with them, to find out what makes them 'tick' – not only today but also in the future*.

From the research reported by Harari (1999, pp 111–112), it appears that the trend for a knowledge intensive 'service' company is to have a selected number of anchor clients around whom the company is able to 'wrap' itself. In effect this allows the 'service' company to structure itself in terms of 'client' companies and not in terms of internal divisions or departments. Each of the client teams then ensure that they work very closely with the client to ensure efficiencies and continuous development for the client. Theoretically, this makes sense but in practice one may find that the 'service' company may have duplications in effort (where two members of staff do exactly the same work without them knowing about it) as well as productivity ebbs and flows (times that are extremely busy and lull times). If, however, the supporting structural capital is functioning to perfection, many of the associated problems could be managed.

Anchor clients do not appear from nowhere. Customer loyalty only comes after the client has proof that his unique and individual needs are met and that the products and services he is paying for truly add value to his own. For this to happen the 'service' company should look at its products and services not as individual components but as a continuous effort to add value for the customer. To retain customer loyalty is even more difficult. It is only when the customer feels that he is totally satisfied by what he is receiving that the customer will stay loyal. Loyalty also develops when it is easy for the 'client' company to make a lifetime commitment to the service company. However, as soon as there is the slightest drop in total satisfaction, loyalty can drop enormously (Jones and Sasser, 1995, p 92). The effective use of customer satisfaction measures and the improvements made possible by the analysis and use of customer satisfaction survey information have therefore become indispensable for survival. Although it is reactive in nature, making improvements after receiving feedback from customers has to happen or gathering customer satisfaction information is a futile exercise.

More pro-active is rewarding customers for their loyalty. Reward schemes conjure up images of bribery and corruption. That is not what rewarding one's customers means. Appropriate rewards both ensure repeat business and are a reliable way through which a company can collect information to ensure client satisfaction. Examples of such 'rewards' are the frequent flyer programmes utilized by most airways and bonus points that accumulate into discounts at shops that sell anything from books to clothes. Naturally the first one to think of a reward scheme is the one who reaps most benefit from it, especially when the competitors are slow to respond. Information services could use 'first access to trial products and services' as a useful reward. Similarly the use of selective dissemination of information techniques could assist in pushing appropriate information of a more personal nature to selected clients.

It is logical that when all competitors use the same reward system, buying patterns should return to normal. It could also be expected that, as soon as the reward system, instead of the customer, becomes the focus point, fraud may be prevalent. A further warning comes from KPMG (2000, p 9). When reward schemes are used as a gimmick to quickly gain additional clients, customers often become disillusioned and move to another supplier. Mishaps in the South African banking sector serve as a prime example of this trend. 'Word-of-mouth' is still the most effective way of marketing and it is therefore recommended that a company identifies its most influential customer base and that it then finds incentives to reward those customers for their loyalty.

Rewarding 'good' behaviour is not the only positive action to take. Jones and Sasser (1995, p 98) established that the most important strategy to ensure customer loyalty is linked to the company's ability to react when something goes wrong. The strategy includes a well-designed support service to guide the customer when there is a need for it as well as efficient recovery processes to ensure that the product or service gets back and stays on track. In conjunction with this, a more difficult issue to deal with is when customers become detrimental to business. These customers are typically the ones that inconvenience other customers, who are unable to understand reason and who inevitably waste time that could be spent more productively in serving loyal customers. The trick is to know when to stop trying to satisfy their needs and allow them to move on to a next supplier. It is in all probability a good rule of thumb to make that decision when the customer's behaviour and demands have (or will have) a detrimental effect on loyal customers.

Reward, recovery and the intention to place the customer in the centre of one's world is unfortunately not sufficient on their own. Value for money requires a quality standard that is congruent with the expectations of the customer. In the words of Harari (1999, p 120) *Quality is not merely meeting specs and delivering error-free product – quality encompasses the individual customer's entire experience with you and your organization*. It is clear that the old mass-market style of dealing with customers is no longer acceptable. Hines (2000, p 2-15) equates the development in the relationship with customers to the development in education. To illustrate this, Hines relates that in the old school with an industrial age approach teachers were

active learners while learners were passive. In the new school, that model is almost reversed. In much the same way, customers, employees and employers will all become active and more importantly interactive learners. With the speed of development continuously gaining momentum, the company is confronted almost daily by situations where the client needs to be part of the process. The trick is not to see this as a threat but to effectively use the energy from the process and to capitalize from one situation in order to have a head start for the next. Fortunately Stewart (1997, pp 155-163) identified the following six rules of thumb to assist in these circumstances:

1. Innovate with your customers. Do not work in isolation. This ensures that the product has an immediate market and the customer shares responsibility and risk along the way.
2. Empower your customers. Do not hide data from them. Give them a chance to provide feedback before you make costly mistakes.
3. Focus on customers as individuals. This rule is linked to the strategy to gain share-of-customer rather than share-of-market. To rather have a select few reliable large customers than many small volume customers.
4. Share the winnings with your customers. This very often leads to a partnership rather than a straightforward buying/selling transactional relationship.
5. Learn your customer's business and teach him/her yours. The better you know each other's businesses the better it is for both of you in terms of cross selling as well as on selling. To do that it is necessary to provide feedback as well as input in terms of R&D, manufacturing, quality, logistics, accounting, as well as planning.
6. Become indispensable. If you provide a vital service to a customer, it makes it harder for him to switch to another supplier. Also intra-company trade is much less pricing sensitive than arm's length trade between unrelated companies.

Utilizing these rules of thumb does not imply that each individual employee 'gushes' over each customer. In research done by KPMG (2000, p 3), it was established that two thirds of the clients interviewed preferred to have a single contact person in the supplier company. Just more than 70 % of the respondents reported intense irritation at having to repeat personal details every time they make contact with the supplier. Interestingly enough, the clients who express annoyance most vehemently also did not want their personal detail retained and the recommendation from KPMG is that suppliers need to collect sufficient information to personalise service but at the same time they need to avoid antagonising their clients. In contrast to what many a customer relationship management author has to say, Brown (2001, p 82), in his fascinating article, makes the following statement *Consumers are sick of being pandered to. They yearn to be teased, tantalized, and tortured by marketers and their wares. Just like in the old days.* He is of the opinion that being mindlessly devoted to the customer leads to me-too products, copycat advertising campaigns and marketplace stagnation. Brown is not frivolous and neither does he negate the value of customer relationship management information. He has, in all probability,

been able to embed the very essence of what modern marketing practice should be about. This is discussed in more detail in the section on marketing which follows.

In conclusion, just because customer relationship management has become a catch- or jargon phrase, it does not mean that customers were never looked after before. (Public relations have been part of marketing practice for as long as one may care to remember.) Previously, however, it was done as and when necessary. Today it is or at least should be an indispensable activity, which ensures constant contact with, and feedback from the client.

(c) Marketing

Ansoff's matrix to depict the product/market expansion relationship is well known (Kotler, 1997, p 79) and it most probably formed the basis of more marketing strategies than one would care to know.

Fig 3.4: Ansoff's marketing strategy model

		Products and Services	
		Current	Future
Customers	Current	Market penetration strategy	Product development strategy
	Future	Market development strategy	Diversification strategy

It may be asked whether this model is still valid within the customer capital development context where it is preferable to choose customers rather than allow them to choose you. No reason to doubt its applicability could be found. Due to the change in the relationship with the customer it does appear, however, that much activity is set to take place in the market penetration and product development quadrants. When additional income needs to be generated, as is discussed in more detail in section 5.4.3.3 on page 5.48, the market development strategy is the most obvious to follow. Only in exceptional cases would one want to pursue the diversification strategy.

In terms of putting strategy into action, current thinking has it that the 'marketing mix' consists of the following seven 'P's: products, price, place, promotion, process, physical evidence, and people. The essence of marketing remains, however, human behaviour. It all depends on the communication of information – which, according to Postma (1999, p xi), will replace the traditional view of product, price, place and promotion. He warns that two big mistakes often made is to think that human tendencies will be changed by new developments and to forget that old forms will co-exist with new forms (Postma, 1999, p 100). This does not mean that mass marketing is dead but, as was mentioned earlier, customers resist unsolicited contact

from companies that are not regular suppliers (KPMG, 2000, p 1; Postma, 1999, p 4). Technology has made it possible for a client to respond to the supplier and to make his wishes, preferences and needs known. For example, Amazon.com is able to identify specific interests and inform customers of new publications relating only to those interests rather than doing blanket promotion every time new publications hit the shelf. It is possible to say that *in the new marketing era bombardment is replaced with dialogue* (Postma, 1999, pp 5-6). The new marketing era also requires that:

- Marketing management is done in conjunction with information held in marketing databases rather than with information gathered doing market research or generic models.
- Using the media to raise awareness rather than doing generic advertising.
- Personal client relationships are managed. This is in contrast to managing target groups.

From the literature consulted it appears that collecting information about customers in powerful databases and linking personal data to products and services should by this stage be seen as an entry level requirement. However, not all authors are equally enthusiastic about using information collected for customer relationship building when doing marketing. Brown (2001, p 84) claims that consumers miss the days when transactions were just that and not a lifetime commitment to a valued relationship. He claims that 'customer-relationship-management-inspired' tactics should be seen as something similar to stalking. One could therefore easily make the mistake of thinking that Brown (2001, pp 82-84) does not take cognisance of the value of customer relationship management information. It is however in all probability more correct to say that he goes beyond just using a database to market to consumers. To make it possible to use his principles of retro-marketing one would need to collect and analyse masses of information (mainly through automated systems) and then apply intellect (human capital) to go at least one step further. The principles Brown advocates are exclusivity, secrecy, amplification, entertainment and 'tricksterism'. Table 3.4 below provides more detail as to what is meant by each of these:

Table 3.4: The principles of retromarketing (Brown, 2001, pp 84-88)

Principle	Clarification	Examples
Exclusivity	Create the illusion that there isn't enough for everyone. Only a select few can afford/appreciate the item.	De Beers diamonds Harley Davidson Warner's Beanie Babies
Secrecy	Drip feed selected information to the market and promise much, much more but not sufficient stock for all.	Harry Potter and the goblet of fire
Amplify	Ensuring that the item which is 'hot' (or 'cool') is talked about and that there is much talking about the talking (speculation). Surprise or unexpected marketing campaigns also amplify previous efforts.	Dean Kamen's 'Ginger' invention

Principle	Clarification	Examples
Entertain	Marketing must divert. It must engage. It must amuse. It is about glitz and glamour. It's mischievous and mysterious. It is fun.	The treasure hunt linked to the remake of *Planet of the Apes* The prize money linked to the release of *Swordfish*
Tricksterism	This is not equal to downright cheating. It is about charlatanry with panache, exaggeration, and chutzpah to make the unacceptable acceptable.	Tango's launch of a non-carbonated version of their fruit juice

Brown (2001, p 88) does offer an acronym to remember his principles by. To find the acronym he insists that the reader takes the first letter of each of his principles and then writes these letters in reverse order. The acronym (TEASE) typifies what he sees as the essence of modern marketing practice. This view is perhaps controversial to those who practice marketing as a serious business. The challenge was to take marketing seriously but to also ensure that activities relating to marketing were kept from being stale, repetitive exercises.

Obviously the rapid changes in technology need to be taken into consideration when planning any marketing activities. Electronic and Internet marketing form a natural addition to usual activities. It is however more complicated than merely transferring some activities to a new medium. Electronic marketing should rather be seen as an extension to other activities and, as such, some of the peculiarities of this medium are discussed in more detail below.

(d) Electronic and Internet marketing

Resnick and Taylor (1994, pp 145-146) reported that the Internet's high-income demographics, its low cost and its huge size and fast growth will make the Internet irresistible to any marketer. He anticipated that it would be much more of a mainstream medium than what it was then. He felt that it was therefore safe to bet that there would be continued commercial activity on the Internet that entrepreneurs would start making serious money in cyberspace and that larger businesses would become more interested and more involved in the network. Since then many .com directors did make large sums of money but then these companies as a rule went bankrupt. As a result people, in general, are more cautious about business on the Internet. However, to take advantage of the opportunities provided by the new technology one needs to make sure that you are part of the community which is at present taking the Internet for granted because ignoring electronic and Internet marketing would be a grave mistake.

Electronic marketing does not mean that everything previously known about marketing is forgotten. The acquired knowledge just needs to be applied slightly differently. Electronic media performs the same function as the traditional trade shows with the associated advantage of 24 hour per day, permanent exhibition facilities (Postma, 1999, p 8). It is useful to remember that on the Internet the generic rules of sales and marketing are turned upside down. Not only does junk mail fall on deaf ears, but also it often drives away the customers it was meant to

attract (Resnick and Taylor, 1994, p 111). Furthermore, web marketing and web selling is not the same thing. Web marketing refers to a strategy to use the Internet to market the products and services one has on offer. There is no limitation on the combinations of products or set prices. Web selling on the other hand refers to the typical Amazon.com scenario – where the product range is set and prices are linked to all products. Lewis and Lewis (1997, p 29) suggest that it is established which one of the two needs to be done prior to attempting to do either.

Blitzing the Internet with junk mail is not the only mistake marketers can make. Resnick and Taylor's (1994, pp 112 and 121-122) findings may be a bit dated but they still are very relevant. Some of the mistakes he identified were the following:

- Lumping all Internet users together: although many are highly educated technological professionals there are also college students, senior citizens, sports fans and just about any other socio-demographic grouping. This links back to the one to one relationship craved by the customer.
- Tacking up a press release and walking away: you need to earn credibility - therefore join a discussion group and actively participate. Presence not advertising is the key that will unlock the commercial opportunities on the Internet. Here again it serves to remember that loyalty does not come automatically and if you alienate people in one forum by violating a guideline, others on the service are likely to hear about it.
- Doling out information stingily: to get something from the Internet you need to give away something, preferably for free.
- Ignoring the Internet culture: time invested on reading about the Internet and browsing through messages posted on discussion groups do not only teach you about working with the community, it may also make you friends and win you allies.
- Thinking that the Internet is the only place to market. For the time being successful marketing campaigns will still require that more traditional formats are used to pull customers to the Internet.
- Believing that all customers have access to the Internet. It is anticipated that it will take quite a while before all South Africans, even all the young upward professional people, will use the Internet away from the office.
- It is easy to market via the Internet. By contrast, on the Internet, users jealously guard what they regard as their last bastion of non-commercial, non-advertising computer space. It is useful to remember that once you alienate users on the Internet, it can be difficult to return to their good graces for Internet users have long memories.

Once Internet marketing is identified as the way to go, it is useful to know more about the market. An analysis of any market begins with its size and demographics. Unfortunately, just as there was no real scientific way to track the number of individuals and companies that join the Internet at the time when Resnick and Taylor reported on this in 1994, there still is no known tool that provides accurate, reliable information. The Internet is, however, a tremendous tool for achieving market equity with larger corporations and even for breaking into expensive, but potentially lucrative, foreign markets: markets traditionally only reached through personal visits,

attendance at international trade shows, or expensive worldwide advertising campaigns (Resnick and Taylor, 1994, p 118). If demographic information is necessary, it is easy to launch a competition to gather the information. It provides an opportunity to be innovative. It is possible to grab attention by either providing a very 'different prize' or making it sound inviting.

As was established earlier, there is very little use and need to try and organize Internet customers into groupings. Internet users have already done so themselves. Lewis and Lewis (1997, pp 26-28) identified the following categories of web surfers:

- Directed information seekers: they are looking for particular pieces of information.
- Undirected information seekers: people just hungry for information.
- Bargain hunters: looking for freebies and discounts.
- Entertainment seekers: looking for ways to avoid boredom.
- Directed buyers: make sure that your ordering process and backroom operations are functioning smoothly.

The customers grouping that Information Services needs to target mostly relate to direct information seekers. Other groupings can, however, not be ignored for it is amongst these that one is able to pick up the tricks and tips that ensure that customers return to a specific web service. Of course – before the customers will return to the service they first need to be made aware of the existence of the service. There are a number of ways in which to reach these Internet users effectively, directly and inexpensively. Mailing lists and discussion groups that range in variety from Star Trek to medieval literature are as a rule freely available. When looking at the Internet for marketing activities it is useful to remember that the Internet is in a state of flux. What works today will in all probability not work tomorrow. It was however possible, from the work of Resnick and Taylor (1994, pp 125-140) and Lewis and Lewis (1997, pp 73-81), to identify the following methods to use to reach these groups:

- direct e-mail shots to associations or established groups;
- press release postings on ListServes;
- electronic billboards;
- relationship marketing: joining a discussion group where your company can provide the answers to some of the questions, boosting your visibility;
- display advertising: colourful virtual shopping malls;
- cross promotion of web sites: mutual referrals by partners;
- registering with major web indexes and search engines;
- getting yourself mentioned: getting yourself into the publications that your customers read;
- promoting your web presence everywhere: business cards, stationary, print advertisements, corporate gifts and even, if you can afford it television advertisements;
- keeping the company site name as simple as is possible: mnemonic is even better;
- stressing the benefit of the electronic service with every chance you get; and

- always exploiting the interactivity of the medium: gathering customer information whenever possible - using sophisticated techniques is acceptable but there is nothing wrong with also providing the client with the option to ask for and to be given more information.

Again, as is the case with non-electronic marketing, further advice is that time should be spent getting to know the target market or group. This means exploring the current conversations, paying particular attention to what potential customers want, how they like to interact, and what level of seriousness, professionalism or information is most apt. It is important to remember that the first rule of Internet marketing is to keep the message short. Traditional advertising copy with its generous helpings of style, metaphor and image is likely to fall flat. Resnick and Taylor (1994, p 143) advise that it is much better to place a message with commentary on industry trends, to create an electronic newsletter or to enter into dialogue with the forum about surrounding issues than to launch a formal advertising campaign on the Internet.

The main advantages of using the Internet for marketing is obviously its community of upscale, well educated, and likely to be more highly paid and to be early technology adaptor members. More importantly, though, other advantages for the marketer are:

- There is greater participation by the viewer, which provides for immediate feedback, testing and response.
- The opportunity to present more information, one is not limited by the format or any printing costs. Both in-depth and comparative information can be posted.
- Timeliness - almost up to the minute. As soon as information becomes available you are able to make it available to your customers.
- On the Internet no one knows how large your company is, so one-person shops can create an advertising and marketing presence in cyberspace that rivals the presence of much larger competitors. If you want to compete merely make your presence known and offer customers an irresistible deal.
- Lower costs. There are considerable savings in printing and publishing costs.
- Relationship building - it is easy to both talk to and learn from customers.
- Audience sizing becomes relatively easy because technology allows one to establish how many people visited the web site.
- Convenience because of the 24-hour availability.
- It is possible to make quick adjustment to market conditions, for example, adding new products and changing prices.

For the customers some of the obvious advantages include the following:

- Fewer hassles: they do not have to maintain a collection of information, it is always there and available whenever necessary.
- They do not have to deal with persuasion and emotional factors when doing purchase research.
- Privacy: the Internet almost guarantees anonymity.

Because of the major advantages of electronic marketing specifically and marketing in general, it is tempting to believe that it is enough to engage and retain customers. Unfortunately this is still not the full picture. Service levels, which are discussed in some detail below, hold the real key to what it is that customers return time and again.

(e) Service

Service is difficult to describe in tangible physical terms. It is however possible to use tangibles such as facial expression, tidy office space and professional image to enhance perceptions about service. Furthermore, service is about being knowledgeable (getting facts straight), reliable (delivering what is promised), responsive (sticking to deadlines), reassuring (displaying confidence in your products and your ability to provide the service), and empathetic (not sympathetic). Harari (1999, p 120) warns that the days are gone when any individual or company could base their business on the customer's ignorance. In today's connected world the client knows what he is entitled to and where to find the service he needs if he is not satisfied with what he is getting. Quality of service is not merely delivering to the set specifications. *Quality encompasses the individual's entire experience with you and your organization*. This is in line with Stewart's (1997, p 144) observation that customers can no longer be treated as adversaries with 'take it or leave it' arrogance.

The natural reaction to Stewart's statement is that it does not apply to anyone known any more. However, it is exactly what Anderson and Zemke (1991, p 36) identified as 10 'controllable sins' when it comes to providing excellent service. Each of these 'sins' is epitomized by the attitude associated with the following statements:

1. 'I don't know'. Here they suggest that one admits to not knowing but 'I'll find out and let you know' should form part of the vocabulary.
2. 'I don't care'. Customers want to know that you care about them and their needs or they will find the service somewhere else.
3. 'I can't be bothered'. When a customer is ignored due to the fact that personal issues take precedence, he will also abscond and find better service elsewhere.
4. 'I don't like you'. Customers are sensitive to this attitude and will remember it for all the wrong reasons when they depart.
5. 'I know it all'. Customers expect you to listen to what their needs are. Jumping to conclusions before the need is analysed may appear to save time but it often leaves the customer feeling he was 'bludgeoned into submission'.
6. 'You don't know anything'. Belittling perceptions and incorrect facts may make you feel as if you are in control but customers remember the feeling when they walk through the doors of a different service provider.
7. 'We don't want your kind here'. Prejudices show. All customers have the right to be treated with courtesy and respect.

8. 'Don't come back'. The whole purpose of business is to encourage customers to do repeat business. Thanking customers for patronage and loyalty allows relationships to grow and mature.
9. 'I'm right and you're wrong'. Customers are not always right but it usually does not cost anything to give them the benefit of the doubt.
10. 'Hurry up and wait'. When you respect your customer's time they more often than not reciprocate.

Service is therefore not about merely giving the customer what you perceive his requirement is. It is very often about the attitude or perceived attitude that is linked to service delivery.

Unfortunately, in service industries, it is not only the customer that is affected by the service provider's attitude. In information services the relationship with suppliers plays a crucial role in effective service delivery. This relationship is discussed in some detail below.

(f) Supplier relationship management

The role of supplier relationships is changing rapidly within the L&IS environment. However, no published evidence could be found that this relationship is specifically being addressed. In essence, the reverse of customer relationship management is required to make sure that information service clients are able to gain access to, for example, full text articles from their desktops. The responsibility to ensure that products and services are developed and enhanced to serve the needs expressed by information customers is of course central in managing this relationship. It is also about developing the necessary knowledge and skills to do effective and realistic negotiations on behalf of these information service customers. It is further about having sound knowledge of license agreements and copyright legislation. Lastly, it is about developing the ability to develop a relationship that leads to win-win solutions where both suppliers and customers gain fairly from the negotiated contract. It is suspected that this specific aspect will become increasingly important and it therefore warrants investigation separate from what is the intention of this research.

It is also anticipated that the role of being an expert supply chain selection agent will become increasingly important in terms of the way in which the role of information services will be developed within the CSIR. This is depicted in the integrated services model (see Figure 5.2 on page 5.7), which was adopted by the CSIRIS group. From the model it is clear that one of the most important value contributions, to the CSIR is to make reliable information supply chain selection recommendations to research staff members. Part of the challenge is to ensure that researchers are aware that information staff members have the required competency and skills in making these recommendations as well as in negotiating suitable contracts.

3.5 Summary

The focus of this chapter was on the development of the following three components of intellectual capital:

- human capital;
- structural capital; and
- customer capital.

The fact that human, structural and customer capital are intertwined and work together was discussed in detail. It was established that it is not enough to develop any one of these separately. To truly gain leverage from its knowledge base, a company needs to realise that intellectual capital development requires a constant interplay amongst human, structural and customer capital. For example, isolated stocks of knowledge that reside only in the minds of some employees (because it is never codified into the organization's structural capital) will not have a positive effect on the customer's opinion and not influence future business performance.

It is a mistake to think that all knowledge can be captured and stored in some form of structural capital. It is more correct to say that the most precious knowledge within an organization often cannot be passed on. The best that can be done is to create an environment in which intellectual capital can prosper. The environment necessary to develop intellectual capital as well as the stages to expect during the development of intellectual capital were discussed.

Most of this chapter was utilized to investigate the

- actions that need to be taken to develop human capital;
- methods to build structural capital; and
- principles of engaging in customer capital development.

Much of what was investigated will be developed or implemented during the implementation and measuring phases of this study. Several items that would not really be of use, such as in-depth competitor analysis, were also identified as impractical for implementation. During the next phase of this study, the measuring of intellectual capital and the implementability of those measurements within the given environment will be dealt with in more detail.