CHAPTER 4: ALIGNMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY STRATEGY WITH THE CORPORATE STRATEGY OF AN ENTERPRISE

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SYNOPSIS

Traditional strategic management practice is based on the premise that IT strategy follows corporate strategy. Innovative technological developments within the computer industry has given rise to a situation where ICT is now shaping business practice and the traditional premise is increasingly being questioned by management and technologists. Within the management literature there are few models for integrating business and technology at a strategic level. Clarity as to what is taking place in practice is consequently considered to be important so that practice can inform theory.

It is argued that ICT, as an important strategic resource, has a fundamental role to play in resolving contemporary strategic management issues and the gap that exists between ICT and business executives therefore needs to be bridged. The need therefore to articulate the interconnection between strategic management and IT with a set of concepts, analytical frameworks and normative prescriptions is deemed to be imperative. Seen within this context the objective of this chapter is to explore the linkage that exists between business systems and ICT, from a strategic management perspective, and present a model that may be used to integrate the two.
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4.1 INTRODUCTION

“The major management challenge lies in the development of a dynamic alignment between the business strategic context and the IT strategic context. While this may be explicitly understood there is a glaring lack of frameworks to conceptualise the nature of alignment in operational terms.”

Venkatraman 1991:154

The literature relating to strategic management showed a phenomenal growth in the latter part of the previous millennium, as both researchers and executives attempted to find a more effective means for dealing with a dramatically changing business environment. Armistead et al. (1999:96) and Feurer & Chaharbaghi (1995:11) acknowledge the existence of a vast strategic management literature base and simultaneously stress that despite the extensive research that has taken place no generally accepted definition or view of the concept has come into existence. Ruocco & Proctor (1994:24) in researching contemporary strategic management practice similarly conclude that no universally accepted definition of the concept “strategy” has emerged. As a result a wide range of conceptual strategic management models have been developed, each tending to reflect the strategic emphasis of the research study in
question and the researcher's particular paradigm and understanding of the concept. Research undertaken at the Massachusetts Institute of Technology revealed that ICT, as an important strategic resource, has a fundamental role to play in resolving contemporary strategic management issues (Macdonald 1994:17). In view of the fundamental role played by ICT as a strategic determinant one would have expected it to feature quite prominently within the various strategic management models that have been developed, yet as may be seen from the introductory statement by Venkatraman (1991:154) this appears to not be the case. Venkatraman (1991:124), in terms of his research findings, explicitly asserts that “we certainly have not yet reached the point of clearly articulating the interconnection between strategic management and IT - with a finite set of concepts, analytical frameworks and normative prescriptions”. Martin (1995:55-56) in a similar sense notes that “an amazing number of management books - and many executives - avoid the issues of technology” and this according to the researcher “makes as much sense as a skyscraper architect not knowing about materials and engineering”. A possible explanation may be found in the divide that separates business executives and ICT specialists. It is, however, deemed imperative that a model or framework is developed that reflects the interdependences that exist between corporate and ICT strategy (Henderson & Venkatraman 1999:472; Luftman et al. 1993:198). It is an imperative that is reflected in the objectives formulated for this study.

The linkage and interaction between ICT innovation and business process renewal can in theory be conceptualised as constituting a converging process of strategic change management. It is based on the fundamental premise that an organisation’s ability to gain a competitive advantage in a highly competitive global context, is directly related to management’s ability to exploit the advantages derived from aligning business systems and technology infrastructures in implementing a well thought through corporate strategy. Porter & Millar (1998:96) argue that the point of departure in identifying possible ways that ICT might establish a competitive advantage is to assume that it will
in effect have a likely impact on every activity of the value chain. By implication the strategic alignment of ICT and business processes therefore assumes strategic significance.

In researching business practice Battles et al. (1996:116) note that often the typical IT strategic plan is only “loosely connected” to the business strategy and as a consequence the IT strategic focus appears to be 20% on the “I” and 80% on the “T”, whereas well-run enterprises would be expected to integrate their IT strategy within the overall business strategy.

Cross (2000:36) adopts a slightly different perspective on the issue by asserting that ICT is forcing managers to rethink and reshape their business strategies. Martin (1995:56) similarly argues that technology is the driver of corporate strategic change and is a key reason for corporate restructuring. Walton & Gupta (1999:372) are less concerned about which philosophy of strategic change management an enterprise decides to embrace, provided that it takes into consideration the impact of ICT as a significant agent of change. In reality it could well be argued that ICT strategy and business strategy are two sides of the same coin and that the challenge is one of achieving an alignment between the two in managing strategic change. Macdonald (1994:17) concurs that successful transformation initiatives depend on the “alignment of strategy, structure, processes and technology”.

The realities of business practice appear to reflect a rather disconcerting picture. Weil (1998:Internet), in reporting on a research study undertaken by Arthur Anderson, points out that the research findings indicate that while 84% of the executives interviewed agreed that IT was critical to their business operations, only 13% believed that the IT strategy formed an inherent part of the corporate strategy. Boar (1994:4) in terms of his research also acknowledges that in the past the trend has been one of technology planning being “poorly linked to the business, if at all”. This reflection seems to confirm the insights gained from the brief introductory discussion and accentuates the need for a
model or framework that takes both the strategic realities of business processes and ICT into account.

Hope & Hope (1997:44,94) draw attention to the fact that as new technologies emerge, markets shifts and customer needs change, enterprises need to look beyond a narrow economic model, to embrace a more responsive strategic model that capitalises on the intellectual capital and commitment of its employees. They go on to argue that process-based structures are built around teams that focus on delivering value to the customer (Hope & Hope 1997:99). From a slightly different perspective Grover & Segars (1996:51) conclude that in this new era the winners will be the enterprises that are best able to enhance customer value through the effective utilisation of ICT. The emerging strategic imperative therefore appears to be one of integrating technology, business systems and the human dimension in meeting customer needs within a highly competitive context. It is a view endorsed by Kettinger & James (1998:102) who stress the need for achieving “a proper fit between people, work process, information management and technology”. It is a view that underpins the research perspective adopted within this study.

In the following sections of this chapter the focus will be on business processes, ICT and the strategic alignment of these two domains of management. The third domain identified, namely that of change management will be addressed in the following chapter of this study.

4.2 BUSINESS PROCESS ANALYSIS: A STRATEGIC MANAGEMENT APPROACH

“Taking a process approach implies adopting the customer’s point of view. Processes are the structure by which an organization does what is necessary to produce value for its customers. Consequently, an important measure of a process is customer satisfaction with the output of the process.”

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A brief review of the contemporary management literature soon reveals a number of distinct themes that emerge in analysing the concept “business processes”. These themes essentially relate to alternative perspectives of the design approach and the nature of what constitutes a business process. There are researchers who for instance place an accent on:

- Innovation as a key determinant in business process redesign (Davenport 1993:10)
- The inherent radical nature of the changes involved in the redesign of business processes (Al-Mashari & Zairi 2000:11; Hammer & Champy 1993:1)
- The strategic intent of the redesign process (Tinnilä 1995:44)
- The role of ICT in redesigning business processes (Bhatt 2000:139; Chan 2000:224).

A particularly significant perspective of process redesign is the conceptualisation of business processes as constituting a value chain that cuts across traditional functional boundaries that define departments (Markus & Benjamin 1997:55). Each of these perspectives collectively provide a better understanding of the complexities involved in the redesign of business processes.

The focus on the customer and the need for ensuring customer satisfaction is a common theme encountered within a highly competitive context such as that engendered by globalisation. Martin (1995:153) in fact states that the goal of all corporate activity is best described as “satisfying the customer”. Slywotzky (Barabba 1998:35) in defining business design concludes that it “is the entire system for delivering utility to the customers and earning a profit from that activity”. Sherr (1993:81) in a similar sense believes that concern for the customer and customer satisfaction, has prompted many enterprises to begin to analyse business processes from a customer perspective. These expressed understandings, as to the importance of customer satisfaction as an outcome of business process design, are captured in the introductory quotation. The expressed
customer orientation or sentiment that underpins the process design is also associated with what Martin (1995:105) describes as “value stream reinvention”.

The European Foundation for Quality Management (EFQM) was founded in 1988 with the endorsement of the European Commission and developed a model for business excellence that is increasingly being used by more than 800 prominent business enterprises (EFQM 1999: Internet). It adopts a customer focus with the contention that the customer is the final arbiter of product and service quality. It is further maintained that customer loyalty, retention and market share gain are best optimised through a clear focus on the needs of current and potential customers. At the very centre of the model are processes designed to assist the organisation to perform more effectively in meeting customer needs, while taking the needs of all other stakeholders into consideration. This is in line with the declaration of LaHay & Noble (1998:568) that business processes are directed at profitably satisfying customer expectations and the contention by Armistead et al. (1999:101) that the ideal process is informed by several voices, in particular that of the customer.

In the ensuing discussion these various perspectives in relation to business process design will be explored in greater detail. This will be done with reference to the MIT90 (Massachusetts Institute of Technology) framework that places management processes at the very center of the model depicted in figure 3-1 of this study.

4.2.1 Defining the concept “business process”

Armistead & Machin (1997:886) contend that business processes “can be thought of as a series of interrelated activities, crossing functional boundaries with inputs and outputs”. Davenport & Short (1990:12) in a similar sense define business processes as “a set of logically related tasks performed to achieve a defined business outcome”. They go on to accentuate that processes have two important characteristics, namely they have customers that are recipients of the outcomes and they cross organisational boundaries.
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customers and their satisfaction, as constituting an important missing element. The input and output operational characteristic of traditional approaches in defining business processes is criticised by Sherr (1998:85) in that only procedural aspects are considered. With the exception of Sherr (1998:85), a strategic focus is certainly not accentuated in the above definitions.

Martin (1995:64) adopts a value stream perspective in defining business processes. He specifically avoids using the term “process” as it has very different connotations within different contexts and in an attempt to gain a greater sense of clarity as to what a value stream is he defines it as “a precisely defined concept for the end-to-end set of activities that delivers particular results for a given customer” (Martin 1995:64). The importance of this definition is its accent on value streams that extend across the organisation, other than that it is not all that different from the above definitions of a business process. Of specific interest, however, is Martin’s (1995:65) assertion that value-stream reinvention entails “replacing the current work process with one that is dramatically better”. It is not seen as constituting an ongoing incremental improvement of existing processes, but as being far more radical in nature.

Konsynski (1993:111) also describes business processes in terms of the management challenge it presents in crossing enterprise boundaries. Konsynski (1993:111) specifically contends that the traditional view of the enterprise with clear boundaries, limited relationships with other organisations, and a focus on internal efficiency and effectiveness is no longer adequate. The challenge of business process design is, according to Konsynski (1993:111), “huge, messy, interfunctional, longitudinal, and rich in operational and strategic threats and opportunities”. Like Sherr (1993:80), the researcher introduces a strategic focus to business process design. The horizontal, as opposed to a hierarchal, structural perspective that is more in line with the value stream approach is also clearly evident. In this regard it is interesting to note that McKay & Radnor (1998:926) suggest that business process design entails defining customer requirements and then aligning horizontal processes, that cross functional boundaries, to meet these needs. Clearly implied is a value chain approach in describing business
processes. McAdam & McCormack (2001:117) in fact do not attempt to differentiate between “value chains” and “business processes”, from a definition perspective, claiming that they are in fact the same thing.

A total quality management (TQM) approach is manifest in LaHay & Noble’s (1998:566) conceptualisation of business process design. They argue that “TQM is a process of integrating ever increasing value to the customer with the management of the business. In doing this, the sometimes abstract concept of TQM becomes a concrete approach to business process improvement” (LaHay & Noble 1998:566). Apparently, TQM is seen as being an integral dimension in the redesign of business processes by the researchers. Of pertinence in this regard is the notion that it is an incremental adaptive process and not radical in nature, as previously suggested by Martin (1995:64). The focus on the customer is also accentuated by the researchers as being of significant importance “in assimilating a strategy of ever improving value to customers” (LaHay & Noble 1998:566). In a very similar respect Jones (1994:25) views business processes as a matrix of internal customer/supplier chains that are focussed on the cost-effective satisfaction of agreed customer requirements. Jones (1994:25) contends that “today’s cross-functional approach to process management has its roots in the holistic approach to business performance improvement, known to many of us as total quality management”.

In discussing business process design Davenport (1993:10) distinguishes between process innovation and process improvement. Innovation is seen as starting from a clean slate, rather than improving existing processes (Davenport 1993:11). Innovation also assumes a far more radical connotation and tends to stand in contrast to an incremental adaptive approach, such as advocated from a TQM perspective. The more radical perspective tends to be associated with a business process re-engineering (BPR) perspective, as advocated by Hammer & Champy (1993:33).

Several conclusions may be reached as to what constitutes a business process from the
aforementioned definitions attributed to the concept. A central tenet embodied in many of the definitions is the accent placed on the meeting of client or customer needs. Of equal pertinence is the emphasis on the horizontal nature of these processes and the fact that they cut across functional boundaries. Value addition along the value chain is a theme also frequently implied or encountered in the definitions. A key difference that appears to surface is whether process design is a radical or incremental adaptive process. The latter is in particular associated with TQM as a means for achieving increased efficiency and effectiveness in realising customer expectations. While process design is essentially viewed as focussing on operational activities, the strategic element directing the process cannot be ignored. The noted ICT connotation or association in defining business processes is an issue that certainly needs to be explored in greater detail in the subsequent sections of this chapter.

In analysing business process design the key considerations identified within the various previous definitions attributed to the concept, need to be kept in mind. They in particular serve as a frame of reference in the ensuing discussion relating to the alignment of business processes and ICT systems.

4.2.2 The concept of “value chains” as a determinant in the design of business systems

“The need for rapid and sustainable development within supply chains is one of the key imperatives of today’s business environment. Indeed it is undoubtedly a key source of competitive advantage, as the locus of competition moves increasingly from the company to the supply chain”

Hines et al. 2000:1

Interest in the concept “value chains”, which entails a strategic approach for dealing with logistic planning and operations on an integrated basis (Lau & Lee 2000:598), has within the literature assumed substantial recognition. The importance of value chains
that span not only across the various traditional functional boundaries of business institutions but also between enterprises, is highlighted in the introductory quotation. Porter (1998:77) is a researcher who, in the past, has accentuated the importance of the concept “value chains” as a strategic factor in any competitive analysis. Porter (1998:77) makes the interesting observation that the concept “divides a company’s activities into technology and economically distinct activities it performs to do business”. Clearly, in so doing, he draws a distinction between technology and business processes, in defining the core activities that add value to an organisation’s operations (Porter 1988:77).

Fundamentally, value chain management may be seen as determining the needs and requirements of clients and aligning business and ICT systems across the enterprise, to meet these business determinants in a cost-effective manner. Cross (2000:38), however, views revenue-generating value exchanges that end with the customer as constituting just part of the value network picture, the other being the flow of knowledge, information and related forms of intangible value addition through an enterprise.

Three important perspectives emerge in adopting a value chain approach in the design of business systems. These relate to an emphasis on the management of relationships between activities along the value chain, the attainment of a competitive advantage in global markets and the role of information in coordinating activities across the value chain (Walters & Lancaster 2000:160). These appear as recurring themes, with the need for realising cost efficiencies and improved customer satisfaction also appearing high on the list of strategic objectives to be achieved in redesigning business processes within the value chain. In many respects the activities and their linkages within the value chain evolved over the space of time in response to finding a way to cost effectively provide services and products to clients. The process in effect essentially is one of making changes on an incremental adaptive basis in response to changing business conditions.

At a point in time a stage is reached where dramatic changes in business strategy, require a fundamental redesign in the business related activities and their linkages.
across the value chain. Simultaneously, ICT systems are reviewed and changes implemented to support the business processes involved. Alternatively new ICT systems may be implemented and the business processes redesigned to bring them into alignment with the ICT systems. Davenport (1993:14) terms this to be “process innovation”. Coetzee (2000), Theart (2001), Voges, (2001), and Webb (2001), concur that in practice both process innovation and improvement are encountered in strategically managing value chains and in addition it is confirmed that the realignment process may be either ICT or business driven. Davenport (1993:14) also concludes that in practice the need exists for organisations to view process innovation and improvement as coexisting management practices.

From a value chain perspective the accent is on core business processes and activities that represent the organisation in process terms. As previously indicated the analysis and redesign of business systems to reduce costs and improve service delivery levels, are an inherent consideration in adopting a value chain perspective. It is a consideration that needs to be seen from a holistic integrated perspective and not in terms of isolated systems, as has tended to be the case in the past, by viewing IT systems as a separate infrastructure for supporting the core business processes of the enterprise. In this respect Davenport & Short (1990:13) urge industrial engineers, who wish to improve the organisation’s operations, to look at the entire integrated process that constitutes the value chain, rather than focussing on isolated systems. The more astute managers of modern day business enterprises are, however, already exploring how to move beyond leveraging ICT for redesigning current business processes to create new and as of yet unenvisaged business capabilities (Venkatraman 1997:51). Business systems and technology surface as being not only of strategic interest from a value chain perspective, but to be business critical in attaining a competitive advantage in the global marketplace (Weeks & Lessing 2001:5) and as such innovative ICT is deemed to play a vital role in redefining business capabilities.

Seen within the context of evolving contemporary management practice e-business is a
typical case where technology and redefined business processes are instrumental in creating new business capabilities. It is for instance argued by Janssen & Sol (2000:406) that “electronic relationships with suppliers and clients can be regarded as a potential source of competitive advantage”. Understanding the interdependencies that exist between ICT and business systems design is essential in implementing an e-business strategy. ICT acts as a catalyst or driving force for redesigning business processes to capitalise on the opportunities presented by e-business. Typical opportunities relate to the speed with which transactions are concluded and a reduction in the costs associated with such transactions.

While most of the technological systems for e-business are in place, Tapscott & Castron (1993:26) found that one of the most common difficulties encountered in practice related to managing the transformation process, as the basic nature of business operations that have served the organisation well in the past tended to remain unchanged. Managing the transformation process not only entails a need for redesigning the associated business processes involved, but for managing a change in the culture and traditional management paradigms that have become entrenched within the hearts and minds of management. A fundamental and key issue in adopting an e-business strategy is the need for sound business case that takes the business and management considerations into account (DeCoveny 1998:40-41).

It is stressed by Rockart & Short (1991:190-191) that an ICT enabled networked organisational approach constitutes a major design challenge, as without the appropriate business systems and employees with the required skills, the institution will be unable to exploit the opportunities created by the technology concerned. From a design perspective, networked organisations are conceived as communication-rich environments with information flows blurring traditional organisational boundaries (Rockart & Short 1991:191). An important facet of the business process design entails establishing the flow of information along the value chain and its various business related linkages.
Davenport (1993:83) maintains that information management processes should include an analysis of the entire information “value chain”, starting with the definition of information requirements and moving through various phases to the eventual utilisation of information to manage organisational activities across the value chain. In view of the importance associated with information, in managing the value chain across functional and enterprise boundaries, the role of ICT in linking the various entities that form the value chain assumes vital significance. In this regard Jansen & Sol (2000:409) stress that the various roles played by intermediaries in the extended value chain need to be modelled, in order to evaluate their value-add contribution to the eventual end result.

The alignment of business processes, ICT systems and human resource issues, across the value chain, is diagrammatically presented in figure 4-1.

Figure 4-1
A value chain model integrating business processes, ICT systems and human resources as key components
Kock & McQueen (1996:20) identified three business process products which tend to cut across several departments, namely goods, services and information. They further maintain that “a broad view of business processes comprise information about business process products, suppliers, customers, component activities, the agents and tools involved in the execution of component activities, and the relationship between activities” (Kock & McQueen 1996:20). This by implication implies that opportunities for process improvement are very likely to accrue from an analysis of how information is generated, stored and flows across departmental and organisational boundaries in relation to the core business processes. ICT provides a business critical infrastructure for facilitating the management of information from a systemic perspective and this accentuates the importance of attaining an appropriate alignment between the systems concerned. Davenport (1993:71) in fact concludes that “it is difficult to fully disentangle information from information technology and systems”. He defines information management in very broad terms by stating that it comprises the overall management of a firm’s entire
In researching the roles of information in processes, Davenport (1993:73) concludes that information can play a number of supporting roles in an effort to gain improved process efficiency, namely it can be used to measure and monitor process performance, integrate activities within and across processes, customise processes for particular customers and facilitate longer term planning and process optimisation. There are increasingly business processes that have information as a very significant, if not primary outcome. Typical cases in point being information generated during banking or insurance related business transactions. It is therefore not surprising to find information systems increasingly gaining prominence, as a field of analysis, in an attempt to improve business process efficiency.

A distinct correlation exists between organisational business processes, documentation flows in relation thereto, and consequently the flow of information through an enterprise. Within contemporary business institutions both the documents and the associated information tend to be in electronic format. As previously stated, Davenport (1993:84) identified six components that are deemed to constitute the information value chain or process for information management, the components being:

- The identification of information needs and requirements
- Information acquisition or collection
- Information categorisation and storage
- Information packaging and formatting
- Information dissemination or distribution
- Information analysis and use.

The information process or value chain essentially defines a distinct inarticulate linkage between management or business processes and technological systems, as depicted within the MIT90s framework presented in figure 3-1. The information value chain, for the purposes of this study, needs to be seen as inextricably linked to the organisation's
business processes. It is a contention supported by the conceptualisation of the processes as constituting a structured, measured set of activities designed to produce a specific output for a particular customer or market, with a strong emphasis on the “how” or means for realising a defined outcome (Davenport 1993:5). It by implication implies an ordering of activities across time and place and provides a dynamic horizontal view of how value is added through the activities concerned (Davenport 1993:5). It also tends to de-emphasise the vertical departmentalisation and structuring of the enterprise (Belmiro et al. 2000:1195; Davenport 1993:5; Weeks & Lessing 2001:8), as implied in the model presented in figure 4-1.

The evolution of innovative technology and new business practices has taken place at an unprecedented rate leaving in its track confusion, uncertainty and a lot of rhetoric that remains largely unsupported by empirical studies (Weeks & Lessing 2001:7). A world of seamless communication that transcends all boundaries giving rise to an information rich society, may sound appealing, but when all the rhetoric is over, executives are still left with the task of translating technological possibilities into profitable business reality. It is here that the integration of business and technological strategies spell the difference between wishful thinking and opportunistic strategic planning reality (Weeks & Lessing 2001:7).

From the BPR empirical research studies conducted by Belmiro et al. (2000:1193) it appears that the executives interviewed held varying perspectives of what constitutes a business process and in most instances these tended to embody an emphasis that was significantly different to that encountered within the literature. The definitions provided demonstrated a confusing presence of fragmented functions that served as examples of business processes and even more alarming was the lack of congruence between the definitions provided and the practices observed within the organisations surveyed (Belmiro et al. 2000:1194). It is assumed that the researchers had in fact expected a horizontal flow of activities to predominate within the definitions, as more commonly encountered within the literature. The accent according to Belmiro et al.
(2000:1194,1196) needs to be on moving from functionally orientated management thinking to a horizontal process directed orientation and this it was argued by the researchers implies a need for a change in the culture of the institutions concerned. It is important to note that from their study of the institutions investigated two fundamental themes appeared to surface consistently (Belmiro et al. 2000:1200), namely:

- There was only a very basic awareness of the importance of understanding business process flow
- There was no clear demonstration of how business processes were actually analysed and designed.

These findings seem to suggest that in practice management thinking is still largely influenced and constrained by a perception of hierarchical and functionally structured business institutions and the notion of value chains extending across departmental and institutional boundaries are still not well established in management’s thinking. Moore (1999:172) in a similar sense confirms that the concept of value chains is still fairly new. Process redesign under such conditions will tend to focus on departmental processes and a holistic integrated view of the flow of business activities across the organisation will tend to be afforded less attention. Evans et al. (1999:121) argue that business systems have in effect evolved into functional structures and they use personnel, marketing, and manufacturing as typical examples of the “functional silo” conceptualisation of business processes. It is also reflected in the use of IT to support departmental specific business processes, as opposed to enterprise wide resources planning and knowledge management systems.

Value chain based process management thinking in contrast to a functional paradigm adopts the view of a seamless delivery process with the customer as the primary focus. It in fact constitutes the underlying rationale of the model presented in figure 4-1. From a process design perspective the objective is to structure the various sub systems into a seamless integrated system with specific emphasis on cost efficiencies and best practice. Two fundamental perspectives come into play in designing business processes
across the value chain. The first relates to efficiencies achieved by redesigning existing systems on an incremental adaptive basis and the second on achieving a competitive advantage through the radical redesign of business systems to introduce innovative and novel services to clients. The latter essentially entails the use of state of the art technology. The approach adopted is largely a product of the strategy formulated for the enterprise and the degree of risk executives are prepared to accept in redefining value chains across the organisation.

Process or system thinking has proliferated in recent years as a result of the total quality movement and business process re-engineering (Davenport & Short 1990:13; Evans, et al. 1999:123; Kock et al. 1996:8). The two, however, tend to adopt a totally different perspective in analysing and designing business processes. The former tends to employ an incremental adaptive approach, while the latter assumes a far more radical perspective. It is also noted by Davenport & Short (1990:13) that process analysis in the quality movement literature rarely focuses on ICT, yet as stressed by Hammer & Champy (1993:83) information technology is deemed to play a critical role in business process re-engineering.

The focus on increasing efficiency, as an aspect of consideration in redesigning business process, from a value chain orientation is certainly supported by Hines et al. (2000:14) in terms of their assertion that the underlying logic of the redesign process is one of identifying and addressing the inherent inefficiencies within the value chain processes concerned. Jones (1994:25), in contrast, claims that more emphasis is currently being placed externally focussed objectives in business process redesign, namely the fulfilment of specific customer requirements, the achievement of high levels of customer satisfaction and adapting the organisation to the needs of a changing market and business environment. Without doubt the total quality and process re-engineering approaches are fundamentally different and are based on very different strategies.
Regardless of which approach is adopted, it needs to be questioned what constitutes the fundamental principles and logic underlying business process design and management from a value chain perspective. It is argued that in finding answers to this question a holistic perspective should be embraced. Senge (1990:7) observes that in practice the tendency is more often one of focussing on separate elements of a system instead of analysing the system and its various constituent processes as an entity. Systems thinking it is stressed by Senge (1990:68), is a framework for viewing dynamic interrelationships and patterns as an entity. It is also an approach that is consistent with a strategic management perspective, as strategy attempts to direct all the activities of an organisation towards the realisation of a shared and clearly defined objective. These activities form the core of business processes. A reformulation of strategy of necessity therefore requires a review of existing business activities and processes to avoid a situation of business as usual. This by implication implies a review of existing and envisaged business processes, within the context of the value chain, from a strategic management perspective.

Strategy implementation would hardly be possible without taking business activities and processes that form the very core of the value chain into consideration. A competitive strategy focussing on cost reduction would of necessity need to revisit business processes and systems to determine where cost efficiencies could be acquired. Alternatively a strategy based on innovation and a significant redefinition of what constitutes service excellence would require a redesign of systems with the objective of ensuring radically enhanced service delivery. Davenport & Short (1990:13) ask the following question in this regard, namely assuming that an organisation decides its processes are inefficient or ineffective, and therefore in need of redesign, how should it proceed? A five-step process redesign model is suggested by the researchers and notably the development of a business vision and process objectives features quite prominently, as the first of these steps. The remaining steps being the need to identify processes to be redesigned, gaining an understanding of existing processes, identifying ICT levers, and designing a prototype of the process that is then constructed and tested.
before being put into effect (Davenport & Short 1990:14).

The strategic connotation associated with the process redesign model described is quite evident and from the perspective of this study the reference to ICT levers also assumes further significance. Davenport & Short (1990:14) make reference to the fact that in the past, process redesign was typically directed at process rationalisation, so as to eliminate obvious inefficiencies and it did not necessary incorporate any particular business vision. They argue in contrast that the redesign of the entire process should be undertaken with a specific business strategy in mind. As seen from the ensuing discussion the researchers are certainly not alone in adopting a strategic perspective in process redesign.

Three perspectives to business process redesign are identified by Tinnilä (1995:44) one of which recognises business processes as units of strategic planning and consequently acknowledges the need to link them more closely to business strategies. The remaining two approaches identified by Tinnilä (1995:44) are ICT as an enabler of business process improvement and the potential of business processes in redesigning organisations. Of notable reference is the ICT connotation that surfaces in terms of the research findings of Tinnilä (1995:44). Also of particular significance is the contention by Tinnilä (1995:45) that there are only four fundamental processes: technical, innovative, enabling and social. Within this study all four are deemed to be of importance in analysing process redesign from a strategic management perspective.

In the following section greater attention will be attributed to the relevance of adopting a strategic perspective in the redesign of business processes. Adopting a value chain approach, in the analysis and design of business processes, however, requires that a strategic or holistic view be taken to ensure that the business systems that are put in place will not only effectively interlink with the ICT systems, but will be able to support the implementation of the strategy formulated for the organisation.
There are researchers who believe that in applying the traditional value chain concept to business process design, it is important to take cognisance of the alternative realities of organisational management that come into play. Manning (1998:4) is one researcher who is of the opinion that value chains essentially belong within the industrial era and that they are less of use when, as he phrases it, “things become messier” and “when they do not follow in an orderly and predictable sequence”. He argues that “value” is more than a neat sequence of actions and that additional issues come into play, such as organisational learning and knowledge, which are messy overlaying factors (Manning 1998:7).

Beers (1996:230) questions the simplicity associated with the value chain perspective in designing business processes. His view of the organisation, as constituting a “mosaic of processes, structures, relationships and coordinating mechanisms” just does not readily fit into the structured world of value chain-based business process design (Beers 1996:230). The researcher argues that while the virtues of horizontal process-based organisations are being advocated there are few practical guidelines as how to proceed in setting them in place and the degree of understanding as to the implication associated therewith is still limited in extent (Beers 1996:225-226).

With the preceding discussion as reference, it may be concluded that processes, in value chain terms, reflect on how things get done within the business enterprise. In practice the business processes tend to be cross functional and in some instances even extend beyond the traditional boundaries of the enterprise. This incorporates an information component that is critical in managing and coordinating the various linkages and activity interactions that take place across the value chain. The process redesign of necessity is strategically directed and can be either incremental adaptive or radical in nature. They in effect tend to be complex, multifaceted, and incorporate an ICT support infrastructure.

4.2.3 Strategically directed business process design
“Creating a strong and sustained linkage between strategy and the way work is done is an enduring challenge in complex organizations. Because business processes define how work is done, we are dealing with the relationship between strategy and process.”

Davenport 1993:117

A few truths are captured in the introductory quotation, but of specific substance is the notion of strategically directed process definition, described as “the way work is done”. Strategy in effect serves as the frame of reference for process redesign and the motivation for the redesign in the first instance. An important outcome of the strategic process is a shared understanding of what the organisation hopes to achieve and an awareness of the means to be used therein. In a sense strategically directed process redesign constitutes a form of organisational renewal to be able to fit into a digital global business environment. In reality, however, business process redesign constitutes but one dimension of the renewal process, with ICT and human resources considerations forming a further two key components of the process.

Stalk et al. (Tinnilä 1995:44) may be included in the league of researchers who endorse adopting a strategic approach, in process redesign, by asserting that the building blocks of corporate strategy are business processes that have to be transformed into a strategic capability to provide value to customers. Business process re-engineering tends to adopt an operational or tactical, as opposed to a strategic perspective in the redesign of business processes and unless a strategic analysis precedes the re-engineering effort, the effort tends to be narrowly focussed (Tinnilä 1995:46). Generating a new business world view through a process of clarifying assumptions, discovering internal contradictions and thinking through new strategies based on these assumptions provides organisations with a unique source of competitive advantage (Senge 1990:178). It may also be argued that it is business critical in engaging in business
process redesign to avoid merely focusing on existing, instead of concentrating on potential process possibilities. By implication the desired strategic position should be the point of departure for process redesign, as opposed to merely the improvement of existing operations.

The benefits that may be derived from adopting a strategic approach to business process design would largely relate to ensuring that the enterprise systems are optimally configured to derive maximum advantage from the utilisation of the scarce resources available. This would without doubt include achieving the greatest synergy possible in aligning business processes and ICT architectures. Using new innovative ICT to capitalise on strategic opportunities in the marketplace without redesigning the business systems, would not be unlike placing a new highly engineered state of the art car engine in a model T Ford. The business process constraints would prevent management from gaining optimal benefit from the ICT systems, just as the model T Ford would probably disintegrate in taking the first high speed bend in the road, as it was just not designed to deal with the new technological requirements. Admittedly the resultant failure in both cases could be quite spectacular in a negative sense and hardly in line with the positive strategic expectations placed on the implementation of the technological innovations.

Using the MIT 90s framework, as depicted in figure 3-1, as a source of reference it will be noted that there are two fundamental possible strategic approaches that may be used in ensuring that business processes and ICT systems are brought into strategic alignment, namely a technological or business process driven approach. These two approaches were also briefly alluded to in section 4.2.2. According to Yetton et al. (1994:62) the traditional theoretical argument is that an organisation formulates strategy, selects the structure and management processes that best suit the strategy, then brings ICT in alignment and finally individual roles and responsibilities are redefined. Yetton et al. (1994:62), however, go on to describe a case in which business transformation occurred along an almost reverse sequence of events, through the incremental adaptation of ICT (Yetton et al. 1994:62). In response to a perceived threat the initial
intervention was at a technological level followed by a transformation of individual skills and roles. Changes in structure and the subsequent alignment and integration of management processes then ensued (Yetton et al. 1994:62). The strategic vision it is contended grew out of the implementation process. The technology enabled lower-cost operations and enabled the creation of competitive advantage through the ability to provide high-quality, timely, and unique services to clients. The researchers argue that the latter scenario is consistent with models in the IT strategy literature that advocate formulating strategy in the light of IT’s innovation potential (Yetton et al. 1994:62).

The sequence of events described in the latter case seems to suggest that strategy emerged from an incremental implementation of technology, which served as a driving force for the redesign of business systems and organisational transformation. In the process of implementation and adaptation a situation of experiential learning is assumed to have occurred. The second scenario tends to stand in direct conflict with traditional strategic management practice, Yetton et al. (1994:62) maintain that the situation is often an incremental and “muddled” process of adaptation shaping emergent strategy. The picture presented in the preceding discussion is in certain respects in line with the conceptualisation of the strategic process, by Mintzberg (1994:24). He describes it as follows: “the real world inevitably involves some thinking ahead of time as well as some adaptation en route” (Mintzberg 1994:24). He further acknowledges that within the literature the concepts of deliberate and unrealised strategies are deemed to be facts of reality, while the concept of emergent strategy is generally not acknowledged (Mintzberg 1994:24-25). The insinuation of a need to learn from one’s mistakes and successes is inherently encapsulated within the concept of emerging strategy. Seen within this perspective the alignment of business processes and IT infrastructure may be conceptualised as constituting an iterative process of adaptation and experiential learning. It is, however, not a perspective that is propounded in the literature as being ideal.

The emergent route of business process development allows for a continuous review of
business processes and their adaptation to deal with changing business conditions. It also tends to promote what can best be described as a process of muddling through, an approach that is often associated with departmentalisation and not one of adopting a holistic perspective of the core business process, or value chain transcending the boundaries within the organisation. Most core business processes follow a complex route through the enterprise and in so doing interrelate and converge with other subsidiary or supportive processes. This reality in the real world of management complicates the issue of gaining a holistic understanding of organisational business processes, particularly where they cross institutional boundaries. In this regard it is important to take note of the research findings of Konsynski (1993:112-115) that seem to suggest that in their quest for operational efficiencies and competitive position, organisations are increasingly establishing strategic alliances and new business partnerships, which in turn serves to complicate any analysis of core business processes. Whether or not existing processes need to be taken into consideration or if a process should rather be redesigned without any reference to existing processes, seems to be a subject on which little consensus exists. It is also a subject of extensive debate (Al-Mashari & Zaire 2000:32).

Hammer and Champy (1993:49) favour a more radical approach of discarding existing processes and replacing them completely. Davenport (1993:11) confirms that process innovation initiatives start with a relatively clean slate, rather than being constrained by existing processes considerations. In contrast the notion of constant review, evaluation and adaptation to achieve incremental improvements, as captured in TQM theory (Bititci & Muir 1997:365), appears from the preceding discussion to reflect a very practical approach in the design of business processes. It is in fact suggested by Davenport & Stoddard (Al-Mashari & Zaire 2000:32) and Theart (2001) that few organisations are in fact able to adopt a radical clean slate approach. An incremental approach in effect constitutes a means for dealing with the complexity associated with core business process redesign. The issue of a radical versus an incremental adaptive approach in business processes design is the subject of the ensuing two sections in this chapter.
the context of this section, however, the accent is on the strategic implications in relation to the two contrasting approaches.

A fundamental assumption in the debate as to adopting a radical or incremental adaptive approach is the issue of process innovation, which it is contended by Davenport (1993:10) is directed at achieving “order-of-magnitude” and not slight improvements in efficiency. They are inherently strategically driven. As previously noted in this chapter, it is argued by Davenport (1993:14) that in practice most organisations need to combine process improvement and process innovation as part of an ongoing strategic quality improvement programme. From a strategic perspective, however, a fundamental change in the mission, vision, values and strategy of an enterprise, as a result of discontinuous contextual change, will without doubt necessitate a complete review of existing business processes and ICT systems to give expression to the implementation of the new strategy. For the purposes of this study, strategy is deemed to inform the business process and ICT systems redesign, be it from a business or an ICT driven strategic orientation.

With the above in mind it is interesting to note that Kettinger, Teng & Guha (Al-Mashari & Zaire 2000:28) developed a six stage model for process design. The point of departure is one of strategically exploring and discovering opportunities for process redesign, while the 6th stage entails an evaluation and ongoing improvement of the designed process. It also embodies an analysis of existing processes and is therefore not based on a so called clean slate theory approach that disregards existing processes. However, implied is a comprehensive framework to first achieve a significant degree of improvement, followed by a process of incremental gains in efficiency, which tend to give practical support to Davenport’s (1993:10) above suggestion.

The proposed six stages incorporated within the process design model are (Al-Mashari & Zaire 2000:28):

- **Stage 1: Envision** - Establish management commitment and vision, discover re-
engineering opportunities, identify ICT levers and select processes for redesign

- **Stage 2: Initiate** - Organise re-engineering teams, plan project, determine external process customer requirements and set performance goals
- **Stage 3: Diagnose** - Document existing processes and analyse existing processes
- **Stage 4: Redesign** - Define and analyse new process concepts, prototype and detailed design of new process, design HR structure and analyse and design information system (IS)
- **Stage 5: Reconstruct** - Reorganise HR roles, implement IS components and train users
- **Stage 6: Evaluate** process performance and link to continuous improvement programmes.

There are many similarities between the process described above and that advocated by Davenport & Short (1990:14). Both adopt a strategic orientation in process redesign, with the development of a business vision featuring prominently as the first step. The steps in process redesign, according to Davenport & Short (1990:14), are:

- Developing a business vision and process objectives
- Identifying processes to be redesigned
- Understanding and measuring existing processes
- Identifying IT levers and finally designing
- Building a prototype of the process.

Of particular note is that both the above processes entail an analysis of existing systems and therefore by implication they do not advocate a clean slate approach. The most likely strategic objectives cited by Davenport & Short (1990:14) for embarking on BPR are:

- Cost reduction
- Time reduction
- An improvement in output quality
- Enhanced quality of “work life”.

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A research study undertaken by Wong & Li (1998:317,323) to determine the strategic benefits derived from BPR, reveal a very similar list of benefits, which include *inter alia* that of:

- Improved customer service
- Faster response times in relation to changing competitive and market conditions
- A significant improvement in management reporting.

Martinez-Lorente *et al.* (1999:12) point out that a strategy of continuous improvement does not necessarily work in markets which constitute high investments, such as microprocessors and pharmaceuticals. In these industries the changes encountered tend to take place far more rapidly and are inclined to be very innovative and based on “break through” technologies, as a consequence of huge research and development expenditures (Martinez-Lorente *et al.* 1999:12). This notwithstanding there are, however, also strategic benefits that may be derived from an incremental adaptive approach in appropriate circumstances. The strategy used, it seems, will largely relate to contextual circumstances encountered in practice.

It may be concluded from the discussion that business process redesign is strategically informed. The nature of the transformation, be it BPR or incremental adaptive change, merely relates to the strategic intent embodied in the corporate strategy. In the ensuing section BPR will be explored as a consequence of a strategic realignment.

### 4.2.4 A business process re-engineering approach

“Businesses must not be viewed in terms of functions, division, or products, but as key processes. Achievement of order-of magnitude levels of improvement in these processes means redesigning them from beginning to end, employing whatever innovative technologies and organizational resources are available.”
The central tenet underlying business process re-engineering is that of process innovation, which adopts a clean slate approach in the design of business processes. It stands in direct contrast to process improvement, which is incremental adaptive in nature. Re-engineering entails a radical departure from the tried and proven processes of the past, disregarding existing processes and systems, to find new innovative means of doing things. To paraphrase Hammer & Champy (1993:33) “re-engineering is about business reinvention - not business improvement, business enhancement or business modification”, it is about “quantum leaps in performance”. Starting from scratch to redesign business processes is referred to by Martin (1995:70) as “shock treatment” and “major surgery”, with resistance to change being almost a natural outcome, in view of the radical nature of the process involved. It is further warned by Martin (1995:70,74) that the process is fraught with risk and unless carefully managed many projects tend to fail in implementation, a key factor therein being the resilience of the organisation’s culture.

BPR is considered to be customer service driven, the business processes redesign initiative is consequently seen as starting with the needs and expectations of the customer and ending with the profitable satisfying of these needs (Al-Mashari & Zairi 2000:15; Boar 1994:78; Martin 1995:153-154). These needs and expectations could well be very different in nature and with the advent innovative ICT systems, with specific reference to customer resources management, an important facet of any BPR initiative is the accent of individualisation of service delivery in redesigning core business processes. It is no longer a case of one size fits all, but a case of ensuring satisfied individual customers at the end of the service delivery process. As pointed out by Hammer & Champy (1993:21), as a result of ICT making information far more readily available to customers they have gained the upper hand in their relationships with service providers. By implication it can no longer be a case of business as usual and consequently traditional business processes and ICT support systems need to be
directed at providing clients with individualised services. From a BPR perspective this entails a radical change in the way business has been traditionally conducted. Seen within the context of an attempt to break into global markets this reality has quite fundamental implications for South African business institutions.

With the demise of the apartheid era in 1994, South African business institutions are making a renewed attempt to break into global markets with organisations that are hardly attuned to the harsh realities associated with globalisation and the competitive conditions associated therewith. Increasing competitive conditions require a strategic response based on innovation, flexibility, cost efficiency and service excellence. It is a response that from a BPR perspective entails a fundamental change in traditional business practices, that have largely been oriented towards operating within more stable environmental conditions. It should be noted that South Africa prior to 1994 was to a large extent reasonably isolated as a result of politically initiated sanction campaigns and as a result the economy was far more inward focussed than is presently the case.

Competing in the big wide world, according to Manning (1998:62), is unlike competing in the cloistered confines of yesterday’s South Africa. The organisations that are more likely to survive within a global context are described by Manning (1998:62) as innovative, lean, responsive, flexible, agile and fast. These are all qualities that tend to be associated with the re-engineering of an enterprise, as they entail a dramatic change in the way the organisation is managed. Martin (1995:73-74) depicts this change as one of “steadily downsizing, cutting out layers of management, and moving from hierarchical to more horizontal structures”. This according to Martin (1995:74) is, however, not enough, organisations in the digital economy apparently differ in just about every respect of management from that of a passing era. Teamwork, measurements as to what constitute success, business processes, compensation systems, staff skills development, performance appraisal, employee reward systems, employee motivation, and electronic linkages with trading partners, are but a few of the changes referred to by the researcher. While most of these aspects could also be dealt with on an incremental
basis, the time frames involved would just not be acceptable and consequently the advocates of the re-engineering approach recommend a far more radical transformation of all of these dimensions on a simultaneous basis. In view of the complexity of the change process and dramatic impact thereof on the enterprise, it is a process that needs to be strategically informed and managed.

Typical interventions applied in the re-engineering process are (Martin 1995:76):

- Automation.
- Elimination of bureaucracy
- Simplification of workflow
- Refinement of the information infrastructure
- Working smarter
- Reduction of intermediaries that add no or little value to the end result
- The elimination of unnecessary work.

All the interventions mentioned above have definite significant business process redesign implications. The objective is not only to reduce the costs associated with doing business, but also to improve the speed and quality of service delivery to the client. Of equal pertinence is the need to ensure that the organisation is able to rapidly respond to changing business conditions and situations as they arise.

ICT plays a fundamental role in most process re-engineering initiatives. It is contended that in fact most organisations could benefit from ICT enabled business process redesign. The effort involved, however, according to Davenport & Short (1990:15), creates practical limitations and even when the total redesign of the organisation’s business processes is advocated, the companies studied by the researchers selected only a few key processes for their initial efforts. This contention stands in contrast to the radical process advocated by the proponents of re-engineering, who favour a simultaneous total redesign of all business processes. The risks associated therewith are extensive and it is this realisation that drives executives to more often than not adopt
a more cautious approach. The alternative is to focus on high-impact processes that are vital for the implementing of a particular business and ICT strategy. ICT resources are generally limited and this in most instances acts as a constraint in the simultaneous deployment of a large number of electronic-based business support systems.

An important development within the ICT context is the introduction of enterprise resource planning (ERP) systems that allow an enterprise to share common data across the enterprise. It in effect plays a significant role, from a value chain perspective, in precipitating the redesign of business processes. ERP systems are directed at achieving a seamless integration of information flowing through the organisation and ensuring that the various functional domains within the enterprise have the appropriate information they require for effective operations management across the value chain. The ERP system also provides senior executives with a wealth of centralised real time operational information, but it comes with a sizeable price tag attached (Davenport 1999a:161,166). The scope of the ERP implementation is generally enterprise wide and encircles the entire value chain within an enterprise, thereby consequently impacting on all core business processes (Siriginidi 2000:378). It is defined as “an integrated suite of application software modules, providing operational, managerial and strategic information for an enterprise, so as to improve productivity, quality and competitiveness” (Siriginidi, 2000:378).

As may be determined from the above definition attributed to ERP it relates to both strategic and operational levels of management. It could also be assumed that the introduction of an ERP system would entail a review and redesign of all functional business processes supported by the system, to ensure compatibility. This is confirmed by Voges (2001), who from experience in implementing such a system at BMW, found that many of the existing core business processes needed to be either adapted or totally redesigned, so as to ensure effective alignment between the ICT system and the business processes concerned. Notably, Voges (2001) claims that a clean slate approach was not followed by BMW, but that instead a project was launched to review
all existing business processes to determine their compatibility with the ERP system. It was also confirmed that elements of both BPR and incremental adaptive change were incorporated within the ERP implementation strategy.

Coetzee (2000) and Theart (2001) assert that existing business systems need to be reviewed and either modified or completely redesigned, with reference to ERP system requirements. Coetzee (2000) and Voges (2001) both attest to the complexities associated with implementing an ERP system in support of strategic and operational business processes. It is cautioned by Davenport (1999a:162) that organisations that attempt to implement an ERP system without first gaining a clear understanding of the business process implications, may well find that their dream of a seamless systems integration could suddenly turn out to be a rather dismal nightmare.

One of the most meaningful benefits to be derived from a BPR initiative is the focus it places on core business processes and ICT support systems in relation to these processes. A frequent axiom encountered in traditional management practice is that “if it is not broken leave it alone”. Within a turbulent business environment, dramatic contextual change may require a considerable if not total change in business strategy and this in turn this could well translate into radical realignment in business processes at an operational level.

One would not expect a radical change in strategy to occur every time a strategic review is undertaken, but a dramatic event could well arise at some point in time that could well either invalidate the existing strategy or make a major strategic realignment business critical. A business as usual approach could under such conditions spell disaster for the organisation. A case in point is the move towards e-business. As the momentum of change grows, a stage is eventually reached where organisations who are not able to conduct business on an electronic basis will be seriously disadvantaged. It is for instance difficult today to imaging a banking institution that has, as of yet, not established a formidable electronic presence in the marketplace, as most large financial
transactions between financial institutions are today electronically transacted. As the winds of change gained momentum in the financial industry a business critical stage would have been reached where, business as usual would have spelled the eventual demise of the institution concerned. As a consequence the ICT strategy, to bring the organisation in line with industry standards and practices, would without doubt have required a fundamental reevaluation and redesign of the associated business systems of the institutions concerned.

It is confirmed by Coetzee (2000), Harris (2001) and Theart (2001) that in practice significant developments in the ICT industry, particularly if they involve the introduction of new standards, has a ripple effect on the business environment. At first these changes may just be blips on the organisation’s strategic radar screen, but as they become far more discernable they need to be addressed at both a corporate and ICT strategic level (Coetzee 2000; Voges 2001). Depending on the extent of the strategic realignment required, it could well be that the organisation’s core business processes would need to be revisited. In practice it appears that where business processes need to be radically redesigned, such a redesign generally entails a thorough analysis of the existing systems and a clean slate approach is not deemed to be general practice (Coetzee 2000; Theart 2001; Webb 2001). The situation cited is notably one where ICT innovations enable fundamental changes in business practice and as a consequence ICT drives the strategic realignment process.

Both researchers and practitioners emphasise that BPR not only requires the redesign of business processes and the introduction of innovative technology, but that it also impacts on the structuring of the institution and in particular a change in the culture of the organisation (Boar 1994:79; Coetzee 2000; Harris 2001; Theart 2001).

The insights gained from the preceding discussion are summarised as follows:
- The BPR process is visionary and therefore strategically driven
- BPR assumes a radical clean slate approach in redesigning business systems

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The customer and their expectations feature as an important consideration in BPR

Innovation plays a key role in BPR

A major objective in adopting a BPR approach is one of doing away with any activity that does not contribute significant value to the end result

In view of the magnitude of the project and the inherent substantial risks involved, it of necessity requires executive involvement

ICT is seen as both an initiator and an enabler of BPR

In practice the assumptions on which BPR is based are constrained by practical realities associated with risk management and the ability of employees to deal with such an extensive project with limited resources.

4.2.5 An incremental adaptive approach to business process redesign

“In a global environment, volatile political and economic factors and unstable competitive and consumer patterns demand continuous organizational change. The constant reorganization of resources, technologies, marketing, and distribution systems, and human networks become part of the business itself.”

Rhinesmith 1993:87

Although not categorically stated as such, but certainly implied in the introductory quotation, is the need for a continuous business process review and realignment in light of the changes referred to. TQM and continuous improvement are cited by Rhinesmith (1993:87) as logically structured processes for dealing with complex changing global competitive conditions. As noted by Webb (2001), an organisation’s strategic response to changing global competitive conditions is hardly likely to translate into a fundamental change in the mission and vision of an enterprise and it is therefore far more likely that the response will be at an operational strategic level, with a reformulation of short term strategic objectives.

The notion of strategically driven incremental change in order to deal with changing
global, national or local competitive conditions on an ongoing basis requires a new paradigm of management, that is founded on creativity, flexibility, and strategic thinking. In rather harsh terms Mintzberg (1994:273) states that “if senior managers cannot think strategically ... either the managers must be replaced, or else others with the capacity must be found in the organization”. There certainly can be little doubt as to the importance attributed to strategic thinking by the researcher. Within the context of this section, strategic thinking relates to an ability to be able to constantly change course through a maze of emerging contextual realities, while never losing sight of the ultimate destination or the vision of what the organisation hopes to achieve.

Manoeuvring a large organisation through complex and continually changing environmental conditions, is according to Webb (2001) not unlike manoeuvring a large ocean liner through seas of turbulence and constantly emerging storms. The larger the ocean liner the less likely it is, of being able to constantly make dramatic course alterations. As a consequence the tendency will be to attempt to detect emerging storms on the ship’s radar and make incremental adaptive changes in course to circumvent the storms, while constantly focussing on the beacon that represents its final destination. This analogy, presented by Webb (2001), vividly captures the essence of incremental adaptive change. Contextual complexity and change do not invalidate the need for strategy. It necessitates an ability to keep the big picture or strategy in mind while on a more operational level making incremental changes to deal with internal and external contingencies as they may arise.

The resurgence of Japan’s economy is to a large extent attributed to a management philosophy termed “kaizen” (Martin 1995:201), which has no English equivalent term. According to Martin (1995:201) it has been translated in Western terms as “total quality management” or TQM for short. At an operational level it essentially translates into incremental adaptive changes in business processes, products and activities, to realise constant improvements in efficiency, quality and ultimately customer satisfaction (Martin 1995:201).
TQM's differentiating characteristics in relation to BPR, as has been stated before, are that of the scale and risks associated with process changes. An important aspect associated with the TQM approach is its orientation and association with organisational learning. Morris (1995:324) claims that management’s interest in learning organisations stems from a deep-seated conviction that organisations need to be able to constantly realign themselves, in order to be able to retain their competitive position within the global marketplace. This interest is also apparently associated with the same rationale that underpins TQM theory and practice (Morris 1995:324).

A pivotal facet in the management of incremental adaptive change is deemed to be the intellectual capital and creativity that exist within the organisation and management’s ability to actively engage this potential in efforts to achieve meaningful process improvements. This also brings into question the importance of knowledge management, as an aspect of consideration, in managing incremental adaptive change. The contention being that we have moved from an industrial to a knowledge era and that it is the collective knowledge that resides within business institutions that provide the modern day enterprise with a strategic advantage in the global marketplace.

Incremental improvements to business processes are described by Hill & Collins (2000:621) in terms reminiscent of emergent strategy, that is to say based on a learning process associated with gains in efficiency and quality engendered by the changes that have been initiated. Incremental emergent strategy allows management to learn not only from successes achieved, but also from mistakes that have been made, thereby reducing the risks associated with more radical changes to existing core business processes. The strategy planning process also supports an evaluation of competing incremental business process improvement initiatives (LaHay & Nobel 1998:569) and ensures an integrated approach in dealing with the changes envisaged. Process owners drive the process improvements within their respective competencies and accept ownership thereof. In cases where several competencies are affected by the envisaged
changes, a cross-functional team needs to be established that includes all the stakeholders involved (LaHay & Nobel 1998:570). Sight should, however, not be lost of the ultimate objective, namely to make business processes and their interrelated activities and procedures significantly more efficient.

A fundamental tenet underlying TQM and incremental adaptive change is the notion of teamwork to improve performance. Quality circles constitute a very specific team effort with the objective of finding means to improve business processes, reduce costs, enhance safety and reduce defects and waste (Lee & Walden 1988:11). The projects launched within quality circles established throughout the organisation are generally of an incremental adaptive nature and the real value associated with quality circles stems from their collective impact throughout the value chain. TQM is all about soliciting suggestions from rank and file employees for the improvement of business processes (Martin 1995:220). It is after all the employees involved in the business processes that have the greatest know-how and understanding thereof and that as a consequence are able to make the most meaningful suggestions for their improvement. Whether employee efforts at process improvement take the form of quality circles or other related forms of team settings, the key ingredient is that of mobilising the intellectual capital, ingenuity and creativity that reside within the teams.

The TQM approach to business process improvement essentially, according to Lee & Walden (1998:10), comprises four dimensions, namely:

- Continuous improvement
- A customer focus
- Total participation
- Social networking.

The first two dimensions have been quite extensively dealt with in preceding sections of this chapter and for the purposes of this section their relevancy is therefore merely reiterated. Total participation and social networking are deemed to be of particularly interest in view of the fact that they introduce human resources issues that are of
relevance in process design. Total participation for instance without doubt implies a bottom up operational approach to process improvement. The institution’s culture will certainly play a role in determining the viability of a bottom up approach, which will impact on power relationships within the institutions concerned. Haas (1993:105) concludes that breaking down the barriers that separate management and staff is challenging, in that basic traditional management assumptions, values and beliefs are challenged in the process. It is therefore not uncommon for TQM programmes to start with a fanfare and end with a whisper (McLagan & Nel 1995:11), when it comes into confrontation with the culture of the institution. Total participation is an inherent principle embraced within quality circles, teamwork, self-directed teams and similar forms of process improvement-based group interaction (Lee & Walden 1998:10) and the organisation’s culture therefore is a factor of consideration in such initiatives.

Globalisation and the associated increased competition, businesses attempting to access opportunities in global markets, increasing contextual turbulence, and a shift in traditional management thinking are all strategic determinants that demand a strategic realignment of the enterprise’s operational processes and the use of technology. Tinnilä & Vepsäläinen (1995:57) cite service industries as being a case in point, in that they are restructuring their delivery systems and replacing traditional channels dominated by corporate sales with new channels for delivering financial, logistics and other services at an even faster pace. Automation is seen as playing an important role in both cutting service costs and providing clients with a quick response. The use of ICT in enhancing service levels and reducing costs is deemed to be business critical. Tinnilä & Vepsäläinen (1995:57) claim that the quality movement has emphasised the conformance of technical specifications of service, while also enhancing the support of customer relationships.

Service as a concept encompasses a wide variety of processes and provides an ideal base for incremental adaptive change, the objective being to identify and integrate business processes where the customer enters into relationships with the business
institution (Tinnilä & Vepsäläinen, 1995:57). From a contemporary management perspective there is a clear need for moving towards the establishment a customer-orientated horizontal view of business processes, in contrast to the traditional departmental view (Tinnilä 1995:49). Notably, teams feature quite prominently as a means to bridge the traditional departmental divide or as it has also become known the “silo effect”. It is suggested, in terms of this study, that this forms an ideal basis for strategically driven and coordinated incremental adaptive change, as the culture of the organisation will not be able to be changed overnight and such an approach will be ideal for experiential learning, which will tend to engender a new set of cultural determinants. The strategic objective will essentially entail making incremental improvements to business processes, to meet or even exceed client expectations in terms of service delivery, through the use of project teams that are representative of the functional domains that are involved in the services rendered.

Malhotra (1998:Internet) claims that a lack of sustained management commitment and leadership, unrealistic scope expectations, and resistance to change, are at the heart of the problem of why 70% of BPR projects fail. The latter two causes cited by the researcher can clearly be addressed by adopting an incremental adaptive approach, in that it is more directed at limiting the scope to manageable proportions and it enlists the very people who need to implement the changes in the planning thereof.

TQM and BPR have been positioned as two extremes on a continuum, whereas in practice they both have a lot of elements in common (González-Benito et al. 1999:345). TQM is based on continuous improvement to facilitate business process realignment, whereas BPR advocates a more fundamental large scale structural process redesign on a clean slate basis (González-Benito et al. 1999:345). In spite of these differences in approach they are seen by a few researchers as being compatible (González-Benito et al. 1999:345). Both for instance place an accent on the customer and his or her needs as a point of departure in analysing process design and in both instances a sense of innovation and creativity is propagated, in order to achieve enhanced service delivery at
a lower cost.

Two researchers who have analysed the differences in approach between TQM and BPR are Mac Donald & Dale (González-Benito et al. 1999:350) and they conclude that:

- Large step changes are riskier, more complex and more expensive than continuous improvement
- BPR places more emphasis on ICT rather than on people, while the latter is emphasised in TQM
- TQM adopts a more holistic view of the business processes, in contrast to BPR which tends to concentrate on a single specific core process at a time. As a consequence TQM is directed at building improvements into all aspects of the organisation’s business operations.

It is contended by Coetzee (2000), Theart (2001) and Webb (2001) that both are in fact relevant approaches that are used in practice, depending on the nature and circumstances relating to the strategic issue to be addressed. The main difference essentially relates to the scope or extent of the changes and the nature of the changes concerned. From a business process design perspective, the strengths and weaknesses associated with each approach needs to be taken cognisance of in formulating an appropriate strategy for the specific situation confronting an organisation and the time frames that are deemed acceptable therefore.

In summary the key issues relating to business process design are:

- The need for executive commitment
- The need to adopt a team approach that involves all the stakeholders, whose “buy in” to the need for change is deemed to be critical in the implementation thereof
- The process needs to be strategically driven to ensure clarity of purpose and a holistic perspective of the business processes to be brought into alignment with changing business conditions
- ICT is deemed to play a significant role, as either a driver or support infrastructure
The culture of the organisation needs to be taken into consideration as it can either facilitate or inhibit the implementation of the envisioned changes.

The concept of “value chains” has significant relevance in gaining an understanding of business processes that extend across departmental and organisational boundaries.

Business processes are the means whereby an enterprise conducts its business activities and therein realises its strategic objectives utilising appropriate ICT support structures. This attests to the importance of ensuring that the business systems are correctly aligned to the corporate strategy to be implemented and with the ICT systems that are crucial for their effective operational efficiency.

### 4.3 ICT: A STRATEGIC DETERMINANT IN THE REALIGNMENT OF THE ENTERPRISE

“The strategic use of information technology (I/T) is now and has been a fundamental issue for every business ... The effective and efficient utilization of information technology requires the alignment of the I/T strategies with the business strategies, something that was not done successfully in the past with traditional approaches. New methods and approaches are now available.”

Luftman et al. 1993:198

In researching the concepts “business processes” and “ICT systems” it is difficult to merely focus on either one of the concepts without making extensive reference to the other, as they are so interwoven in the business fabric of modern day business institutions. In the preceding discussion extensive reference has been made to ICT as an initiator and enabler of business process redesign. It is intended in this section to build on the insights and understandings acquired in the preceding sections and not to once again revisit the issues covered in the preceding sections from an ICT perspective. The accent in this section will be to focus on the means used to attain strategic
alignment between ICT and business strategy. This is in line with objective three formulated for this study, where an attempt is to be made to develop or find an appropriate model or framework that may be used for understanding the relationship that exists between corporate strategy and information and communication technology strategy. The importance associated with this objective may be determined from the contention in the introductory statement that in the past little success has been achieved in effectively aligning business and ICT at a strategic level. This contention has eminent consequences for attaining operational efficiency, in meeting the competitive challenges presented within the digital global economy.

The transition from ICT strategy formulation to implementation, it is claimed by Currie (1995:2), is fraught with many challenges that are complicated by constantly evolving new innovative technology developments, which bring into question traditional strategies and methodologies. A frequent question that is for instance posed is whether ICT strategy formulation follows that of business strategy or if they are in effect formulated simultaneously. There are researchers who hold rather strong views in this regard, so for instance White (1996:211) forcefully states that:

“One adage that was true in the good old days remains true today. Putting the cart before the horse can have serious consequences. The minute you fail to put business before technology you're headed for trouble.”

Boar (1994:2) also notes that the traditional view is framed within the paradigm that the ICT function must adapt to accommodate the business and not the converse. The traditional business support role of ICT is also acknowledged by Venkatraman (1991:122). From a traditional perspective, Yetton et al. (1994:57) similarly conclude that an enterprise first formulated its business strategy, then determined its structure and management processes, followed by the alignment of IT in relation to the former.

The traditional notion of ICT as a support function and not as a business driver appears
to have given rise to a paradigm of “ICT strategy follows business strategy”. It is a paradigm that still is encountered in business today. Coetzee (2000) and Voges (2001) indicated that it essentially is the model adopted by their respective business institutions with a slight variation, in that the ICT function is requested to make representations, to the executive team formulating the business strategy, on trends and technology developments that they may be able to take into consideration in the formulation of the business strategy. The strategic management paradigm that appears to emanate from such practice is still one of business strategy driving ICT strategy, but with the variation of ICT trends and technology developments informing the business strategy.

In 1984 faculty members at MIT Sloan School of Management established a task team to research the consequences of environmental uncertainty and turbulence (Morton 1991:5). An important outcome from this research was the MIT90s framework, which is depicted in figure 3-1 of this study. Business systems are placed at the very core of the model and as noted by Morton (1991:5), within the context of this model, it would appear that IT would have an impact on the management processes and ultimately the strategy of the organisation. This research finding to a certain extent seems to stem from the realisation that information is the lifeblood of the organisation, which flows through the electronic networks of the enterprise and in many instances beyond the boundaries of the organisation itself. The major findings emerging from the research study undertaken by the MIT task team are (Morton 1991:11-19):

- IT is enabling fundamental changes in the way work is done within institutions
- IT is enabling the integration of business functions at all levels within and between organisations
- IT is causing shifts in the competitive climate in many industries
- IT presents new strategic opportunities for organisations that reassess their missions and operations
- Successful application of IT will require changes in management and organisational structure
- A major challenge for management in the 1990s will be to led their organisations
through the transformation necessary to prosper in the global competitive environment.

These findings all seem to suggest that ICT can no longer be considered to merely constitute a support function, but that it is moving towards becoming a driving force that needs to be recognised at both a strategic and an operation level in the contemporary business environment. An important aspect of the findings is the opportunities ICT seems to present in reconfiguring the value chain within and between business institutions and the strategic advantages that may be derived therefrom. This is an aspect that has previously been addressed in far greater detail within this chapter. Of pertinence within this section is the realisation that ICT can serve as a strategic driver of change within the organisation. It is a perspective supported by Harris (2001) who believes that the inhibiting factor in many instances still is the culture and traditional thinking that has become ingrained in many business institutions.

Venkatraman (1991:125) notes that while it has become the vogue to refer to ICT as a means for engendering strategic advantage, there still exists a significant degree of lack of clarity as to the causal forces for creating and sustaining such advantage. What has, however, become clear is that the traditional role definition of ICT needs to be changed to reflect the business critical role of ICT in business strategy (Harris 2001; Venkatraman 1991:125). This realisation is clearly articulated in the following statement by Venkatraman (1991:125):

“Our fundamental premise is that it is no longer a question of whether IT has a strategic role but how to exploit IT in strategic management or, more precisely, how to develop strategy-IT alignment. For strategists - who have long treated IT as belonging to the technical and/or administrative core of the business - the new challenge is how best to reconceptualize the role of IT in business.”

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The above statement certainly captures the main challenge confronting executives within contemporary business institutions, in having to achieve an alignment between business and ICT strategy. The strategic challenge is one of taking changing global and local contextual uncertainties and events into consideration, while on the other hand taking note of the potential that ICT offers the organisation in gaining a strategic advantage within such turbulent environmental conditions. Based on extensive research undertaken, Venkatraman (1991:127) identifies five levels of IT-induced reconfiguration benefits. The first two are deemed to be evolutionary in nature and relate to localised exploitation of ICT within business functions and the internal integration or exploitation of ICT within the total enterprise. Clearly, the two are very definitely related. The remaining three levels are deemed by Venkatraman (1991:127) to be revolutionary levels, these are:

- **Business process redesign**
- **Business network redesign**
- **Business scope redefinition**.

The third level, namely business process design necessitates the reconfiguration of business using ICT as a lever, instead of viewing them as a fixed determinant or a constraint in the formulation of strategy. Implied therefore is a need for business process and ICT infrastructure alignment, in contrast to superimposing the technology platform on existing business processes (Venkatraman 1991:125). It is noted by Luftman *et al.* (1993:203) that ICT is in effect enabling business processes to be redesigned in ways that previously were either thought to be impractical or impossible.

A golden thread identified in the previous discussion, is the challenge presented in attaining an alignment between business and ICT strategy. It is argued by Luftman *et al.* (1993:203) that the strategic success an enterprise achieves in reality, depends on the degree of harmony achieved in aligning business and ICT strategy, business infrastructure and processes, and ICT infrastructure and processes. In the ensuing
sections these issues will be explored in greater detail.

4.3.1 The alignment of business and ICT strategy: a contemporary perspective

Even a brief review of the management literature reveals that the concept strategic management essential deals with the future and is primarily directed at optimally positioning the enterprise within this future context (Joyce & Woods 1996:2; Luehrman 1998:89; Manning 1997:171; Mintzberg et al. 1996:10; Weeks & Lessing 1993:38). Corporate strategy sets the direction and defines the organisation’s envisioned desired future state, thereby establishing a set of strategic determinants that serve as a framework for the business unit strategy. ICT has traditionally been seen to be one of these business units. Venkatraman (1991:125) confirms this traditional view, in contending that corporate strategy develops the overall vision and establishes guidelines for business-level strategies. ICT is therefore essentially seen as constituting a support function and not as a driver of strategic change. In many instances this traditional perspective of the strategic management process has become ingrained in management thinking. The ICT support connotation stands in contrast to strategy being considered as constituting a response to technology, as a dimension shaping the competitive environment. Within this latter context, as may be seen from figure 2-2, ICT is assumed to be a driver of strategic change within an enterprise.

The strategic alignment process presented in figure 4-2 makes provision for both a business and an ICT driven change processes and the integration of the two. The strategic integration acknowledges the link that exists between the business and ICT strategy and the fact that they are so interwoven that for all practical purposes they need to be viewed as coexisting processes. Webb (2001) specifically contends that in practice corporate strategy formulation is addressed by taking cognition of both the business and ICT strategic domains and that an either/or approach was no longer deemed to be appropriate. Of particular significance is the contention by Webb (2001) that the model presented in figure 4-2 is currently being used within Transnet. This
Coetzee (2000) concurs with Webb (2001) that in practice one can no longer not address both the business and ICT strategy on a simultaneous basis. Theart (2001) also acknowledges the need to address business and ICT strategy as coexisting processes, as they are interactive in nature, but cautioned that in practice this entailed a significant mindset change in traditional strategic management thinking and he was of the opinion that in many instances this paradigm change had not yet become generally ingrained in contemporary management thinking. A very similar perspective was held by Harris (2001), who acknowledged that a salient problem that still needs to be addressed in many instances is the culture of yesterday’s strategic management mindsets. Harris (2001) was firmly of the opinion that the corporate strategy needed to be formulated on the basis of business and ICT being seen as integrated concepts.

Figure 4-2
Strategic alignment model
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In analysing the model presented in figure 4-2 above, Luftman et al. (1993:203), conclude that for companies to succeed in a highly competitive and information rich context the principle domains, as reflected in the figure, need to be in alignment. Boar (1994:26-27), in reviewing alternative models which in essence are very similar in nature and content to that presented in figure 4-2, concludes that “all the models view the business and I/T as existing in parallel and need to align perfectly at each level of decomposition. The optimal alignment ... occurs when business strategy and I/T strategy are developed together”. The researchers' findings are in line with the insights derived from practitioners, as reflected in the above discussion.

The problems encountered, in practice, in integrating business and ICT strategy are reflected in the claim by Dempsey et al. (1997:80-83) that the centralised ICT functions within many institutions are slow to respond to emerging business challenges. Consequently, according to the researchers, a sense of despair exists in the boardrooms of these entities, who are experiencing difficulty with technology infrastructures that are complex and difficult to reconcile with business realities (Dempsey 1997:80-81). It is contended that the solution to the problem is to establish a clear vision for ICT within the overall context of the business strategy.
Webb (2001) echoes the expressed importance of having a clear future vision that defines the enterprise’s desired future state. The strategic objectives are stepping stones leading to the vision and these may change in the face of changing contextual conditions, but the vision tends to be more stable and enduring according to Webb (2001). Seen within this context, strategic alignment is a process of moving towards a beacon (the vision) on an incremental basis.

Henderson & Venkatraman (1999:474) suggest that generally managers are far more comfortable with the business related strategic decisions, than they are with defining the technological functionality that shapes and supports their business strategy. The researchers propose that the position of the enterprise in the ICT marketplace involves three fundamental choices (Henderson & Venkatraman 1999:474):

- **The scope of ICT** - relates to technologies either currently supporting business strategies or that could play an important role in shaping new strategic initiatives that provide the institution with a competitive advantage
- **Systemic competencies** - are strategic attributes of ICT that are able to contribute to the creation of new business strategies or more effectively support existing business strategy imperatives
- **ICT governance** - deals with the selection and utilisation of various means to acquire the required ICT competencies. Examples cited are that of joint ventures, strategic alliances and joint research initiatives.

Each of these external strategic domains has a business related equivalent, as may be determined from figure 4-2. The internal ICT domain has a similar set of components (Henderson & Venkatraman 1999:474), namely:

- **Information systems architecture** - defining the portfolio of applications, configuration of hardware, software and communication, and the data architecture. Collectively these elements define the technical architecture
- **Information system processes** - define work processes relating to the operational
aspects of the information systems architecture. These aspects include both systems development and maintenance, as well as the monitoring and control of the systems that have been implemented

- **Information systems skills** - this is essentially a human resources issue and pertains to ensuring that the appropriate ICT skills are available to manage and operate the infrastructure that has been established.

Webb (2001) while concurring with the above domains of ICT management drew a distinction between the fundamentals of ICT, namely: business efficiency, business experimentation and break through technology. The fundamentals relate to the information systems architecture that needs to be in place to support the operational activities of the organisation.

- **Business efficiency** would relate to those systems that are directed at driving costs down and improving service delivery. They are in effect directed at value generation
- **Business experimentation** relates to experimenting with new technologies and where relevant making use of the insights gained. Also, of pertinence is the implementation of the associated technology on an incremental basis
- **Break through technology** will make a fundamental difference in the way that business is transacted at an operational level and has the potential to provide the business institution with a significant strategic advantage. This may be seen as “value questing” in providing the institution with new opportunities.

The available resources for ICT will need to be allocated to each of the above respective domains. It is important to note that they range from a purely tactical or operational focus to an emerging strategic dimension. One cannot escape the question of return on investment, in managing scarce ICT resources and the effect of technology expenditure on the bottom line or profitability of business operations remains a critical determinant. The aspects referred to can be viewed in terms of those essential for keeping the enterprise in business and those directed at creating new business. These practical
insights, highlighted by Webb (2001), add to our understanding of ICT strategic and operational management, both being key domains within the model depicted in figure 4-2.

An important facet that emerges from the preceding discussion is the role played by ICT in two key business domains. The first relates to operational efficiency and the second strategically driven business enhancement. They also respectively relate to the “must do” elements of ICT and on the other end of the scale the need to search for strategic opportunities that may be derived from state of the art emerging technological innovations. From a strategic management perspective this implies a need to have, as so well stated by Webb (2001), “our radar monitoring the technology environment to detect what technologies are coming into focus and we then need to analyse and evaluate each of these technologies in terms of the effect thereof on our business operations”. The linkage between technology and the use thereof in business is a fundamental reality that is embodied in the theory on which the alignment model in figure 4-2 is based. It is an interactive strategic process of technology and business application evaluation, with the vision and mission of the enterprise in mind.

Henderson & Venkatraman (1999:475) from their observations conclude that traditionally management tends to place a far greater focus on the operational (internal) aspects of ICT, which is deemed to be understandable in view of its historical support role. They as a consequence argue that ICT strategy needs to be elevated from its internal focus to address external issues of positioning the enterprise within a rapidly transforming ICT environment (Henderson & Venkatraman 1999:475). This, as noted by the researchers, does not in any way distract from the importance of having to take cognisance of the internal operational considerations in formulating strategy.

In strategic terms, from an ICT perspective, the objective is to have a clear understanding of the role of ICT in directing and supporting the business strategy and determining the application portfolio and infrastructure required for the implementation
of strategy (Demsey et al. 1997:82-84). As noted by the researchers, this entails building on a sound foundation of shared experience, one where business and technology executives have a strategic and operational understanding or awareness of the cross functional implications involved. This stands in stark contrast to the comment made by Martin (1995:55), that a gulf exists between business and ICT management structures. Significantly, both Coetzee (2000) and Webb (2001) indicated that the new generation of management, that are taking their places within the ranks of contemporary business institutions, are far more comfortable with both the business and the technology spheres of management, as both these spheres are being integrated within MBA and various related management training programmes completed by these managers. This attests to the importance attributed to ICT as an aspect of management, by both business and academic institutions.

As may be ascertained from the strategic alignment model and the preceding decision, the effective management of ICT necessitates achieving a balance among all four of the domains depicted in figure 4-2 and not merely a horizontal (business/ICT) or vertical (strategic/operational) alignment. The four perspectives that therefore emerge from an analysis of the model presented in figure 4-2 are (Henderson & Venkatraman 1999:477-480; Luftman et al. 1993:211-214):

- **Strategy execution**: it assumes that business strategy drives both the organisational design choices and the IS infrastructure. The sequence is: business strategy - organisational infrastructure - IS infrastructure (see figure 4-2). It is considered to be the most commonly encountered perspective corresponding with the hierarchical view of strategic management. Executive management formulates strategy while the role of ICT management is that of implementing the strategy at an operational level.

- **Technology transformation**: involves implementing business strategy through the development of an appropriate ICT strategy, which in turn informs the information infrastructure and processes. The sequence is: business strategy - ICT strategy - IS infrastructure (see figure 4-2). Contrary to the preceding perspective, this approach...
implies that the organisational infrastructure and processes do not act as a constraint, but instead the focus is on identifying ICT strategic competencies through appropriate positioning within the technological marketplace and identifying the corresponding internal IS architecture. There is a tendency in some instances to anchor business strategy on technology-based competencies. Executive structures provide technological vision that will best support the defined business strategy, while the ICT management is that of the technological architect.

- **Competitive potential:** the strategic focus is one of exploiting emerging ICT in order to derive a strategic advantage through the development of innovative products or services. The sequence is: ICT strategy - business strategy - organisational infrastructure (see figure 4-2). With the three components or dimensions of ICT in mind an attempt is made to identify suitable strategic options for the development of a business strategy and a corresponding organisational infrastructure for implementing the business strategy. The executive role is one of articulating emerging ICT strategic advantages into business strategies. The role of the ICT management is that of interpreting the ICT environment in terms that the business managers are able to understand.

- **Service level:** the accent is on building a so called “world-class” ICT service organisation. It entails an understanding of the external dimensions of ICT strategy with a corresponding internal design of IS infrastructure and processes. The sequence is: ICT strategy - IS infrastructure - organisational infrastructure. The ICT function creates the capacity to meet the needs of its customers. The influence of business strategy is indirect and relates to providing broad direction to stimulate customer demand. The primary role of the executive structures is one of prioritising allocation of scarce resources within the organisation and in the ICT marketplace. The role of the ICT management leadership, tasked with ensuring the success of the service delivery to customers within the operational guidelines established by the executive structures.

With the preceding discussion serving as a source of reference and insight the following...
points are made:

- **The first point to note is that in all four the above instances the point of departure was from a strategic perspective, be it the business or ICT strategy. Strategy therefore informs the operational decisions that need to be made. This implies a move away from the traditional “internal” or operational focus of the ICT function within an enterprise to one of adopting a strategic perspective (Henderson & Venkatraman 1999:480)**

- **The second point of interest is the contention that the business driven strategic process is deemed to be the most prevalent encountered in practice, particularly if viewed from a traditional management perspective. (Luftman et al. 1993:216; Yetton et al. 1994:57)**

- **Thirdly the notion of an integrated coexisting business and ICT strategic processes, influencing both internal domains simultaneously is essentially ignored by the researchers in their analysis and this may be deemed to be a rather significant omission. So for instance Luftman et al. (1993:216) assert that the domain pivot should be either business or ICT strategy. It should, however, be noted that in so doing the researchers do not imply that there is no iterative interplay between the two, but only that one of the two are deemed to be the principle driving force**

- **Fourthly strategy formulation is essential seen by the researchers as falling within the executive domain. The notion of a participative strategic process involving lower levels of management at an operational or “internal” level is essentially discounted.**

- **Fifthly the notion of a strategy driven by emerging highly innovative ICT, to attain a strategic advantage in a highly competitive global context, is certainly quite modern in its conceptualisation. As well phrased by Luftman et al. (1993:205) “new technologies will continue to offer new opportunities for competitive advantage and strategic advantages”. It in essence engenders an impression of institutions constantly surfing successive emerging waves of technological innovations, a strategy generally associated with an emphasis on research and development, so as to be the leader within the industry. The extent to which such a strategy assumes general legitimacy in practice, is certainly within the context of this study**
not clear and further empirical studies will be required to determine the extent that it is applied in practice

- In the sixth instance it is noted that strategically driven ICT application, accompanied by changes in internal business processes, has the potential to result in significant advantages to an enterprise (Venkatraman 1994:75), the strategy apparently being one of exploiting the leverage provided by ICT systems in business transactions and service provision.

A five-year research initiative undertaken by Venkatraman (1994:75), revealed that at a local level the use of ICT is directed at gaining an advantage, either around a reduction in the costs associated with doing business or engendering a quick response to changing customer requests, needs and expectations. The logic of this contention is a recurring theme within a traditional ICT context. Although previously stated in this study, it needs to be reiterated that it has been found by Venkatraman (1994:75) that the benefits derived from ICT functionality, are not fully realised if superimposed on current business processes. This latter finding assumes significance from the perspective of having to achieve a balance among the four domains depicted in figure 4-2.

A question posed by senior executives representing Fortune 500 corporations within the United States of America, as to what steps were needed for successful business and ICT alignment and the enhancement of business performance through ICT (Luftman & Brier 1999:112), is deemed to have relevance within the context of this section. This led to a study to determine the enablers and inhibitors to achieve harmony between the business and ICT related functions. The study revealed that only half of the respondents that took part in the study were of the opinion that their business and ICT strategies were in alignment, 42% confirmed they were not aligned and 8% were unsure (Luftman & Brier 1999:112). Significant enablers identified were (Luftman & Brier 1999:112):

- Senior executive support for ICT
- The involvement of the ICT function in strategy formulation
- A need for a business understanding by ICT staff
The fostering of a close relationship between ICT and non-ICT personnel
The need for ICT to manifest strong leadership
A prioritisation of ICT efforts
Ensuring ICT commitments and ICT plans linked to business plans are met.

The inhibitors to a large degree were found to be the converse of most of the enablers identified. A very prominent inhibitor identified was the lack of a close relationship between ICT and non-ICT personnel within an enterprise. Based on their research Luftman & Brier (1999:115) propose a six-step approach to achieve strategic alignment in any organisation, these are:

- Setting organisational goals and establish a cross-functional team of executives
- Understanding the business ICT linkage from a current and future perspective
- Analysing and prioritising gaps between current and future states of the twelve alignment components, as depicted in figure 4-2, which constitute the major content of the business & ICT strategies
- Specifying the actions required for carrying out the recommendations. The focal areas for these actions are essentially in the infrastructure domains of the strategic alignment model
- Selecting and evaluating success criteria. After the strategy has been set, the action plan specified success criteria need to be clearly articulated
- Sustaining alignment.

According to Luftman & Brier (1999:115) the process mirrors traditional strategic planning and incorporates an organisational assessment using the strategic alignment model. It is further stressed by Luftman & Brier (1999:120) that strategic alignment is not an event, but an ongoing process, with no single strategy or single combination of activities that will enable the enterprise to achieve and sustain alignment. It is a sentiment echoed by Henderson & Venkatraman (1999:482), who, on being questioned as to which alignment perspective is deemed to be the best (see previously discussed four perspectives), replied that they do not believe that there is one universal superior mode
to formulate and implement strategy. The four dominant alignment perspectives, based on both business and ICT strategy, as the driving force, are deemed to be equally pertinent.

4.4 CLOSURE

Running like a golden thread through this chapter, is the realisation that in theory and practice business processes and ICT have become so interwoven that it is almost impossible to analyse one without making reference to the other. It could well be argued that the two form the strategic fabric of many an organisation’s competitive strategy, particularly if seen within the context of the global marketplace. A central tenet embodied within the concept of “strategic management” is the need to view the organisation as an entity. Each of the various functional units within the enterprise are linked by means of business processes and ICT networks that form the value chain, that extends across the functional boundaries. This by implication implies a need for ensuring that they are in strategic alignment. An important problem identified in achieving such an alignment is the divide that exists between management responsible for business operations at a functional level and ICT personnel. A traditional business orientation, with ICT seen as a support function, has given rise to a business driven strategic process in many instances and this has not been very instrumental in bringing the two disciplines closer together.

An objective established for this study was to develop an appropriate model or framework that may be used for understanding the relationship that exists between corporate strategy and information and communication technology strategy. In researching the concepts it soon became apparent that the strategic alignment model, advocated by Henderson & Venkatraman (1999:476), was very much in line with the research findings of this study and little would be achieved in attempting to reinvent the wheel. The model also served as a source of reference for other researchers (Luftman et al. 1993:204; Macdonald 1991:162) attempting to gain an understanding of the complexities involved in integrating the two at a strategic and operational level. The model also tends to be in line

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with the MIT90s framework, which in turn embodies a human resources (culture) perspective, thereby completing the three-dimensional linkage (business processes, ICT, and human resources) that forms the foundation for this study. Both the MIT90s framework and the strategic alignment model are complementary in nature. The two diagrammatic representations were therefore selected as being very appropriate for researching the interaction between the concepts concerned in this study.

In the ensuing chapter the linkage with the human aspect, as a dimension of strategic change management, is analysed using the MIT90s framework and the strategic alignment model as a source of reference.