CHAPTER 1: INTRODUCTION

1.1 Chapter overview

The diagram below gives a brief overview of this chapter:

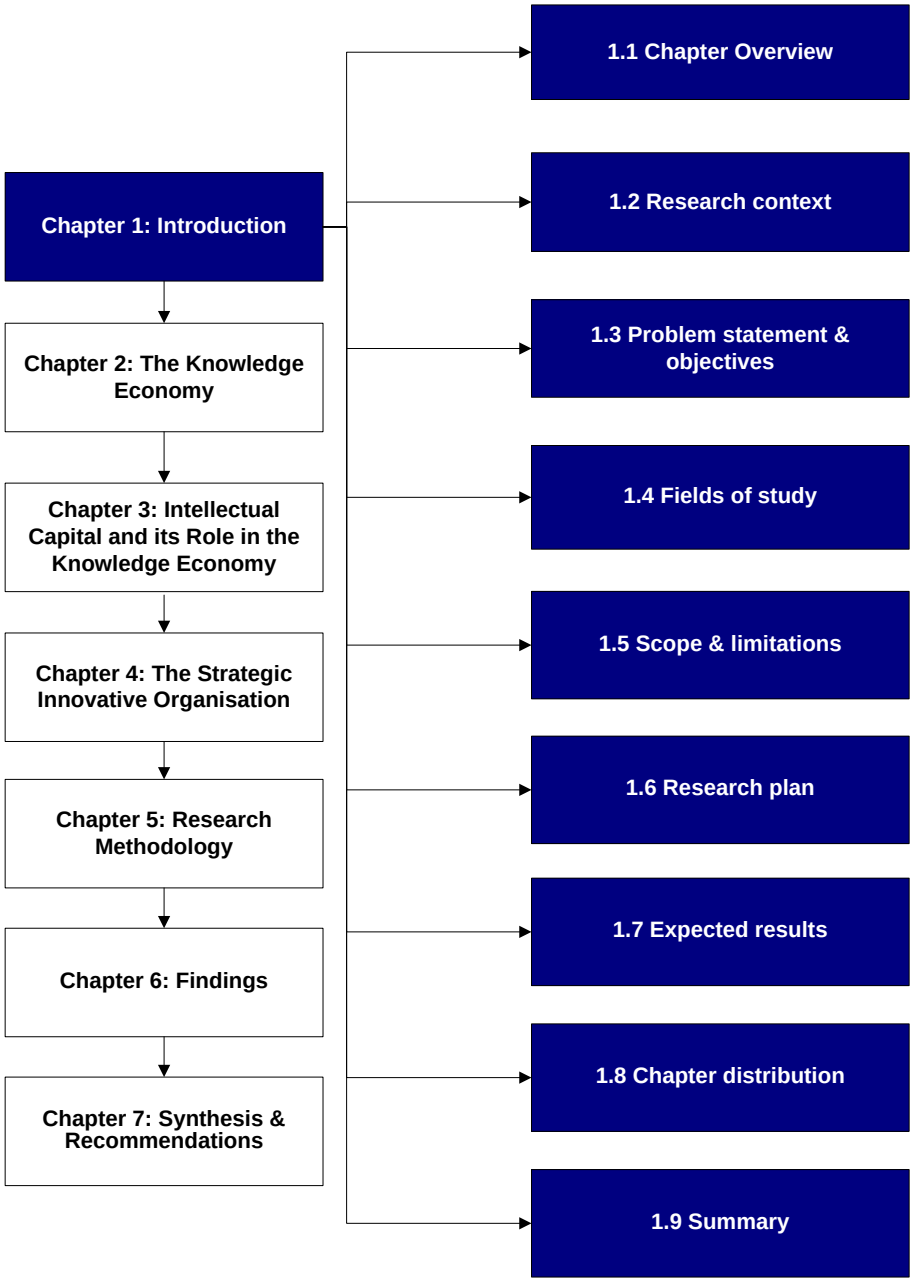


Figure 1.1: Chapter overview

1.2 Research context

The knowledge economy has become the talking point of many organisations in the new millennium. The traditional bases for economic power have shifted from land and labour to information and knowledge. The boom in the information age has led organisations to rethink their strategy in order to stay competitive.

In the insurance industry the changing market place, globalisation, new governing rules, the rapid developments in new technology and customers who know exactly what they want, have driven these organisations to become more innovative than ever. New products need to be developed at a rapid pace and the go to market strategies for these life insurance organisations need to allow for rapid product releases. The saying in the knowledge economy that the fast eat the slow is therefore even more true for life assurance organisations.

In the life assurance industry today there are many opportunities and perhaps even more risks in positioning themselves in this market that the knowledge economy has created. These opportunities and risks are also a challenge for vendors who supply life assurance organisations with software systems. Software vendors need to constantly adapt their product offerings in order to meet their customers' needs. One of the biggest challenges for vendors and life assurance organisations alike is how to build an innovative environment that will leverage knowledge as a corporate asset, maintain customers and allow for rapid development and release of customised product offerings.

1.3 Problem statement and objectives

1.3.1 Problem statement

This research hypothesises that organisations need to be strategic innovative if they wish to survive in the knowledge economy.

It is therefore critical for organisations to understand which variables could contribute to creating a strategically innovative operational environment. Although tools exist to measure innovation, most organisations innovative success is measured based on certain innovation inputs (e.g. research and development spending) versus outputs (e.g. number of patents filed) and do not take into consideration the operational environment that is needed for strategic innovation.

In lieu of the above this research sets out to answer the following question:

To what extent can an instrument be developed to measure an organisation's strategically innovative environment?

In exploring this issue, the following subquestions arise:

- What is the knowledge economy and what impact does it have on a strategically innovative environment?
- What role does intellectual capital play in the strategically innovative environment?
- What is a strategically innovative organisation?
    - Which variables contribute to the creation of a strategically innovative environment?
- How can learning theory contribute to the creation of a strategically innovative environment?
- To what extent can organisations in the life assurance industry in Southern Africa be regarded as strategically innovative?

To readers, this research may hold the following value:

- Awareness and analysis of factors surrounding the integration of the concepts of knowledge economy, intellectual capital, the corporate curriculum, learning theory and strategic innovation.
- Sensitivity to the need to support strategically innovative organisations as suppliers/vendors.
- Exposition of elements crucial to the evaluation and development of a strategically innovative environment.

- Appreciation for the factors affecting organisations wishing to improve their strategically innovative environment.

1.3.2 Objectives

The first objective of this study is to describe the role intellectual capital, the knowledge economy, the corporate curriculum and learning theory plays in creating a strategically innovative operational environment. In order to meet this objective this study will attempt to:

- Describe the constructs mentioned above in order to establish their conceptual boundaries.
- Discuss the characteristics of these constructs in order to establish the relationship between them.
- Explain the value that each construct adds to business in order to provide a high level of understanding of the nature of each construct and its interrelationship with other constructs.

A second objective of this study is to develop an instrument to measure an organisation's strategic innovative environment based on the analysis and investigation of the above constructs. In order to meet this objective this study will attempt to:

- Integrate the aforementioned constructs to identify certain variables that could promote or inhibit a strategically innovative environment.
- Use Cronje and Burger's (2006) learning matrix as a base to develop a matrix for strategic innovation.
- Draw up a list of statements based on the characteristics of each variable. These statements will represent elements of the x- and y-axis of the refined matrix mentioned above. These statements will also be used as the basis for a Likert-based instrument which will be used to evaluate the participating organisations.

A third objective of this study is to apply this newly developed instrument to eight life assurance organisations in Southern Africa. By applying the instrument to these organisations this study will attempt to:

- Plot the results from the instrument on the refined matrix to illustrate the relationship between the variables in creating a strategically innovative environment.
- Help vendors to these organisations (in the case of this study, SDT Financial Software Solutions (Pty) Ltd) understand its customer environment in order to customise its product offering;
- Illustrate to the participating organisations which variables have an impact on their overall strategically innovative environment.

A fourth objective of this study is to provide the participating organisations with insight on how they could build an operational environment conducive to strategic innovation. In order to meet this objective this study will attempt to:

- Provide these organisations with recommendations on how they could improve their operational environment to become strategically innovative.

1.4 Fields of study

Main subject fields include knowledge management, the knowledge economy, intellectual capital, learning theory and strategic innovation. Fields of study include, but are not limited to: information science, general management, operational management, strategic management, organisational development and economics.

1.5 Scope and limitations

This study is limited in both theoretical scope and empirical scope as described below.

1.5.1 Theoretical scope

This study is limited in terms of the following aspects: the knowledge economy, role of intellectual capital in the knowledge economy, the corporate curriculum (Harrison & Kessels, 2004), learning theory (Cronje & Burger, 2006) and strategic innovation (Palmer & Kaplan 2007). Cronje and Burger's (2006) model on learning theory will be used as a base to develop the new instrument.

1.5.1.1 The knowledge economy

In chapter 2 the knowledge economy is explored. A brief description of the knowledge economy is followed by a comparison between the knowledge economy and the industrial economy to highlight the major differences between the two. The impact of the knowledge economy on the workplace is explained with reference to organisational learning, after which certain challenges for Africa are highlighted.

It is important to understand the different nuances in a knowledge economy because it represents the climate in which organisations need to be strategically innovative.

1.5.1.2 Intellectual capital and its role in the knowledge economy

In chapter 3 intellectual capital and its role in the knowledge economy is explored. Chapter 3 describes intellectual capital by referring to its components (see section 3.3.1) and their relationship to one another, as well as exploring ways in which intellectual capital could be managed.

Chapter 3 is concluded by highlighting the importance of human capital as a catalyst to creating a strategically innovative environment.

1.5.1.3 The corporate curriculum

Chapter 4 describes the corporate curriculum as a framework towards organisational learning. The eight pillars of this curriculum and the impact each pillar has on an organisation is explained in table 4.2.

This curriculum was developed by Harrison and Kessels (2004) to provide organisations with a tool to assist them in creating an environment conducive to learning.

1.5.1.4 Learning theory

According to Ormorod (1995) and Illeris (2002) in psychology and education, learning is commonly defined as a process that brings together cognitive, emotional, and environmental influences and experiences for acquiring, enhancing, or making changes in one's knowledge, skills, values, and world views. Learning as a process focuses on what happens when the learning takes place.

Explanations of what happens constitute learning theories. A learning theory is an attempt to describe how people and animals learn, thereby helping us understand the inherently complex process of learning. Learning theories have two chief values according to Hill (2002). One is in providing us with vocabulary and a conceptual framework for interpreting the examples of learning that we observe. The other is in suggesting where to look for solutions to practical problems. The theories do not give us solutions, but they do direct our attention to those variables that are crucial in finding solutions.

Two main categories or philosophical frameworks under which learning theories fall: instructivism and constructivism are described in chapter 4 of this study by referring to Cronje and Burger's (2006) learning theory model. Instructivism focuses on learning through instruction while constructivism views learning as a process in which the learner actively constructs or builds new ideas or concepts (see addendum 3).

1.5.1.5 Strategic innovation

Chapter 4 also describes the concept of strategic innovation with reference to Palmer and Kaplan's (2007) model. In this chapter strategic innovation is defined as: *"Creating and applying knowledge to the benefit of the organisation through creating an environment conducive to learning"*.

Chapter 4 furthermore provides a brief overview of the more traditional approaches to measuring innovation in organisations.

A new matrix is proposed in the latter part of chapter 4 based on Cronje and Burger's (2006) matrix that integrates key constructs towards strategic innovation. This new matrix on strategic innovation will be used to plot the results from the newly developed instrument on. It is hoped that by plotting the results on the matrix it will give the reader an understanding of the role key variables play in promoting or inhibiting a strategic innovative environment. It is also believed that this matrix will be a valuable tool for organisations to prioritise which areas need improvement.

1.5.2 Empirical scope

The empirical scope of this study is limited in terms of industry, geographical area and the number of participating organisations.

- ***Industry****:* Life Assurance. This limitation is due to the fact that the researcher and his reporting staff were all employed in this industry by SDT Financial Software Solutions (Pty).Ltd. (hereafter referred to as SDT), the sponsor of this study.
- ***Geographical area****:* Southern Africa (South Africa, Swaziland, Namibia, Lesotho and Mauritius). This limitation is due to the fact that the participating organisations' head offices resided in the various geographical areas.
- ***Number of participating organisations****:* Eight organisations participated in this case study. This limitation was due to the fact that this research was conducted on a selection of customers of SDT. These customers were selected in consultation with executive management of SDT.

1.6 Research plan

1.6.1 Type of research

This research consists of a qualitative case study, which is supplemented by literature studies pertaining to the topic at hand.

The research is furthermore guided by surveys to identify field leaders, such as Harrison and Kessels (2004); Bontis (1998), Edvinsson & Malone (1997) and Senge (1990) to name but a few. It is also informed through case studies and discussion forums.

This research was divided into three phases. In the first phase literature on the topic at hand was analysed to identify the main categories. Material within these categories was then reanalysed to identify subcategories on the basis of specific content within the data.

In the second phase various concepts are integrated to formulate statements. These statements formed the basis of the Likert-based instrument to measure the strategic innovative environment of organisations.

As a third phase, this newly developed instrument was used to evaluate a select case of organisations in the life assurance industry of Southern Africa. The results from the instrument were then plotted on an innovation matrix that is based on Cronje and Burger's (2006) initial matrix on learning theory.

1.6.2 Participants in this study

Eight life assurance organisations in Southern Africa were selected for this study. Selecting only eight cases ensured that this project concluded in a reasonable timeframe, therefore not prolonging the process. These organisations were customers of SDT, a software development company in Pretoria, South Africa. The organisations varied in size and turnover. Some were listed on the JSE Limited. More detail on these organisations is provided in addendum 4.

In each organisation three staff members were interviewed. To avoid potential bias of the participants, the interviews were conducted individually and staff at different levels in the organisation was interviewed. A total of twenty four interviews were therefore conducted across eight organisations.

These interviews were recorded to enable the researcher to analyse and reanalyse the data. As mentioned in section 1.6.1 above, the statements developed for the instrument were used as the basis for the interviews.

1.6.3 Data collection methods

A combination of methods was used to collect relevant data. The instruments used to collect the data are discussed below and the cross-references between the specific data gathering instruments and the related questions within the research are explained in table 1.1.

The instruments used were as follows:

- ***Literature review:*** This covered relevant journal articles, books and electronic documents available.
- ***Web pages:*** Pages were consulted to obtain details on the topic at hand.
- ***Participant interviews:*** Telephonic interviews were conducted with participants. These interviews were recorded to enable the researcher to analyse and reanalyse the data.

Table 1.1: Matrix to indicate data collection methods

Question	Literature review	Participant interviews	Web pages
1. What is the knowledge economy and what impact does it have on a strategically innovative environment?	✓		✓
2. What role does intellectual capital play in the strategically innovative environment?	✓		✓
3. What is a strategically innovative organisation? • Which variables contribute to the creation of a strategically innovative environment?	✓		✓
4. How can learning theory contribute to the creation of a strategically innovative environment?	✓		✓
5. To what extent can an instrument be developed to measure an organisation's strategically innovative environment?	✓	✓	✓
6. To what extent can organisations in the life assurance industry in Southern Africa be regarded as strategically innovative?	✓	✓	✓

It needs to be noted that this study attempted to answer the two highlighted questions in table 1.1 and that the non-highlighted questions (questions 1, 2, 3 and 4) were posed in order to create the context in which the author attempted to answer questions 5 and 6.

1.7 Expected results

Expected results from this study include:

- An instrument can be developed that integrates characteristics of the knowledge economy, intellectual capital, the corporate curriculum and learning theory in order to measure the strategically innovative environment of organisations.
- Individual learning is a critical component for creating a strategically innovative environment.
- Areas will be identified that need development if organisations wish to become strategically innovative.
- Participating organisations will be regarded as being strategically innovative due to the competitive environment they operate in.
- Organisations need to become strategically innovative to survive in the knowledge economy.
- The instrument will assist the participating organisations in identifying which variables affect their strategic innovativeness.
- The instrument will allow the participating organisations to prioritise which areas they wish to improve to enhance their strategic innovativeness.
- The instrument will assist SDT in understanding its customers' environment to enable SDT to customise its product offering.

1.8 Chapter distribution

Description of the product

The explicit outcome of this thesis specifies contributing factors as well as the possibilities and constraints of alternative methodologies. It also suggests implicit knowledge beyond the proven facts. Some of these issues and surrounding complexities are captured in chapter 7 as suggestions for further research.

Another outcome of this research is improved insight and further questions in the mind of the researcher. Table 1.2 gives an overview of the thesis.

Table 1.2: Chapter distribution

Chapter 1	Introduction	The framework within which the problem is situated outlines the main points and provides a general overview of the study.
Chapters 2, 3 & 4	Theoretical framework	The literature covered is explained and key concepts within the literature are described.
Chapter 5	Research methodology	The reliability of the outcome of the study depends on the reliability of the methods used to reach those conclusions. This chapter describes and motivates the methodology.
Chapter 6	Findings	The main results are discussed and summarised. Trends and patterns relating to the research questions are discussed.
Chapter 7	Synthesis and recommendations	An overview of the research and conclusions drawn is given. Recommendations for and limitations of the study as well as areas for possible further research are listed.

1.9 Summary

Research undertaken in this thesis shows that it is possible to develop an instrument to measure an organisation's strategically innovative environment.

This research further shows that life assurance organisations in Southern Africa have a moderately strategically innovative operational environment. The degree of strategic innovation depends on the type of organisation and is influenced by certain variables. This research also acknowledges that organisations are different and that

their “path” to create a more strategically innovative operational environment is affected by various changes in the economic climate.

It is believed that the instrument and matrix developed for this study could assist organisations in negotiating this path to a better strategically innovative operational environment.

CHAPTER 2: THE KNOWLEDGE ECONOMY

2.1 Chapter overview

The diagram below gives a brief overview of this chapter:

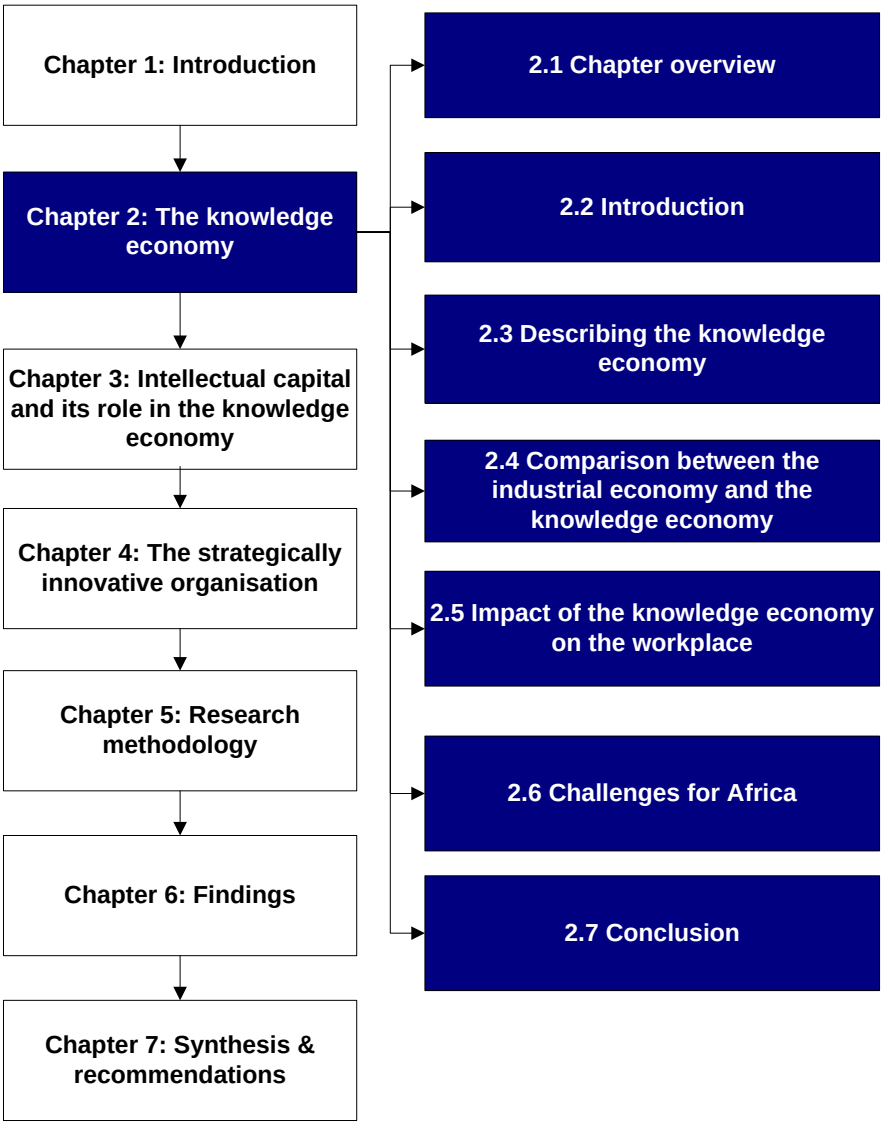


Figure 2.1: Chapter overview

Today, a high premium is put on an organisation's human capital and it is argued that in a knowledge economy, a company's intellectual capital could be the only differentiating factor distinguishing a company from its competitors (Bontis, 1998:63-75).

For organisations to be competitive today they constantly need to adapt to the new demands of a knowledge economy. These demands result in organisations needing to become strategically innovative to adapt to constant changes created by the knowledge economy.

Understanding which competences/variables promote the creation of a strategically innovative environment is becoming more important to survive in a knowledge economy.

This chapter will therefore focus on different aspects of the knowledge economy in order to highlight some of these demands or variables. This will be done by means of a short introduction, after which the knowledge economy will be described. In order to further understand what is meant by the knowledge economy, a comparison will follow between the industrial economy and the knowledge economy. This will explain in brief the major differences between these two economies.

After describing the knowledge economy, there will be a look at how this “new” economy impacts (creates new demands) on the workplace of today. Certain challenges for Africa will then be highlighted.

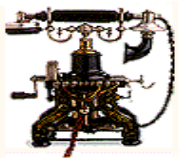
It is important to understand what is meant by the knowledge economy and how it impacts on the workplace of today because organisations need to become more strategically innovative if they want to thrive and survive in this knowledge economy, as stated earlier.

2.2 Introduction

If one looks back at the Industrial Revolution, it is evident that it was fuelled by physical capital (Komlos, 1998:779-802). The machines and the backs of the workers that made the goods, and the factories, ships and trucks that delivered the goods are all examples of this (Lucas, 1996). This all changed in the middle of the 20th century when a goods-based economy gave way to an economy based on services – people were doing things for other people (Jensen, 1993:831-880;

Jones, 2001:1-45; Galor & Moav, 2004:1001–1026). It was suddenly not good enough to teach a worker a task and to put him/her to work for the rest of his/her life on the assembly line. This change came about because of the change in the value chain between the industrial economy and the knowledge economy, as depicted in figure 2.2 below (Trilling & Hood, 1999:5-18). Figure 2.2 highlights the shift from manufacturing to produce products (with services as a by product) in the industrial economy to data and information becoming key to providing a service in the knowledge economy.

Meisinger (2006:10) emphasises this phenomenon as well, stating that the business environment and the nature of work has changed a lot during the past decade. According to Meisinger (2006:10), this trend will also continue for years to come because of the constantly changing marketplace in which organisations need to function.



Extraction => Manufacturing => Assembly =>
Marketing => Distribution => Products (& Services)

Data => Information => Knowledge => Expertise =>
Marketing => Services (& Products)

Figure 2.2: The industrial economy vs. the knowledge economy value chain (Trilling & Hood, 1999:5)

Meisinger's views (2006:10) on the "shifting" economy are also evident in today's workers who have to learn to adapt constantly to these shifting demands, both from their employers and their customers. According to Ruttenbur *et al.* (2000), the key outcome of the transformation from the industrial economy to the knowledge economy was a dramatic shift from investment in physical capital to investment in human capital (see figure 2.2).

This shift to human capital is also highlighted by other authors, such as Galor and Moav (2004:1001–1026) and Becker in Ruttenbur *et al.* (2000:12). One could thus argue that the knowledge economy is built upon the industrial economy. It is further

argued that more developed countries are quicker to adapt to the knowledge economy. It is also noted in *"The least developed countries report"* (United Nations, 2007) that lesser developed countries, especially in Africa, are still very dependent on an industrial economy and that these countries are only gradually moving towards a knowledge economy.

Becker in Ruttenbur *et al.* (2000:12) estimates that about 70% of a country's wealth is in human capital, as opposed to physical capital. He says the following: *"The beginning of this century, in my judgement, should be called 'The Age of Human Capital'."* This, according to Becker, is because individuals and economies have succeeded in investing and commanding the growing stock of knowledge. Huggins (n.d.) also supports this view, stating that knowledge would be the competitive advantage of the future as opposed to an organisation's tangible assets.

Technology[1] also has a major impact on the world today. This high impact is because technology has the ability to connect humans and machines to one another in order to organise information into meaningful knowledge that is easily accessible, as explained by Fresen (2004). Many authors, such as Alic and Wial (1998), Cohen and Zysman (1989), Gershuny (2000), Hertzenberg *et al.* (1998), as well as Masuda (1981), refer to this changeover to the *new* economy as *"post industrial economy"*. This knowledge economy is also marked by the need for investment in human capital, as stated earlier, with the internet improving the efficiency and productivity of this human capital.

There is thus constant change today, with new information created at a rapid rate. This *new* information has a huge impact on business and economy and needs to be organised into knowledge quickly, as explained by Fresen (2004). According to Webber in Ruttenbur *et al.* (2000), to keep up to speed with the constant change in the work environment as a result of the knowledge economy, workers must be taught, with the help of technology, the skills to harness the vast and often raw array of information that technology itself has helped to generate in this knowledge economy. Chari and Hopenhayn (1991:1142-1165) refer to these specific skills as *"vintage human capital"* due to their scarcity. The challenge for organisations is

[1] Advancements in technology could largely be explained by the boom in the internet, according to Webber in Ruttenbur *et al*. (2000).

therefore to develop human capital as a critical success factor for creating a strategically innovative environment.

The initial foundation for the knowledge economy was also first introduced by Drucker (1966) in his book called *"The effective executive"*. In this book Drucker (1966) distinguishes between the manual worker and the knowledge worker. He states that a manual worker works with his/her hands and produces "stuff". A knowledge worker, on the other hand, works with his/her head and produces ideas, knowledge and information. This view of Drucker is also supported by authors such as Schlosser *et al.* (2006:291-303), Meisinger (2006:10), Huggins (n.d.), Leonard (2003), Rylatt (2003:37) and Leadbeater (1998:375).

In the next section a closer look will be taken at what this knowledge economy actually means.

2.3 Describing the knowledge economy

According to the Work Foundation (n.d.:19-23), many politicians and business gurus loosely use the term "knowledge economy" "*as a speech-padding buzzword without having any clear idea who or what they are talking about"*. The article goes further in stating that the *"debate about the knowledge economy is full of slovenly thinking and careless assumptions"*.

In the same article, Ian Brinkley, who was the research director for the Work Foundation researching the knowledge economy, also states that "…*despite half a century's talk about the emerging knowledge economy no robust definition of what it is has so far emerged"*.

In this section the aim is to shed some more light on the concept of a knowledge economy by referring to various authors on the topic.

As can be seen from the introduction (section 2.2) above, the main driving force behind the knowledge economy is the use of ideas, i.e. knowledge, rather than physical ability. This is also highlighted by Brinkley (Work Foundation, n.d:19-23), who states that the knowledge economy is the result of what you get when

organisations bring together technology and "*well-educated minds"* in order to be profitable. Technology needs to be applied to organise information into meaningful chunks of knowledge and the emphasis has moved away from transforming raw materials or the exploitation of cheap labour. Brinkley (Work Foundation, n.d:19:23) goes further in highlighting that this combination of technology and well-educated minds is a new phenomenon, implicating that organisations now compete *"…on their ability to exploit scientific technical and creative knowledge bases and networks"*.

Many other authors (i.e. Huggins (n.d.), Leadbeater (1998:375), Leonard (2003), Meisinger (2006:10), Rylatt (2003:37), Schlosser *et al.* (2006:291-303) and World Bank (n.d.)) agree that the knowledge economy consists of the knowledge, skills and experience of an organisation's workforce and the creative application of these concepts in order to make the organisation more competitive and economically sustainable than its rivals. This view was also popularised, if not invented, by Peter Drucker (1969) in his book "*The age of discontinuity".*

According to the World Bank (n.d.:2), the knowledge economy is characterised by the following four features:

I. ***"Knowledge is being developed and applied in new ways.*** *The information revolution has expanded networks and provided new opportunities for access to information. It has also created new opportunities for generating and transferring information. Knowledge networks and sharing of information have expedited innovation and adaptation capacity. Changes in ICT have revolutionized the transmission of information. Semiconductors are getting faster, computer memories are expanding, and ICT prices are falling. Data transmission costs have fallen dramatically and continue to fall, bandwidth is growing, and Internet hosts are expanding and multiplying. Cellular phone usage is growing worldwide, adding to the pace of and capacity for change and innovation"*
II. ***"Product cycles are shorter and the need for innovation greater.*** *In 1990 it took six years to go from concept to production in the automobile industry; today that process takes just two years. The number of patent applications is growing and more and more international and multiple*

applications are being filed. Industrial countries filed 82,846 patent applications at the European Patent Office in 1997, a 37 percent increase over 1990"

III. ***"Trade is increasing worldwide, increasing competitive demands on producers.*** *Countries that are able to integrate into the world economy may be able to achieve higher economic growth and improve health and education outcomes"*

IV. ***"Small and medium-size enterprises in the service sector have become increasingly important players, in terms of both economic growth and employment.*** *More and more countries, especially developing countries, have a strong governmental focus on developing these enterprises, due to their importance in the economy"*

Further research by the World Bank (n.d.:2) indicates that the knowledge economy rests on the following four pillars:

I. *"A **supportive economic and institutional regime** to provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship"*

II. *"An **educated and skilled population/workforce** to create, share, and use knowledge"*

III. *"A **dynamic information infrastructure** to facilitate the effective communication, dissemination, and processing of information"*

IV. *"An **efficient innovation system** to tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology"*

The pillars above reaffirms that if corporations wish to thrive and survive in this new knowledge economy they need to rethink their strategy in order to adapt to the constantly changing environment in which they do business.

Based on what has been said about the knowledge economy already, the following diagram describes the evolutionary path of knowledge in the knowledge economy:

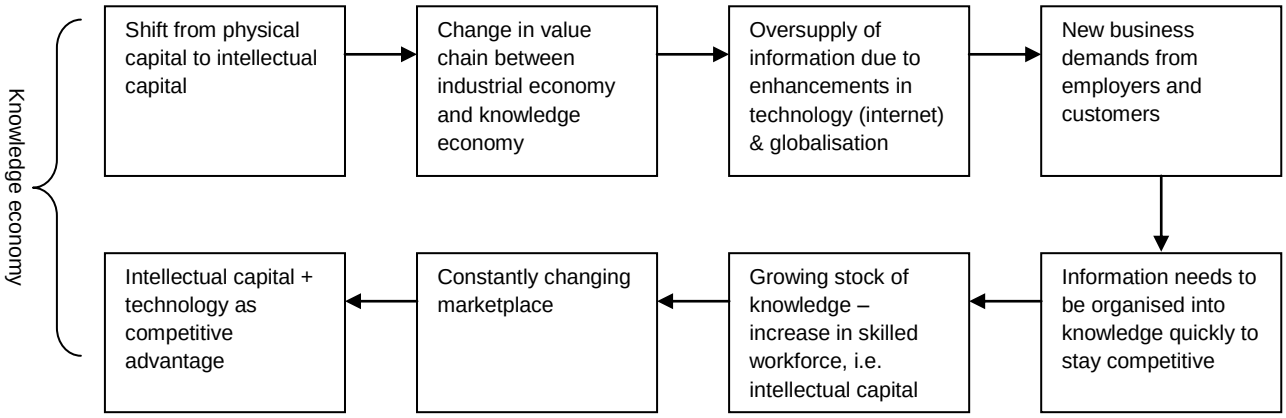


Figure 2.3: The evolutionary path of knowledge in the knowledge economy

Figure 2.3 above illustrates that the general way in which work was valued has changed dramatically over the years. The knowledge economy is characterised by the oversupply of information and refers to the knowledge work-based economy. This oversupply leads to many challenges to managers today due to the fact that they are unable to absorb all the information in order to make effective decisions. For a company to be profitable in the knowledge economy it cannot rely on bottom-line results alone anymore. Intellectual capital has a significant impact on an organisation's success. Another point to note is that a company cannot only rely on a select few to run the organisation. Companies cannot exist in isolation anymore and being successful in the knowledge economy requires synergy between cross-functional teams who are led from different perspectives.

In order to shed more light on the knowledge economy, the next section will differentiate between the "old" industrial economy and the "new" knowledge economy. This will be done by means of comparison, highlighting major differences in sectors such as markets, enterprises and workforce.

2.4 Comparison between the industrial economy and the knowledge economy

If one looks at the description of a knowledge economy, as given in section 2.3 above, it is noticeable that this "new" economy differs from the traditional industrial economy.

A key concept that can be derived from the section above is that knowledge can be treated as a business product and as an educational and innovative product and service, which can be exported by an organisation for a high value in return. In other words, knowledge is a productive asset for an organisation.

This differs from the traditional industrial economy. Table 2.1 below summarises the main differences between an industrial economy and a knowledge economy in terms of the market, enterprise and workforce:

Table 2.1: The industrial economy versus the knowledge economy

ISSUE	INDUSTRIAL ECONOMY	KNOWLEDGE ECONOMY
Markets		
Economic Development	Steady and linear, quite predictable	**Volatile** - extremely fast change, with explosive upsurges and sudden downturns, and **chaotic** - the direction of the economy's changes is not perfectly clear
Market Changes	Slow and linear	Fast and unpredictable
Economy	Supplier-driven	Customer-driven
Lifecycle of Products and Technologies	Long	Short
Key Economy Drivers	Large industrial firms	Innovative entrepreneurial knowledge-based firms
Scope of Competition	Local	Global hyper competition
Competition: Name of the Game	Size: The big eats the small	Speed: The fast eats the slow
Marketing: Name of the Game	Mass marketing	Differentiation
Enterprise		
Pace of Business	Slow	Appreciably faster with ever-rising customer expectations
Emphasis on	Stability	Change management
Business Development Approach	Strategy pyramid: vision, mission, goals, action plans	Opportunity-driven, dynamic strategy
Success Measure	Profit	Market capitalization (the market price of an entire company)

Table 2.1: (Cont.)

Enterprise		
Organization of Production	Mass production	Flexible and lean production
Key Drivers to Growth	Capital	People, knowledge, capabilities
Key Sources of Innovation	Research	Research, systemic innovation, knowledge management, integration, new business creation, venture strategies, new business models
Key Technology Drivers	Automation and mechanization	Information and communication technology, e-business, computerized design and manufacturing
Main Sources of Competitive Advantage	Access to raw materials, cheap labour, and capital for conversion; cost reduction through economies of scale	Distinctive capabilities: institutional excellence, moving with speed; human resources, customer partnership; differentiation strategies; competitive strategies
Scarce Resource	Financial capital	Human capital
Decision Making	Vertical	Distributed
Innovation Processes	Periodic, linear	Continuous, systemic
Production Focus	Internal processes	Enterprise-wide business process management and entire value chain
Strategic Alliances with Other Firms	Rare, "go alone" mindset	Teaming up to add complementary resources
Organizational Structures	Hierarchical, bureaucratic, functional, pyramid structure	Interconnected subsystems, flexible, devolved, employee empowerment, flat or networked structure
Business Model	Traditional: command-and-control	New: refocused on people, knowledge, and coherence
Work Force		
Leadership	Vertical	Shared: employee empowerment & self-leadership
Work force characteristics	Mainly male, high proportion of semi-skilled or unskilled	No gender bias; high proportion of graduates
Skills	Mono-skilled, standardized	Multi-skilled, flexible
Education Requirements	A skill or a degree	Continuous learning: It's not what you know, it's how fast you can learn
Management-Employee Relations	Confrontation	Cooperation, teamwork
Employment	Stable	Affected by market opportunity / risk factors
Employees Seen as	Expense	Investment

(Source: Kotelnikov, n.d.)

Kotelnikov (n.d.) further summarises the qualities of a knowledge economy as follows:

- Technological breakthroughs, economic growth, market evolution, shifts in customer tastes, social changes and political events are all factors that may grow or shrink the business space.
- This new economy also opens up huge opportunities for entrepreneurs, thus being an entrepreneurial economy.
- Knowledge and continuous learning have become critical to success in the knowledge economy. The knowledge component of products and services

has increased dramatically and has become a dominant component for creating customer value. The knowledge economy is thus led by those who manage knowledge effectively.

- Fredman and Dell (1999) emphasise that the internet (i.e. technology) has changed the way in which we do business. Technology has enabled the world to get a lot smaller, i.e. globalisation.
- Dramatic change has led to organisations seeking better ways to increase productivity and competitiveness. These changes are especially apparent in the way organisations communicate today. Vast information resources need to be accessed quickly and communicated over huge distances efficiently.
- According to Ram, Noel and Tichy (1998), the ideas, technology and capital to satisfy new needs flow freely, thus creating huge growth opportunities. What was new today is old tomorrow.
- The new economy is complex. Viscio and Pasternack (1998) argue that because new characteristics are added frequently, but subtracted infrequently, business space, technologies, business processes and business models have become more complex. These factors create exciting new opportunities for organisations.
- The knowledge economy is a customer-driven economy. Globalisation has led to more companies pursuing the same customers. Customers, in turn, have become more sophisticated and more informed. Technology has enabled customers to find alternatives and to exploit them. It has become very difficult for companies to differentiate themselves. This phenomenon has transformed a supplier-dominated economy into one that is dominated by its customers (see also figure 2.2).
- According to Viscio and Pasternack (1998) technology gave birth to the information economy and transformed into the knowledge economy. Information and fast access to information have thus become an integral part of the knowledge economy.
- In business today, distance is becoming a shrinking barrier. The same geographic immediacy is no longer essential for people to work together. Kotelnikov (n.d.) supports this view by stating that markets are globalising and a rapid rate, as are the companies that compete in them.

- Kotelnikov (n.d.) goes further in stating that capital markets have evolved and that new investors are more informed and innovative. They have become agents of change by demanding superior performance and organisational transparency.
- There is also a new competitive dynamic where competition between organisations is now based more on capabilities than assets.
- Kotelnikov (n.d.) argues that specialised skills have now become increasingly important to organisations in order to make their employees more mobile in the market. The relationship between the company and its employees is also changing rapidly. The increase in importance of knowledge and capabilities means that an organisation's people have become more important. Due to evolving demographics, family time and values have also become very important.
- The business of today is about passion and creating new things. Fun has thus become an important element in the business strategy of today.

The last quality is based on Meyer and Davis's work (1998), stating that, in the new economy, the focus must be on the way in which the nature of value is changing. There should be new ways to price goods, information and emotion. An implication of this is the transfer of power from the producer to the customer (see also figure 2.2). Companies will need to think about offers merging products and services and to exploit their knowledge in order to give the customer a value-added experience, instead of just selling them "stuff".

The knowledge economy has an impact on the workforce as was highlighted above. In section 2.5 the impact of the knowledge economy on the workplace will be explored.

2.5 Impact of the knowledge economy on today's workplace

The section above suggests that in today's workplace, organisations are operating in a complex and ever-changing environment. Duffy (1997) predicted that the workplace of the future would be characterised by the following:

- The office would be "mobile" with people working from anywhere.
- Employees would not be unconditional lifetime workers anymore.
- The need for highly skilled employees (i.e. managerial, technical and service jobs) would increase while the need for clerical, manual labour and operators would decrease.
- There would be better technology, better processes and fewer, but better trained employees.
- The number of part-time workers and contractors would increase.
- Employers would take accountability for reskilling their employees, with the latter responsible for their own career growth.
- Jobs would be harder to find and keep for younger people.
- Global competition would force organisations to find new ways to improve productivity, resulting in an ever-changing work environment. This might lead to employees experiencing more uncertainty at work.

Although Duffy's (1997) predictions seemed strange to the people of the time, they all came true as highlighted by other authors such as Huggins (n.d.), Leadbeater (1998:375), Leonard (2003), Meisinger (2006:10), Rylatt (2003:37), Schlosser *et al.* (2006:291-303) and World Bank (n.d.). To keep up, organisations are expected to deliver new and high quality products and services in a flexible and rapid manner. Hackett's research (2000) indicates that if organisations wish to survive in the new knowledge economy, they should be able to do the following:

- Make faster decisions, closer to the point of action. This will be done by increasing sales and faster development of products/solutions.
- Internal and exterior barriers should be overcome by reducing costs and improving customer relationships.
- More opportunities for innovation should be provided. Organisations should not reinvent the wheel and they must save costs.
- Product development time should be reduced.

- Customer relationships should be enhanced by better utilising knowledge.

To deal with this new demand, organisations will need to reconsider and make new choices in how they design their work organisation (Van Amelsvoort, 2000). Old corporate structures that were very effective in the past (industrial economy) are now becoming obsolete in the knowledge economy's turbulent environment. In order to better understand the functioning of organisations and the strategic decisions that are made to adapt to these ever-changing circumstances, Van Amelsvoort (2000) developed a conceptual framework.

This framework is based largely on the modern socio-technical theory model. This approach views the functioning of an organisation in terms of a combination of social and technical systems.

According to Van Amelsvoort (2000), the technical system consists of the formal and informal structure of the organisation as well as the technology in use. The social system consists of the people, with all their attributes including their understanding, skills, beliefs and ideas.

The social system also consists of the organisational culture which is determined by the relations between people and the characteristics of the relationships between the employer and the employees (Van Amelsvoort, 2000).

An integrated approach means that a central position is occupied between the technical and social systems as highlighted by Van Amelsvoort (2000). An organisation's performance is therefore determined by a combination of technical and social factors, i.e. people, culture, structure and systems. By combining all these factors, an organisation has a better chance of continuous and sustained improvement and innovation. This continuous and sustained improvement and innovation is extremely important for organisations in order to survive in the knowledge economy, as stated earlier.

According to Van Amelsvoort (in Van Hootegem *et al.,* 2005), many popular management approaches in modern organisations also fail today, due to the fact that they only focus on the above factors in isolation.

This view is also supported by other researchers, such as Kotelnikov (n.d.), who argues that the corporate strategy in a knowledge economy is very different from one in an industrial economy. This is illustrated by comparing a corporate strategy pyramid (old view) with a corporate strategy stretch (new view), as depicted in figure 2.5 below.

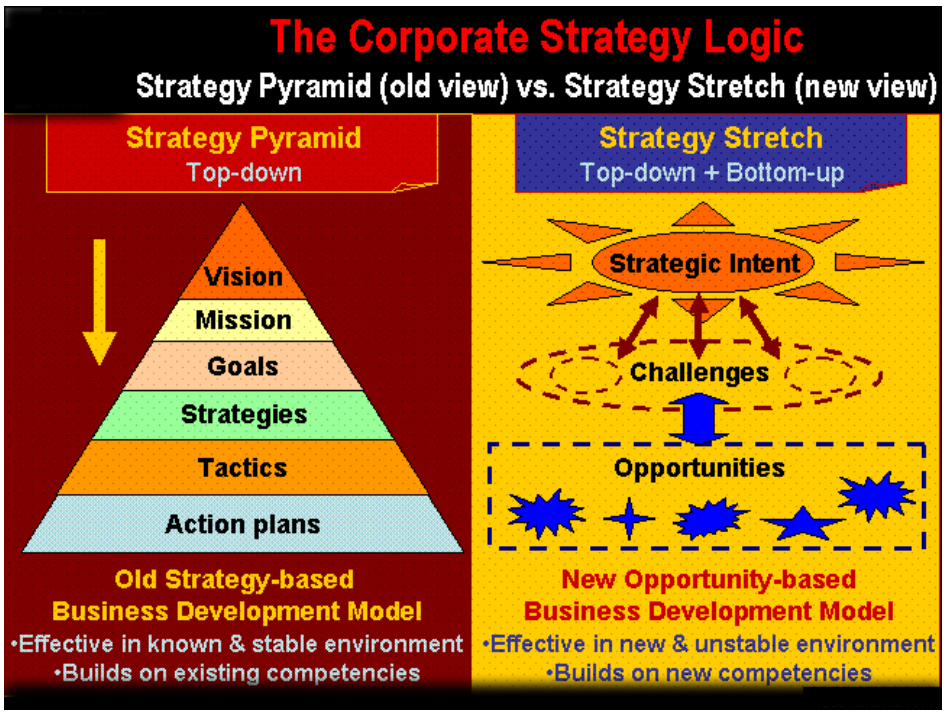


Figure 2.4: The corporate strategy logic (Palmer & Kaplan, 2007)

Figure 2.5 illustrates that the new knowledge economy creates many challenges for organisations wishing to flourish in an economy where new opportunities for growth and change are abundant.

An organisation's strategy also needs to be adapted from a traditional top-down approach to a top-down, bottom-up approach. The strategy needs to expand in order to cater for an ever-changing environment where change is the only constant. This change, in turn, creates many business opportunities, as stated earlier. Taking both the social and technical systems of Van Amelsvoort (2000) into consideration can lead to organisations having different organisational

compositions. This would be as a result of changing external demands over time, as mentioned earlier.

These external demands were researched by Bolwjin and Kumpe in 1998. They identified the following shifting patterns of business demands over the past 50 years (see table 2.2) as referred to by Van Hootegem *et al.* (2005):

- In the 1950s and 1960s, the focus was on price and cost control.
- In the 1970s, the focus was on price and quality.
- In the 1980s, the focus was on price, quality and flexibility.
- In the 1990s, the focus was on a combination of price, quality, flexibility and rapid production and service innovation.
- In the 2000s and onwards, the focus is on price, quality, flexibility, innovation and sustainable development.

As indicated by Bolwjin and Kumpe (1989, as cited in Van Hootegem *et al.* 2005) above, business demands have changed over the past 50 years in order to adapt in this new economy. Organisations are changing their strategies to survive. Things like price, quality, flexibility and product innovation have become critical success factors. These factors have resulted in an evolutionary model, with four different shapes for an organisation. These shapes/types can be summarised as follows (Van Hootegem *et al.*, 2005):

Table 2.2: Historical timeline of ideal types of organisations in connection with external demands of the time

Business demands	Structure	Systems	People	Culture
Price (1950's/1960's)	Specialisation Hierarchy Division of labour	Detailed rules and procedures Budget driven	Narrow tasks Simple and routine work	Focus on hierarchical authority Power based: command and control
Price Quality (1970's)	Horizontal meetings Quality circle	Statistical process Control	Integration of quality control Group meetings Quality awareness	Less hierarchical Reduced power distance

Table 2.2: (Cont.)

Business demands	Structure	Systems	People	Culture
Price Quality Flexibility (1980's)	Business line oriented Small units with a whole task and decentralised control	Just in time Minimal specification Local differentiation Result driven	Multi-skilling Teamwork Self management	Transformation process is leading Managers and staff have a supporting and facilitating role
Price Quality Flexibility Product innovation (2000's)	Mini companies Temporal structures Networking	Speeding up innovation process	High involvement Partnership	Customer focused Human talent is seen as business capital

(Source: Van Hootegem *et al.*, 2005)

Table 2.2 above summarises that various business demands dictate how an organisation needs to adapt in terms of its structure, systems, people and culture. For an organisation to stay competitive in a knowledge economy, it needs to adapt its strategy to ensure that it capitalises on the various new opportunities these demands will create.

According to Van Hootegem *et al.* (2005), an organisation needs to be innovative if it would like to bridge the gap between being quality-driven and flexible. In a quality-driven configuration continuous quality improvement is one of the main drivers. Better interaction between departments and hierarchical levels is needed to improve quality. Continuous innovation will ensure that the organisation stays one step ahead of its rivals in the knowledge economy.

Van Hootegem *et al.* (2005), in table 2.2 above, show that for an organisation to adopt a flexible configuration/shape, i.e. to survive in the knowledge economy, the functional structure should be replaced by a process-orientated structure. The organisation should be broken down into smaller, independent units, i.e. mini companies, each responsible for its own results. This is done by untangling processes and splitting them to link them to specific customer groups or market segments.

Van Hootegem *et al.* (2005) go further in stating that a network configuration/shape has a high customer-orientated culture. A strong focus is placed on the personal development of employees. This is also why this type of organisation is often called the learning organisation. In this organisation the structure changes frequently in order to meet customer demands. These structural changes and continuous learning are very important if an organisation wishes to stay competitive in the knowledge economy.

The following section will describe the term “learning organisation” in more detail.

2.5.1 The learning organisation

The term “learning organisation” has been around for more than a decade and was first introduced by Peter Senge in the 1990’s. Chalofsky (2005:54-57) states that the learning organisation is a way to change an organisation into a new form called “*learned organisation”* or *“knowledge organisation”*. This view is also supported by other authors such as Loren (2005:46-48), Bersin (2006:1), McLean (2006:48-50), Whitney (2006:28-31), Mayo (2007:4), Sowards (2007:65-74) as well as Mets and Torokof (2007:139-154), to name just a few. One of the learning organisation’s goals, according to Chalofsky (2005:54-57), is to help organisations move from the industrial economy to the knowledge economy. One of the pioneers of the learning organisation, Peter Senge (in Chalofsky, 2005:54-57), states that the learning organisation reflects this transformation the society is going through. Chalofsky points out that the learning organisation concept highlights the fact that learning should be implanted into an organisation’s culture. By making learning part of an organisation’s culture, continuous adaptation and improvement is made possible. This will help organisations to excel in facing the constant demands of the knowledge economy.

Mets and Torokof (2007:139-154) point out that organisational learning is one of the aspects related to an organisation’s ability to respond more effectively to changes in its environment, thereby adapting more effectively to the knowledge economy.

Mayo (2007:4), in his answer to the question: *"What are the characteristics of a true learning organization",* describes the character of a learning organisation by dividing these characteristics into two sections:

I. **Processes**

- Employees are visible, participating in processes which encourage and stimulate learning at all levels.
- Individuals take accountability for their own development by compiling personal learning plans.
- Individuals will actively make time and acquire the necessary resources in order to achieve their personal learning goals.
- Teams will share experiences and exchange knowledge between themselves on a regular basis.
- Project teams will learn from past mistakes and pass on those lessons learnt to the next teams.
- Dedicated individuals will coordinate knowledge management and be accountable for benchmarking by external scanning of the environment at organisational level.
- Dedicated individuals will facilitate communities of practice across internal teams and boundaries.

II. **Behaviours**

- A learning culture's behaviour will have certain behaviour enlisted in its followers which will be rewarded.
- Curiosity must be encouraged by top management.
- Collaborative decision making should be encouraged.
- Employees should be sharing their knowledge freely and willingly.

Mayo (2007:4) also lists the following tangible benefits which a learning organisation would be producing:

- Reduced duplication of effort, eliminating making the same mistakes over and over again
- Reduced causes of problems due to a lack of experience
- Increased productivity, higher levels of efficiency and better solutions

- Increased sensitivity to customers' needs and innovative products and services
- Employees will constantly grow and they will react positively to an open and trusting environment
- High retention of staff due to the various opportunities to develop and grow

For organisations to develop the characteristics of a learning organisation, as explained by Mayo (2007:4) above, they need to remodel themselves. This is also evident from the research by Van Hootegem *et al.* (2005) (see table 2.2 above). Mets and Torokof (2007:139-154), in their paper *"Patterns of learning organisations in Estonian companies",* suggest an integrated model for evaluating Estonian organisations. This model is based on Senge's model (1990) on organisational learning as well as Mets's OLF[2] model (2002, in Mets & Torokof, 2007:139-154). As seen in the table below, Mets and Torokof (2007:139-154) developed a questionnaire for their evaluation.

Mets and Torokof (2007:139-154) indicate that all these factors listed below (see table 2.3) play an integral part in evaluating a learning organisation. They conclude that a better understanding of learning processes supports better management practice, employees' growth, as well as better labour practice.

[2] Organisational learning framework model: internal environment and learning, shared values and the main business process (Mets & Torokof, 2007:139-154)

Table 2.3: A comparative overview of Senge's learning organisation model and the three-dimension organisation learning framework

Senge's learning organisation (LO) model	Three-dimension organisational learning framework (OLF)	Comments
Systems thinking: It is the discipline that integrates the others, fusing them into a coherent body of theory and practice.	**Mental systems:** Joint language, cognitive maps, mental models, shared vision, shared values, shared patterns, creativity, principles, culture, systems, knowledge…	OLF model covers Senge's LO features taking into account the general description of the OLF model. In the course of the process both individual and team capabilities (first phase) of the organisation members and leaders are increased and their mental intersection grows (second phase), as a result of which the business process of the company is developed (third phase). New experience gained from the development of business process re-launches the first phase. In reality the learning process will go on, connecting and passing the above-described phases (stages) simultaneously, i.e. a learning environment will be formed. Process-related character describes the OL cycle as a whole, which is fed back and continuous, and parts of which are interconnected in the way the cycle is connected to the emerging learning and development environment.
Mental models: These are 'deeply ingrained assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action'.		
Building shared vision: 'pictures of the future' that foster genuine commitment and enrolment rather than compliance.	**Main process:** Plans, procedures, projects, budgets, products, technologies…; Business processes; Corporate structure and resources; Client's needs; Environment; Product; Organisation capability.	
Personal mastery: It is a process. It is a lifelong discipline. People with a high level of personal mastery are acutely aware of their ignorance, their incompetence, their growth areas.		Partial coverage of the two components. Features of the main process are partially inherent to Systems thinking and Building shared vision.
Team learning: Team learning starts with 'dialogue', the capacity of members of a team to suspend assumptions and enter into a genuine 'thinking together'.	**Individual and joint learning:** Training key persons, training team thinking and acting, mapping and analysing business processes, creating general organisational vision, creating strategies…; coaching and advising managers; informing and training personnel.	Good coverage of each other by the team learning aspects in both models. Partly the Personal mastery is related to Main process and Mental systems. Individual and joint learning are partly related to Building shared vision.

(Source: Mets & Torokof, 2007:139-154)

It can be furthermore argued, by considering the description of a learning organisation, that employees should have a high emotional intelligence. By constantly improving themselves, employees give themselves a better chance to flourish in an ever-changing environment in which organisations need to function to be competitive in the knowledge economy. For this, they need high emotional intelligence.

In conversation with Vermeulen (2007), an expert in the field of emotional intelligence in South Africa, certain aspects came to the fore with regard to employees' ability to grow, which is also referred to by Vermeulen (2007) as the growth loop. This natural human need to grow and develop is depicted in figure 2.6 below.

To understand the growth loop, it is important to realise that "growth" refers to the concept of growing through experiences, as opposed to gaining knowledge

from books. Books may provide us with all the knowledge in the world, but this knowledge needs to be applied efficiently and effectively for it to add any value.

Vermeulen (2007) states that growth always starts with someone needing to make a choice (see figure 2.5). To function efficiently in the knowledge economy, employees are constantly facing new choices on a daily basis, due to the abundance of readily available information. Every new choice thus presents us with an opportunity to grow.

Based on the sheer number of new choices facing employees and organisations in the knowledge economy, hundreds of decisions need to be made rapidly. Vermeulen (2007) puts forward the idea that every action begins with a decision. These actions result in reactions or consequences. Organisations operating in the knowledge economy constantly need to face these consequences, enforced by this rapid decision making process. Rapid decision making is essential to stay competitive in the knowledge economy.

All consequences produce a result and/or a reason. According to Vermeulen (2007), how employees use these results and/or reasons depends on their success in a knowledge economy. These results and/or reasons will lead employees and organisations to new choices. Important to note is that organisations will experience average levels of success in the knowledge economy if they accept the results and if they then keep on making the same choices based on these results (Vermeulen, 2007).

Organisations and employees that struggle to adapt to the knowledge economy often get stuck in the reasons. When a project turns out badly, employees will then often see themselves as failures. When failure becomes the reason, employees tend to blame themselves and others. This blame leads to a feeling of helplessness, leading to a knowledge “unproductive” organisation. According to Vermeulen (2007), these helpless employees soon become the victims in the organisation, spreading negativity. Vermeulen iterates that this negativity will more than likely lead to depression, which could result in employees resigning.

In contrast to the average achieving organisations and employees, as described above, learning organisations, i.e. strategically innovative organisations, have a culture which promotes super achievement. These learning organisations thrive in the knowledge economy by using both results and reasons as valuable feedback. Evaluating feedback leads to preventing mistakes of the past. Strategically innovative organisations in the knowledge economy make different and often better choices, based on this feedback, thus elevating the organisation and its employees to higher levels of achievement.

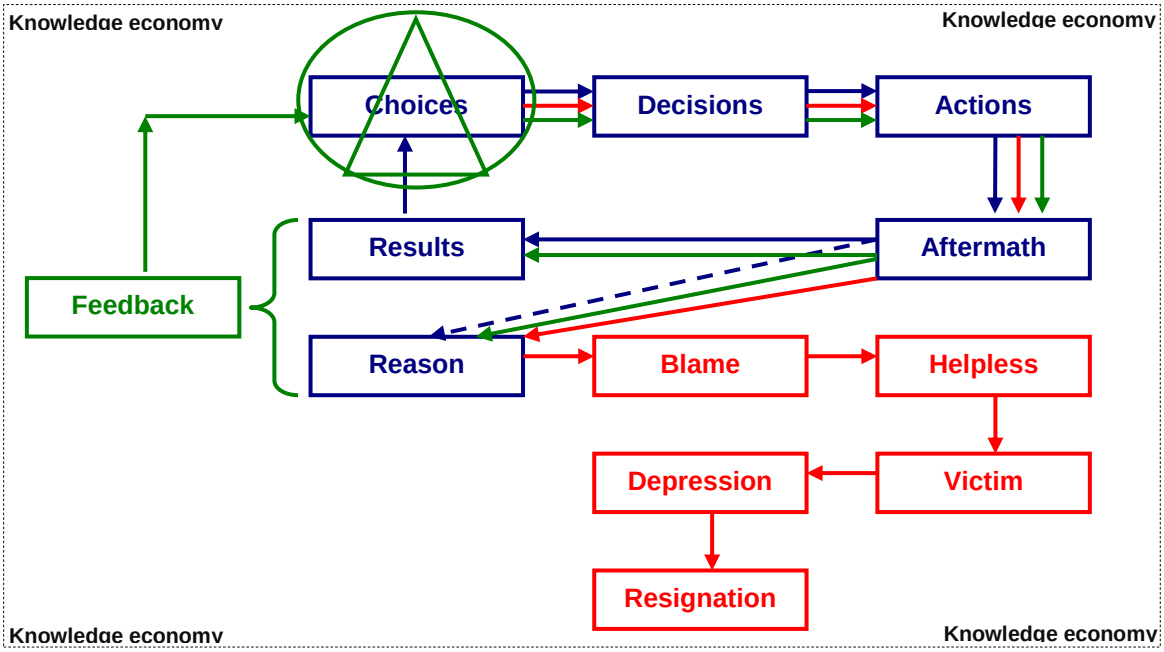


Figure 2.5: The growth loop (Adapted from: Vermeulen, 2007)

One of the critical success factors for any learning organisation to become super achieving is the constant direction and leadership from management (Mayo, 2007:4; Mets & Torokof, 2007:139-154). The following section will explain some of the challenges managers will need to face in the knowledge economy.

2.5.2 Challenges for managers

All the possible organisational “shapes” (table 2.2), as well as the different challenges of creating a learning organisation (table 2.3), have a huge impact on how organisations should be “managed” in the knowledge economy. Kotelnikov (n.d.) is of the opinion that the traditional role of the manager therefore needs to

change from a management role to a leadership role, as many organisations failing today are *"over-managed and under-led"*. This view is also supported by other authors such as Mayo (2007:4) and Mets and Torokof (2007:139-154). Figure 2.6 below illustrates this by comparing a traditional manager to a leader in the knowledge economy.

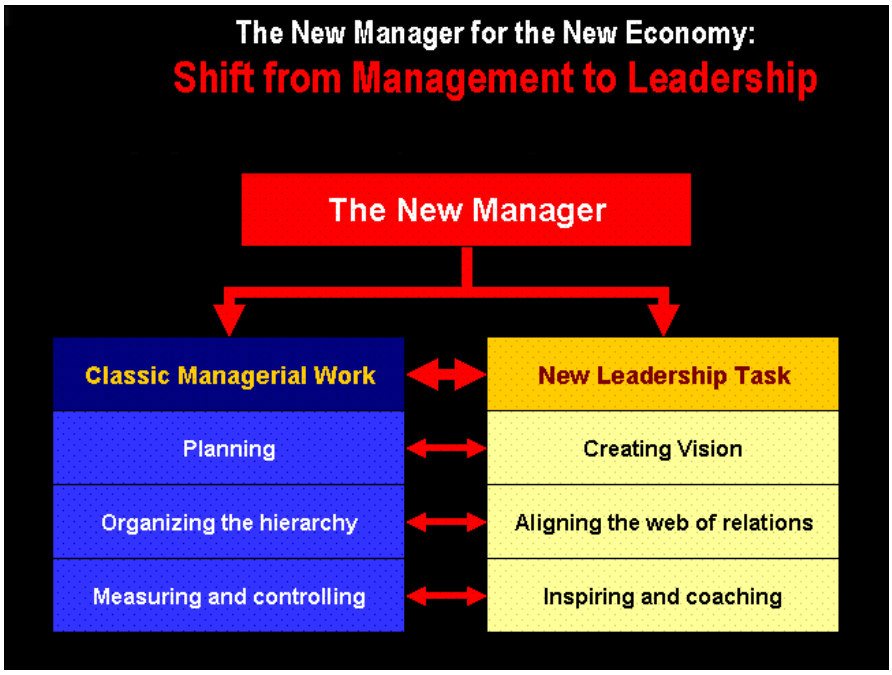


Figure 2.6: The new manager (Palmer & Kaplan, 2007)

This "new" managers in the knowledge economy are now faced with a new leadership task. They need to create a vision and align a web of relations and opportunities. For an organisation to capitalise on these opportunities, they need to be inspiring to their people and coach them for success, creating a learning culture, i.e. learning organisation.

This is different from the "traditional" manager in an industrial economy whose day-to-day work included planning, organising, leading and control (Smit & Cronje, 1998).

As mentioned earlier, the knowledge economy has a huge impact on organisations today. Not only is price, quality, flexibility and innovation important, as pointed out by Van Hootegem *et al.* (2005) (see table 2.2), but organisations also need to rethink their management styles (figure 2.6). For an organisation to adapt to the

shifting demands of the knowledge economy, it needs to adjust its structure, systems, people and culture (see table 2.2). This adjustment needs strong leadership and the emphasis must move from management to effective leadership. This is also highlighted by Collins (2001) in his book: *"Good to great: Why some companies make the leap...and others don't"*.

An effective leader needs to create a learning culture in an organisation, which will ensure that the organisation will grow from strength to strength in the knowledge economy.

2.6 Challenges for Africa

"Unless developing countries in general and South Africa in particular, act to create a growing return on investment in knowledge production, … these countries may suffer the effects of 'structural irrelevance' and fail to capitalize on the potential for economic growth and development that resides within our higher education institutions" (Abrahams, 2003:2).

Abrahams's (2003) quote above notes that developing countries in Africa have some unique challenges compared to developed countries. This section aims to highlight some of these unique challenges.

According to The Commission for Africa's report (in Murenzi & Huges, 2006:252-267), Africa will fail to meet the United Nation's millennium development goals unless it increases its share in world trade. Murenzi and Huges (2006:252-267) state further that the report indicates a steep decline in Africa's share of world trade, from 6% in 1980 to 2% in 2002. This decline is worse when comparing it to the growth of other developing countries over the same period, i.e. China and India.

For Africa to increase its capacity for global trade, Murenzi and Huges (2006:252-267) explain that the knowledge and skills in African countries should be developed further. Africa has a strong historical dependency on its natural resources and raw materials. It therefore needs to become strategically innovative if it wishes to

survive in a modern economy which is fuelled by the growing stock of knowledge and information. A high premium therefore needs to be placed on the investment and use of new knowledge. The knowledge economy therefore needs to be built upon the industrial economy for Africa to capitalise.

For knowledge and skills to increase in Africa, Juma and Agwara (2006:218-231) indicate that Africa is largely dependent on its economic vision and its realignment of national institutions. These authors note that this dependency is highlighted by Africa's realisation that economic growth is mainly a result of the transformation of knowledge into goods and services. Knowledge is expressed in the form of education, science and technology as well as associated institutions and is seen as the basis for economic transformation.

The major challenges for Africa are therefore underpinned in its educational structures as well as in innovation, i.e. science and technology. Another challenge facing Africa is losing its skilled labour force to other countries; this is especially a concern in South Africa. According to Juma and Agwara (2006:218-231), Africa needs to follow other emerging economies, by focusing on the following three factors if it wishes to transform its economy rapidly:

2.6.1 Infrastructure

Huge investments need to be made in things like roads, water, irrigation, telecommunications, sanitation, health centres as well as energy supplies.

By investing in its infrastructure, Africa will ensure that there are no barriers to accelerate its economic growth (Juma & Agwara, 2006:218-231). Poor infrastructure also increases the *"cost of doing business"*, according to Juma and Agwara (2006:224). These authors continue by saying that most African countries will not be able to benefit from increased access to developed countries, if their current infrastructure is not upgraded. This will be problematic for the second largest continent in the world because it will lead to extremely high levels of unemployment and poverty. People will simply not have the ability to collaborate with other developed countries on a global scale, thus improving themselves and Africa's economy.

Juma and Agwara (2006:218-231) also point out that electricity, transport and communications networks form an integral part of any country wishing to improve its basic science and technological capabilities.

One of the challenges for Africa is therefore to make sure that it has the underlying infrastructure in order to stay competitive in the global knowledge economy. Once the right infrastructure is in place, the development of small and medium enterprises can be promoted, as discussed in the next section.

2.6.2 Development of small and medium enterprises

According to Juma and Agwara (2006:218-231), one of the most important challenges for Africa is to create links between knowledge generation and business development. They suggest that Africa should explore various incentive schemes in order to promote business development. The UN Millennium Project (2005; Juma & Agwara, 2006:218-231) states that small and medium enterprises account for more than 90% of the private sector worldwide. It is important for these enterprises to continually develop and improve. They will thus ensure that they transform their knowledge into goods and services. This transformation will, in turn, have a positive impact on the economy. Africa is thus faced with promoting the establishment of small and medium enterprises if it wishes to become knowledge productive in the knowledge economy. For Africa's people to gain the necessary knowledge and skills to establish these enterprises, they would need to engage in the process of lifelong learning. For this process to be fruitful, the educational systems in Africa will need to be enhanced as depicted in the section below.

2.6.3 Government supported and funded higher education institutions

Africa should strive for continuous improvement if it wishes to transform its economy (Juma & Agwara, 2006:218-231). A strong emphasis should be placed on knowledge creation/production which is guided by business enterprises (Conceição *et al.,* 2003 in Juma & Agwara, 2006:218-231). Juma and Agwara (2006:219) point out that this improvement can be seen as *"a society's capacity to adapt to constant change through life long learning*". This continuous improvement will ensure that

Africa will achieve higher levels of performance in the global knowledge economy. These authors also state that government should function as a facilitator for social learning and that business enterprises will become the locus of learning. Knowledge will therefore become the currency of change (UN Millennium Project, 2005 in Juma & Agwara, 2006:218-231). Existing educational structures should be realigned and new ones should be created where they do not exist. Juma and Agwara (2006:218-231) highlight the following educational challenges for Africa:

- There is an urgency to invest in higher technical education, which is fuelled by the effect of various infectious diseases, especially HIV/AIDS, on Africa's labour force.
- Knowledge transfer of technical skills to succeeding generations has become pivotal.
- Universities and research institutions should be placed at the centre of the development process.
- Entrepreneurial skills should be promoted for students to transform their ideas into viable business proposals.

Another challenge for Africa is the concept of sustainable development. Juma and Agwara (2006:218-231) state that Africa's economic renewal should focus on protecting its environment for present and future generations. In other words, Africa needs to ensure that it retains its human capital.
According to Solimano (2002), one of the challenges for developing countries is to prioritise the development of scientists, technology experts and knowledge generation. This is also evident in what has been said before and will ensure heightened productivity as well as long-term development. The challenge for these developing countries is how to retain these newly developed skills. Solimano indicates that there has been an increase in the last decade in the international mobility of human capital. This increase is due to the expansion of the knowledge economy as well as globalisation. Africa is therefore in a very tricky situation. On the one hand it is necessary to send resources abroad to attain new skills and on the other hand these resources should be retained to prevent what Solimano refers to as the "brain drain".

The brain drain is a particularly big problem in Southern Africa, but more specifically in South Africa. Bhorat *et al.* (2002:10) indicate that emigration in South Africa has increased over the past two decades. To counter this outflow of skilled professionals Bhorat *et al.* (2002:10) suggest that skilled professionals should be incentivised for migrating to South Africa. This could be in the form of tax incentives for entrepreneurs wishing to set up their business in South Africa. On the other hand a lot more thinking should go into retaining skilled people. According to Solimano (2002), the outflow of human capital also co-exists with the return of natural talent, thus transforming the phenomenon of the "brain drain" to more of a "brain circulation". The emigration of national skilled talent therefore does not always have to relate to a permanent loss. Solimano (2002) makes the following suggestions for developing countries:

- There should be better incentives for the science and technology sectors.
- Greater priority should be given to the development of science, technology and knowledge generation.
- Developed countries should be prompted to increase the transfer of knowledge to developing countries by receiving grants from international foundations.

2.7 Conclusion

This chapter noted that the knowledge economy is built upon the industrial economy where knowledge is being used as a new exchange rate to make organisations more competitive.

It is argued that if organisations wish to be successful in the knowledge economy they need to develop an approach to adapt to the ever changing market conditions they operate in.

From analysing the literature it was determined that:

- by adapting to the challenges that the knowledge economy created will ensure that organisations stay in business;
- organisations need to nurture human capital as a critical success factor for becoming strategic innovative;

- organisational learning as well as leadership development are key components for survival in the knowledge economy;
- emotional intelligence will help individuals adapt to constant changes of the knowledge economy

Some unique challenges facing Africa were mentioned in section 2.6. These challenges include improving infrastructure and educational systems as well as promoting entrepreneurship. It was also noted that Africa has a major challenge in retaining its skilled workforce and suggestions were made to prevent the brain drain.

This chapter also highlighted the importance of intellectual capital in the knowledge economy. In the next chapter intellectual capital and its role in the knowledge economy will be explored further.