

CHAPTER 2

KNOWLEDGE MANAGEMENT IN CONTEXT

2. KNOWLEDGE MANAGEMENT IN CONTEXT

'The emergence of intellect as a highly leverageable asset is shaping both service and product industries and forcing totally new concepts of strategy on companies.' [27]

The long-held belief, as proposed by Porter, that sustainable competitive advantage depends primarily on five forces (*customers, suppliers, product substitutes, barriers to entry and competitors*) [26], is now being influenced by three new factors - *digitisation, deregulation, and globalisation*. These new factors change the leveragability of the five forces and enabling market penetration in a new way by countering geographic distribution, information accessibility and time barriers. Traditional barriers to entry such as infrastructure and fixed assets do not hold anymore and often become a liability to conducting business.

The change factors that necessitate the management of an organisation's knowledge assets are known as the drivers for knowledge management. In addition, a number of factors, unique to the South African context exert an influence on local companies.

2.1 Drivers for Knowledge Management

Change drivers include inter alia: the emergence of the knowledge era, economics of cyberspace, globalisation, digitisation, customer intimacy, availability of information, role of information technology as well as the costs of reinvention knowledge.

2.1.1 Emergence of the Knowledge Era

"In this society, knowledge is *the* primary resource for individuals and the economy overall" [11]

In the Agriculture Age, mankind used home-based businesses and natural resources to trade and create wealth (see *Figure 3: Emergence of the Skill-Based Economy*) [43]. This continued until the Industrial Age brought with it a change in organisations' competitive advantage. It moved the emphasis of the core organizational asset from natural resources to the utilisation of production assets. This environment favored big factories, which optimised the scarce production resources and focused on creating products for the mass market.

Shortly thereafter, the transformation to the Information Age occurred with yet another emphasis change of the organisation's critical assets towards technology. This business model introduced service organisations that operate independent from production assets and make use of technology to deliver services.

The key differentiator in the Knowledge Age focuses on the organisation's intellectual assets. The knowledge organisation utilises the organisation's intellectual assets to provide a value-added service to customers in the form of business solutions.

Age	Agriculture	Industrial	Information	Knowledge
Time	(Before 1880)	(1880-1985)	(1955-2000)	(1995+)
Assets	Natural Resources	Production	Technology	Intellectual Capital
Value Offering	Trade	Products	Services	Value Addition
Business Model	Home-Based Business	Factories	Service Organizations	Knowledge Organization
Principle		TQM	BPR	KM

Figure 3: Emergence of the Skill-Based Economy

It is evident that since the Knowledge age has been introduced in a similar way than with the transition from the Agricultural to the Industrial age, a strong financial distinction emerges between those that adhere to the new business principles and those organisations that continue to operate on the principles of a previous economic era.

As organisations move into the Knowledge age the sources of wealth and competitive advantage of organisations change rapidly. Primary capital assets needed to create wealth are no longer land, physical labour, machine tools and factories, but the "application of knowledge" [11]. Stewart is of the opinion that: *"Knowledge has become the most important factor in economic life. It is the chief ingredient of what we buy and sell and the raw material with which we work. Intellectual capital has become the one indispensable asset of the corporation."* [32]

The resource-based economy (agriculture, production, and mining) is still subject to the principle of diminishing returns, whereas those parts of the economy that are knowledge-based appear to result in increasing returns. These include products such as computer hardware and software, pharmaceuticals, telecommunication equipment, and fibre optics, which are complex to design and to manufacture.

The development cost of knowledge-intensive goods is heavily front-loaded, as the cost of creating the first product is disproportionately higher than the last. Consequently, it is fairly difficult to estimate the end-value that will be gained from the knowledge-intensive value offerings compared to the cost of acquiring it. These

solutions require large initial investments in research, development, and tooling, but once sales begin, incremental production is relatively cheap. When one brand gains a significant market share, people have a strong incentive to buy more of the same product as to be able to exchange information with those that are using it already [18].

At present the cost of developing a product, is largely due to R&D expenditure, intellectual assets, and services. However, the traditional accounting system focuses on measuring the cost of material, labour and fixed assets mainly used in Industrial Age companies. Consequently, business tends to focus on managing the cost implications rather than the value addition for the customer.

Inevitably, the transformation from the Industrial to the Information Age and recently the Knowledge Age implies a change in rules governing business. This skills-based economy requires that organisations develop and compete on their knowledge-based assets, which in turn requires an ability to manage and measure the organisation's knowledge or intellectual assets.

2.1.2 Economics of Cyberspace

The cost and time involved with acquiring a new product, i.e. the research cost involved with finding the right product and comparing the different prices as well as the logistical cost involved with obtaining the physical product, are known as transaction cost.

Service organisations came about in the Information Age to *optimise transaction cost*. Their competitive advantage is to develop an infrastructure that meets the clients need and that optimises the client's transaction cost of purchasing their product. This includes having the best site, sufficient resources and stock to facilitate the purchasing process.

However, due to the *economies of cyberspace* [10], transaction cost has significantly been reduced. The process involved with buying a book in cyberspace is an example of this. This involves using a website (e.g. Amazon) to find the suitable book, at the best price and then performing the transaction at a convenient time and place, irrespective of physical location.

The cost involved with establishing an infrastructure to optimise transaction cost is regarded as an asset and is reflected on the traditional balance sheet. Unfortunately, these assets become obsolete in the market-space of the knowledge era because of the reduced transaction cost introduced by the economics of cyberspace.

This brings about the *law of diminishing firms* where reduced transaction cost implies a decrease in the organisation's size. The organisation requires fewer resources to process transactions and to provide an interface to the client because the client handles the processing of the transactions online.

An additional factor that influences customers' decision when purchasing in the Knowledge Age is the *switching cost* involved with changing from one knowledge intensive product or service to another, e.g. the cost involved for an organisation to switch from Microsoft to Lotus.

The *economics of cyberspace* facilitates business in a new way. It requires a transition from competing in a physical space to performing business in the virtual domain of cyberspace. Such a transition implies change, requires new enabling infrastructure as well as a knowledge economy paradigm, which is all addressed in the knowledge management business philosophy.

2.1.3 Globalisation

Metcalf's law states that once an open system or a network reaches *critical mass* its value for its users increases exponentially due to the amount of people that uses it, because the network utility is described as the square of its number of users [10].

Due to its openness, the Internet's Communication Protocol reached critical mass in 1993. Thus the Internet became the standard as it increased exponentially in value per additional user. The Internet has become an open market for the sharing, using, and adding of information to the global information base and has a direct influence on the virtual organisation as introduced by the Knowledge Age.

A knowledge management initiative considers the utilisation of these information sources to the benefit of the organisation's knowledge worker and applies this means to facilitate learning within the organisation as well as with external parties.

2.1.4 Digitisation

Moore's Law indicates that digital technology becomes increasingly cheaper, smaller, and faster [10] over time. This rapid change in the capacity of technology has implications for the functional systems operational in society, as well as for the human resources of the organisation.

2.1.4.1 *Functional Systems*

The *law of disruption* states that the exponential increase in the functionality of technology is responsible for major secondary effects on other unrelated systems, e.g. the effect that e-mail has had on the postal services.

2.1.4.2 *Human Resource*

Until recently, the processing power and memory capacity of information technology (IT) was perceived as expensive. For this reason the organisation's IT system was managed to ensure optimal utilisation and was regarded as the critical resource. As the processing and memory capacity becomes less expensive though, the users of the system and the IT personnel that need to maintain the system, becomes the critical resource.

Dave Ulrich, when questioned on why the knowledge worker has become so critical, replied as follows: "*One, business changes faster than ever, and the response to change requires a different level of workforce and a talented workforce. Two, I think talent is scarce. Any scarce resource becomes the most critical resource. I also think expectations for companies to respond globally and to respond to customers are higher than they have ever been*" [36]. The only factors that could change this scarcity is globalisation, the ability to distribute talent all over the world, and the fact that people are quickly developing new skills as the market adjust to supply and demand.

Knowledge management recognises the scarcity of the knowledge worker. It considers the importance of capturing (digitising) information as part of the knowledge worker's daily activities at the source, so that no extra time or resources are required to feed information into the system. It is critical to get people to use these systems and to capture as much information as possible by providing the means to capture the various types of information easily. Only once information is digitised can it be manipulated so that various users can receive benefit from it.

2.1.5 *Customer Intimacy*

The primary *value discipline* has changed from operational excellence to customer intimacy. In the Knowledge age customers require faster problem solving and an ability to adapt faster [31]. Through Internet technology, mass-customisation has become possible. This implies that customers interact with a personal interface according to their personal preferences that gives the company, in return, valuable marketing information on customers' behaviour. Through a knowledge management

initiative the organisation can establish the infrastructure to extract and provide client preferences.

2.1.6 Free Information

The Internet value proposition is to provide users with as much information as possible. As users can easily find public information somewhere else when not sufficiently supplied. For this reason information is regarded as public goods and should be given away for free.

Value-added information that is not freely available is regarded as a prominent product in the knowledge economy and can be sold given that there is a market for the information and that one can attract the market (by first supplying sufficient information).

Thus, knowledge management initiatives need to weigh the value that it generates from attracting customers against the risk involved in giving all of its information away.

2.1.7 Role of Information Technology (IT)

The over-emphasis on the role of Information Technology (IT) creates a real danger for companies that delegate the responsibility for their knowledge asset and the ability to think to traditional IT 'databases'. Despite technological advances, the company meeting point (coffee bar) – where team members share ideas – still surpass the information technology system when it comes to harnessing the knowledge that gives business its competitive edge.

While it is true that technology infrastructure allows information sharing in the modern organisation and, in fact, is essential in the codification, distribution and storage of information, IT falls short in the creative application of knowledge. Knowledge is about how information is applied to leverage the core competencies of the organisation whereas technology is only an enabler to the knowledge creation process.

The application of knowledge still relies on the organisation's knowledge worker and emphasises the critical role of the human element in the knowledge management philosophy.

2.1.8 Costly Knowledge Reinvention

Organisations are currently very ineffective at managing their knowledge assets. Organisations neither measure nor protect their knowledge or their knowledge workers and do not realise the value of knowledge sharing within the organisation. Organisations cannot afford to 'reinvent the wheel' and need to retain knowledge that is lost during downsizing, restructuring and the poaching of knowledge workers.

Knowledge management aims at utilising the knowledge of expert performers and applying it in similar situations in order to develop the company's competence, to retain its knowledge and to avoid timeous reinvention.

2.2 The Implications of Knowledge Management in South Africa

There are a number of factors in the South African context that articulate the need for knowledge management with regards to retaining companies' knowledge capital as well as emphasize the implications of a lack of knowledge management:

- ❑ A high number of professional workers have left the country ('brain drain') or consider *emigration* due to the political uncertainty and the weakening economy of the country as well as the international demand for knowledge workers. This impacts companies' intangible assets, the impact of which is currently not being measured.
- ❑ The high level of *illiteracy* accentuates the scarcity and value of the knowledge worker as well as the need to leverage their knowledge to the benefit of the whole organisation.
- ❑ The *employment equity* act demands high cost to develop previously disadvantaged employees at the cost of valuable knowledge workers.
- ❑ The tacit *knowledge lost* in unsuccessful business re-engineering projects and in downsizing attempts has left the company in a state of knowledge anorexia.
- ❑ Cultural mindset of *knowledge-hoarding* instead of knowledge-sharing that exists in the traditional organisations reduces the opportunity to retain employees' knowledge and broaden the knowledge base.
- ❑ *Information management* competence that acts as a qualifier for successful knowledge management is still immature in most companies.

2.3 Conclusion

The white waters of change introduced by factors like the knowledge economy and globalisation together with the unique South African context necessitate local organisations to develop their ability to retain and leverage the knowledge of the knowledge worker to the benefit of the organisation. In addition, digitalisation and the economics of cyberspace require the codification and effective management of the organisation's information to enable a higher level of customer intimacy.

Subsequently, without the effective management of the organisation's knowledge the cost of 'reinventing the wheel' will leave organisations lagging behind a fast changing world and thereby render the organisation unable to compete effectively or sustainably.