ORGANISATIONAL CULTURE AND KNOWLEDGE CREATION

THE RELATIONSHIP BETWEEN KNOWLEDGE CREATION ENABLERS AND ORGANISATIONAL CULTURE TYPES

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DECLARATION

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Acknowledgement

To my wife Sizakele and my children
Ndumiso, Bongiwe and Philani
Thank you for your support and keeping up with my anti-social behaviour.

Summary

The thesis studies the relationship between knowledge creation and organisational culture. To do that the relations between Nonaka's enabling conditions and the four organisational culture types according to the competing value framework of Cameron and Quinn were tested in two organisations. Whilst many authors are critical of the specifics of Nonaka and Takeuchi's model of knowledge conversion, most seem to agree with their argument about the requisite enabling conditions for knowledge creation. It is argued that these enabling conditions are shaped by the organisational culture and therefore this relation is of some importance.

The empirical research was based on two part questionnaire. The first part of the questionnaire concerned the knowledge creation enablers. The indicators for this part of the instrument had to be developed from the knowledge creation literature. The second part of the questionnaire was based on the validated Cameron and Quinn organisational culture assessment instrument. Since Nonaka recommends a middle-up-down approach for managing knowledge creation in organisations, the questionnaire was directed at the middle management of the selected organisations. 140 questionnaires were sent out and two organisations had adequate responses for statistical data analysis.

The results showed that one organisation has a strong market culture. This organisation displayed requisite variety, creative chaos and autonomy as enablers for knowledge creation. The market culture is an organisation's response to an environment filled with complexities of the brand market which requires the presence of requisite variety and creative chaos. The organisation uses autonomous work teams, hence the prominence of autonomy. The second organisation competes in the business solutions market. Here, the dominant culture type was that of a clan and the organisation was strong in most knowledge creation enablers except redundancy and *ba*. The dominance in clan culture is in line with a medium size company that is competing in the big league of providers of business solutions and the organisation believes that its success is in providing unique business solutions thanks to teamwork and working like family.

It is concluded that for an organization to be competitive requires one dominant appropriate culture and not necessarily all knowledge creating enablers.

Opsomming

Die tesis ondersoek die verband tussen kennisskepping en organisasie kultuur. Dit word gedoen deur die relasie tussen Nonaka se omgewingsomstandighede vir kennisskepping en die vier organisatoriese kultuurtipes van Cameron en Quinn in twee organisasies te meet. Terwyl baie skrywers krities is oor die besonderhede van Nonaka en Takeuchi se model van kennisskepping, is die meeste met hulle eens oor die omgewingsomstandighede wat kennisskepping in staat stel. Daar word geargumenteer dat hierdie omgewingsomstandighede hoofsaaklik deur die organisasie kultuur beïnvloed word en daarom is hierdie verband belangrik.

Die empiriese navorsing is gebaseer op 'n tweeledige vraelys. Die eerste deel handel oor die omgewingsomstandighede en die indikatore hiervoor is uit die teorie ontwikkel. Die tweede deel van die vraelys is gebaseer op 'n reeds gevalideerde instrument van Cameron en Quinn wat organisatoriese kultuurtipes probeer vasstel. Omdat Nonaka klem lê op die sentrale rol van middelbestuur in organisatoriese kennisskepping, is die vraelyste op middelbestuurders in geselekteerde organisasies gemik. 140 vraelyste is uitgestuur en twee organisasies het genoeg response gehad vir statistiese verwerking.

Die resultate toon dat een organisasie 'n sterk markkultuur het. Hierdie organisasie vertoon vereiste verskeidenheid, kreatiewe chaos en outonomie as omgewingsomstandighede wat kennisskepping sou instaat stel. Die markkultuur is 'n organisasie se respons op 'n omgewing gevul met kompleksiteit en dit vereis verskeidenheid. Die organisasie gebruik ook outonome werkspanne en daarom meet outonomie ook hoog. Die tweede organisasie kompeteer in die besigheidskonsultasiemark. Hier was die dominante kultuurtipe dié van klan. Die organisasie het hoog gemeet in al die omgewingsomstandighede behalwe oortolligheid en *ba*. Die dominansie van klan-tipe kultuur strook met 'n mediumgrootte maatskappy wat unieke oplossings moet bied gebaseer op spanwerk in kompetisie met groter konsultasie maatskappye.

Die gevolgtrekking is dat 'n dominante kultuurtipe 'n voordeel is vir 'n organisasie om te kan kompeteer, eerder as die teenwoordigheid van al die omgewingsomstandighede vir kennisskepping.

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Chapter 1

Background to the topic, approach to research and limitations

1.1 Background

"In knowledge economy, a key source of competitive advantage and superior profitability within an industry is how a company creates and shares knowledge."[1] According to a United Nations publication "Expanding Public Space for the Development of Knowledge Society," the development of national knowledge societies should encompass social, cultural, and human development besides economic growth[2]. The World Development Report also states that for countries in the vanguard of the world economy, the balance between knowledge and resources has shifted so far towards knowledge that it has become perhaps the most important factor determining the standard of living, more than land, tools, labor.[3] The advanced economies of the world are generally known to be based on knowledge. According to IMD, knowledge and innovation is crucial for sustainable creation of wealth and driving competitiveness and efficiency in what people do. There is a correlation between the global competitiveness ranking and knowledge ranking[4]. Knowledge creation is a precursor to innovation which is a driver of competitiveness. It has therefore become in the interest of organisations to provide enabling conditions for knowledge creation. The way things are done in an organisation can be influenced by the predominant culture that exists. Knowledge creation and innovation are two concepts that are strongly related[5]. If innovation drives competitiveness and efficiency, knowledge creation is behind that competitiveness.

Çiçekçi posited that the speed and efficiency of the diffusion of innovation through the economy is critical to productivity and economic growth. It can be pictured as a cascading

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[1] The New Economy: A Primer, Cambridge Technology Partners 1999

[2] United Nation 2003. Expanding Public Space for the Development of Knowledge Society

[3] World Development Report 1998

[4] IMD, 1996, p12; 2003a; 2003b; 2004; World Bank 2002

[5] Popaduik & Choo 2006

process. Through the forces of competition and imitation, an initial innovation is developed and improved so that the impact on the economy is many times greater than that brought about by the first application of the innovation[6]. Jack Welsh, the former CEO of General Electric once said, "The operative assumption today is that someone, somewhere, has a better idea; and the operative compulsion is to find out who has that better idea, learn it and put into action - fast."[7] Knowledge creation is a driver of continuous improvement, hence explosive growth in improvement of quality of life in generally.

Individual organisations as part of the global economy are exposed in an international environment of fierce competitiveness where survival relies on the speed of innovation. The ability to manage knowledge is becoming increasingly more crucial in today's knowledge economy and it all begins with generation of knowledge. Fostering the process of knowledge creation is the first step to facilitating innovations in the company[8]. The creation and diffusion of knowledge have become ever more important factors in competitiveness[9]. In fast-moving sectors it is the new enterprises with growth potential that are often the most innovative, forcing established enterprises to respond to the change by themselves becoming more innovative. This encouragement of the emergence of new firms is a strong force for innovation in many sectors[10].

Knowledge creation is the process which produces new knowledge and innovations. The stages of effective knowledge management can be described as identifying knowledge, creating of new knowledge, building competences and the effective management of innovation. For all of these to succeed, there should be a specific way of doings that is entrenched in organisational processes and systems.

Managers in a wide array of organisations are concentrating on knowledge creation as a way of achieving competitiveness. The concepts of individual learning capability and the learning

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[6]   Hasan Torun-Cumhur Çiçekçi, 2007

[7]   Jack Welsh, former CEO General Electric

[8]   Enkel, Gibbert, Makarevitch &Vassiliadis, 2002

[9]   Dalkir, 2005:2)

[10]   Hasan Torun-Cumhur Çiçekçi, 2007

culture of organisations are used by managers[11]. In all this, there is a specific culture type that will make it happen.

Tsoukas views organisations as systems of knowledge that highlight the crucial role of human interpretation, communication and skills in generating effective organisational action. This enables the move beyond individual to broader social bases like social practices, forms of interaction, values, routines, power structure and organisation of work[12]. These are also underpinned by the type of dominant organisational culture.

As Karppinen put it, knowledge creation is culturally influenced by patterns that are linked to language and communication[13]. Knowledge creation is linked to culture. Many other authors have written about knowledge and culture; how culture influences knowledge creation hence competitiveness, and how culture affects sharing and transfer of knowledge[14]. Knowledge transfer that ignores cultural difference has shown limited success. This is the case for organisations that tried to copy Japanese work practices to drive innovation and failed in most cases.

1.2   Statement of Problem

In a competitive environment, the relationship between Nonaka and Takeuchi's enabling conditions for knowledge creation and the organisational culture has not been well researched. To know the type of organisational culture that will support knowledge creation enabling conditions will be critical for good innovation strategy. For this research, it is important to know how the organisational culture of selected companies in a highly competitive environment supports knowledge creation. It is accepted that to survive in a highly competitive environment, it requires innovation or continuous creation of new knowledge.

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[11]   Enkel, Gibbert, Makarevitch &Vassiliadis, 2002

[12]   Tsoukas, 2006

[13]   Merja Karppinen 2006. *Cultural Patterns of Knowledge Creation*. Helsinki School of Economics

[14]   Smith and McKeen 2003; Gurteen 1999; Ladd and Heminger 2002

Organisations in a competitive environment go through a process of creative destruction and innovate to bring new products, services and processes to the market. Research in this regard could improve understanding of which organisational cultural types are supportive of which specific elements of knowledge creation. The nature of the correlation between culture types and knowledge creation elements should be understood. This research could indicate the organisational culture types that are critical for knowledge creation and innovation. The general hypothesis is that an organisation surviving in a competitive environment must have a good knowledge creation system that drives innovation and that it has an organisational culture to support innovation.

1.3 Need and Justification

The literature survey on the subject on knowledge and culture indicates various work and research done to connect the two concepts. Smith and McKeen[15] used a focus group of senior knowledge managers to establish how a knowledge sharing culture is instilled in organisations. Previously, research by Jarvenpaa and Staples[16] showed that a willingness to share knowledge is positively related to profitability and productivity and negatively related to labour cost. The focus group shared the view that there should be a corporate value or commitment that defines how work is done and how everyone thinks.

Edwards, Kumar and Rajan[17] used Nonaka and Takeuchi's description of innovation as being heavily dependent on knowledge, which is based on the underlying values and assumptions that underpin the learning process. They argued that the innovative capacity of the organisation is dependent on its culture. Their contention is that the organisational culture propels the organisation towards a tacit and continuous process of innovation. Their case study tested the theoretical premise that the organisational culture fosters innovativeness.

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[15] Smith and McKeen 2000

[16] Jarvenpaa and Staples 2000

[17] Edwards, Kumar and Rajan 2002

Lodhi[18] developed a culture-based knowledge sharing model. Knowledge sharing is considered a subset of knowledge management. Lodhi stresses that true knowledge is embedded in human cognition and human interaction at various levels depends on knowledge that creates value. The culture that facilitates this human interaction leads to the creation of value.

Karppinen's study analysed knowledge creation in international business to determine which aspects of knowledge creation vary across cultures. The focus of the study was Finland and Japan to find out what knowledge creation style is typical of these two cultures representing West and East. The study showed how national cultures foster different style of knowledge creation.

Ben-Jeng Wang and Dan-Shang Wang[19] published a paper that constructs a measurement for knowledge creation capacity, in addition to probing into the effects of the knowledge creation capacity in relation to the organisation culture, conditions of knowledge sharing and knowledge sharing motivation. According to their results based on hierarchical multiple regression, organisational culture is the key element influencing knowledge creation in an organisation.

Kalil Md. Nor[20] argues that the success of knowledge management, in particular the creation and sharing of tacit knowledge, is also influenced by the dominant organisational culture. It is hypothesized that certain dimensions of organisational culture encourage the creation and sharing of tacit knowledge.

Grey and Densten[21] integrate Nonaka and Takeuchi's knowledge creation model with Quinn's competing value framework. The conceptual parallels between the two models are identified and interaction effects among dimensions analysed. The resultant organisational knowledge management model improves the understanding of social and organisational culture processes that drive knowledge creation and underpin organisational effectiveness.

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[18] Lodhi 2005

[19] Ben-Jeng Wang and Dan-Shang Wang 2006

[20] Khalid Md. Nor 2006

[21] Grey and Densten 2006

According to Pillania[22], organisational culture has been highlighted as a major reason behind failure of knowledge management initiatives. Pillania conducted research in India's software, pharmaceuticals and petroleum marketing companies to understand the current organisational culture and knowledge management. The findings pointed to the lack of organisational cultural support for knowledge creation, sharing and dissemination.

Ladd and Heminger[23] conducted research to find out if there is a correlation between the types of organisational culture and factors influencing knowledge transfer. They concluded that there is a correlation between organisational culture and factors that influence knowledge transfer.

Keskin, Akgun & Imamoglu[24] investigated the relationship between adhocracy and clan cultures and tacit oriented knowledge management strategy. Their regression analyses showed that adhocracy and clan cultures have positive effects on tacit oriented knowledge management strategy; and the impact or magnitude of adhocracy culture is approximately the same as the clan culture on tacit oriented knowledge management strategy.

Davenport and Prusak argue that knowledge creating activities take place between and within humans and that knowledge is considered as among the most important corporate assets[25]. Polanyi posits that all knowledge is either tacit or rooted in tacit knowledge. Dalkir estimates that only 15 – 20% of valuable knowledge has typically been captured, codified, or rendered tangible and concrete in some fashion[26]. This is in the form of books, databases, audio or video recordings, graphs and pictures, and so forth. The other knowledge is in a tacit form, which is a bigger constituent of knowledge. Mandl, Pippan and Haslinger posit organisational culture as tacit knowledge in action[27]. Tacit knowledge is also embedded in organisational culture which makes it critical for innovation. The tacit - explicit mobilization

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[22] Pillania 2006

[23] Ladd and Heminger 2006

[24] Keskin, Akgun and Imamoglu 2005

[25] Davenport & Prusak, 1998

[26] Dalkir, 2005:49

[27] Mandl, Pippan and Haslinger 2008

in the epistemological dimension and the individual - group - organisational sharing and diffusion in ontological dimension have to take place in order to create knowledge and produce innovation[28]. This diffusion in ontological dimension is organisational culture dependent. The connection between knowledge and culture can be viewed from many angles. The nature of tacit knowledge makes culture an enabling factor in the value creation of the organisation.

Nonaka's dynamics of knowledge creation is based on the dialogue between tacit and explicit knowledge[29]. This model has four knowledge conversion processes which are socialization for tacit to tacit knowledge, externalization for tacit to explicit knowledge, combination for explicit to explicit knowledge and internalization for explicit to tacit knowledge. While knowledge is created by individuals, organisations play a critical role in articulating and amplifying that knowledge. The diffusion and amplification processes will require a specific behaviour in organisation as facilitator. It will be important to know the organisational culture that is important to drive knowledge conversion for innovation in an organisation.

The Cook and Brown model of knowledge creation is based on the generative dance between the epistemology of possession and the epistemology of practice[30]. The epistemology of possession emphasizes explicit over tacit knowledge and individual knowledge over group knowledge. Organisations can be better served by equally treating tacit, explicit, individual and group knowledge. This equal treatment provides an opportunity of handling knowledge and culture as one in organisation. The success in handling both knowledge forms in an ontological dimension can be best served by co-handling of knowledge and culture. The use of tacit knowledge should be affected by culture as basic assumptions, beliefs and values an individual holds. Explicit knowledge can be expressed in words and numbers and can be easily communicated and shared in the form of hard data, scientific formulae, codified procedures and universal principles[31]. According to Sanchez, the tacit knowledge approach emphasizes understanding the kinds of knowledge that individuals in an organisation have, encourages people to transfer knowledge within an organisation, and managing key individuals as knowledge creators and carriers. The explicit knowledge approach emphasizes processes for

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[28] Dalkir, 2005

[29] Nonaka, 1994; Nonaka and Takeuchi, 1995

[30] Cook and Brown, 1999

[31] Nonaka and Takeuchi, 1995

articulating knowledge held by individuals, the design of organisational approaches for creating new knowledge, and the development of systems including information systems to disseminate articulated knowledge within an organisation[32]. The positioning of individuals as an important part of knowledge creating system, then organisational culture should influence the commitment of individual to knowledge creation. Hall thinks that knowledge management writers over-emphasize the explicit dimension of knowledge and that they downplay the limits of codification[33]. The codification process is however, heavily influenced by the tacit component of knowledge. This tacit component of knowledge is also present in organisational culture, therefore organisational culture can have an influence on the codification process. The explicit knowledge focus sometimes downplays the influence of organisational culture by limiting the human element of knowledge creation, and generally limiting the connection to the source of explicit knowledge. The view of epistemological pluralism states that objective knowledge is only one way of knowing things, and some aspects of explicit and tacit knowledge are only known collectively[34]. This view combines the objective and subjective elements of knowing. The organisational culture can facilitate the connection of individual knowledge to group knowledge and ensure a more balanced treatment of tacit knowledge and explicit knowledge. In a team work situation, the generative dance of epistemology of possession and epistemology of practice can be facilitated by presence of appropriate organisational culture.

The handling of knowledge from creation, storage or transfer is biased toward explicit knowledge. The issue of differentiating knowledge possession from knowledge ownership is generally not the focus of organisation. An organisation owns knowledge produced, but individuals possess this knowledge. An organisation can provide culture that will transform knowledge possession to organisation's success. It is said that knowledge cannot be conscripted but it is volunteered[35]. Therefore an organisational behaviour that minimizes a successful exploitation of tacit dimension of knowledge can limit innovation. The usability of codified knowledge is also dependent on individual skills that are sitting in an inarticulatable form of knowledge.

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[32] Sanchez, 2000

[33] Hall, 2004

[34] Spender, 1998

[35] Kinghorn 2006. Lecture to MIKM 2006 class

The capability to create and apply new knowledge successfully constitutes the true source of competitive advantage of a firm[36]. Nonaka proposes a middle-up-down management model to support knowledge creation. Verkkunen and Heli argue that learning on the shop floor is to be understood as the incremental, linear development of expertise and mastery of production processes[37]. This is a combination of expert knowledge and bureaucracy to drive efficiency. The rapidly changing technology and market conditions require a different form of learning to further innovative capabilities. This should be supported by the learning culture of the firm. If the organisation has a learning culture, how does this learning culture fit in the overall organisation culture and drive innovation. By understanding middle management cultural elements that sustain knowledge creation, it will assist in leveraging organisational innovation capabilities and have a sustainable competitive edge. According to Krogh, Ichijo and Nonaka, there are five enablers of knowledge creation; instilling knowledge vision, managing conversations, mobilizing knowledge activists, creating the right context and globalizing local knowledge[38]. These enablers will assist with the unleashing of the tacit form of knowledge for innovation.

Bhatt distinguishes between individual knowledge and organisational knowledge and says that the sum of individual knowledge does not add to organisational knowledge[39]. The culture of the organisation will influence how individual knowledge is translated to organisational knowledge and further innovation. Slater and Nerver put it that the entrepreneurial drive provides a cultural orientation for organisational learning[40]. The entrepreneurialism is linked to self-organisation which is a knowledge creation enabler in a form of autonomy. Chou and Tsai developed a knowledge management framework based on individual and organisational perspectives[41]. This research identified the impact of user involvement, knowledge cognition, and organisational mechanisms on knowledge creation. Obviously knowledge is linked to human action. An individual knowledge is linked to human action therefore individuals may create knowledge for organisation if there is culture

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[36] Saez, Muina & de Castro, 2002

[37] Verkkunen and Heli, 2004

[38] von Krogh, Ichijo and Nonaka, 2000

[39] Bhatt, 2000

[40] Slater and Narver, 1995

[41] Chou & Tsai 2004

to support it in the form of appropriate values, norms and beliefs. There is a need to research the culture types that support the creation of knowledge.

According to Smith and McKeen, all organisations have culture as a set of norms and values that guide the behaviour of employees[42]. That behaviour of employees should be in line with the generation and sharing of knowledge. Organisations are faced with complexity of in internal and external environments which require among other things, management that appeals to individual employee pattern recognition and use of distributed knowledge to cope. Calling upon this distributed knowledge requires some level of cultural understanding that will appeal to individuals in the organisation and create a coping mechanism. The coping processes may develop to culture and institutions that go with it. As said by Weick, people actively construct the environments which they attend to by bracketing, rearranging, and labelling portions of the experience, thereby converting raw data from the environment into equivocal data to be interpreted[43]. The data conversion process will be guided by individual's mental model and the prevailing organisational culture. In other words, knowledge creation happens in response to complex environment that most organisations find themselves in.

Choo proposes three forms of knowledge, tacit, explicit and cultural knowledge[44]. He defines cultural knowledge as "the shared assumptions and beliefs about an organisation's goals, capability, customers and competition". These beliefs are used to assign value and significance of information and knowledge by individuals. Individual's beliefs affect the use of information and coded knowledge in innovation process. Choo puts knowledge creation as done through exploration which involves socialization and externalization, and through exploitation which involves internalization and combination processes. Both socialization and externalisation is anchored in human processes which will be affected by organisational culture.

In a competitive environment, generally organisations have no formal systems of knowledge creation per se but there are systems of innovation. These systems fit within a specific organisational culture or assist to create one to sustain the momentum of innovation.

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[42] Smith and McKeen 2002

[43] Weick 1995

[44] Choo 2002

According to Castells the development of the informational, global economy is precisely its emergence in a very different cultural context[45]. This emergent character does not clarify whether organisational culture or knowledge creation comes first, but it is important to understand how these two impact on each other. Is it the culture created as organisations are trying to cope with the complexities of global economy or is it the ntentional effort to innovate and have a sustainable competitiveness? Choo maintains that the capacity to develop organisational knowledge is distributed over a network of information processors and participants. The effectiveness of information processors will be somehow influenced by values and beliefs espoused in the organisation. Rather than being centrally controlled and coordinated, the capacity to develop knowledge emerges from the complex, unpredictable patchwork of processes in which participants enact and negotiate their own meanings of what is going on; stumble upon and wrestle with new knowledge to make it work; and creatively improvise and bend rules and routines to solve tough problems[46].

The fast changing nature of global economy has made certainty rare. A common matrix of organisational forms in the processes of production, consumption, and distribution has adapted to reduce uncertainty, from Fordist which is mechanistic to Toyotastic production processes which is adaptive to market demands. The organisational culture that supports Fordism will be different from the one that supports Toyotasm. The success of Japanese organisations in this regard has been linked to modernization of processes within the cultural context of Japan. In any firm, the modification in organisational culture should happen due to the firm's consented efforts to create knowledge on ongoing bases. It is important to know these adaptation processes that have moulded and organisational culture that firms survive in a continuously innovative environment. According to Karppinen, a cultural difference in language and communication is assumed to launch different patterns of knowledge creation[47]. In this case, it is the culture that influences how knowledge is created. The first level of culture will show itself in a communication medium a firm tends to adopt. This is more relevant in the context of national culture; however organisational culture cannot be completely divorced from the national culture. Weick says that in belief-driven processes[48], people start from an initial set of beliefs as part of organisational culture that are sufficiently

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[45] Castell, 2000

[46] Choo, 2002

[47] Karppinen, 2006

[48] Weick, 1995

clear and plausible, and use them as nodes to connect more and more information into larger structures of meaning. People may use beliefs as expectations to guide the choice of plausible interpretations, or they may argue about beliefs and their relevance when these beliefs conflict with current information. These beliefs will enable or block the use of tacit knowledge an individual would possess. In other words, organisational culture can optimise knowledge creation process by appealing to tacit knowledge of individuals. In action-driven processes, people start from their actions and grow their structures of meaning around them, modifying the structures in order to give significance to those actions. At middle management level, people may create meaning to justify actions that they are already committed to, or they may create meaning to explain actions that have been taken to manipulate the internal and external environments. This justification may emanate from the beliefs members of the organisation hold as part of culture. In Weick it is also considered that the premise controls co-vary with non-routine tasks which introduce the dimension of technology into sensemaking[49]. Boisot presents an anthropological interpretation culture as extension of technology[50]. To use the first and the second order controls orders, surveillance, rules, specialization, and standardization, the work has to be understood and subdivided. This is the case for mechanistic organisation that may be bureaucratically driven to achieve higher efficiency. The third order or premise controls should evolve from organisational culture to some extent, which is a looser form of control. This should allow a freedom to create, and innovate.

Ladd and Heminger found a correlation between organisational culture and knowledge transfer[51]. Knowledge transfer happens between humans therefore influenced by organisational culture, and these transfers support knowledge creation. In Wang and Wang study of organisational knowledge creation capability in Taiwan's manufacturing industry found that developmental culture and rational culture significantly affect capability for knowledge creation[52].

Boisot describes culture as a knowledge asset. This comes from the fact that many anthropologists have treated culture as extension of technology. Technology embodies

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[49] Weick 1995

[50] Boisot 1999

[51] Ladd and Heminger 2002

[52] Wang and Wang, 2004

knowledge and technology is an extension of culture[53]. This implies that culture embodies knowledge. When technology is accepted in an organisation, it provides cultural options; therefore for this research it is important to understand how these cultural options support knowledge creation. Morgan metaphorically describes organisation as culture in a sociological sense[54] which connects organisational culture and knowledge as organisations create their future to survive in challenging environment. The above arguments justify the need to do this research.

1.4   Rationale

Enkel, Gibbert, Makarevitch and Vassiliadis raise the issue of impact of globalisation and innovation on the levels of cultural and technological diversity within and between firms, the ability of firms to adapt to changing environments and also the ability of individuals and groups to make good sense of the situations that they participate in.[55] Innovation is driven by the continuous creation of knowledge and this impact on the level of cultural diversity, therefore the interconnection between knowledge and organisation culture worth investigating. The changes in cultural and technological diversity create an occasion for sense making by individuals and groups which will affect the conversion of information to knowledge. As stated by Weick and Blackler, sense making requires an appreciation of the highly tacit and distributed nature of organisational knowledge as well as the complex, social practices through which such knowledge develops.[56] These social practices are impacted upon by culture which further highlights the connection between knowledge and organisational culture.

According to von Krogh, Ichijo and Nonaka knowledge creation can not be managed. It is not possible to control the process of knowledge creation; instead, managers need to support it. In other words the conditions that make knowledge creation happen need to be created. The process of knowledge creation can only be enabled or supported by an "overall set of

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[53]   Boisot 1999

[54]   Morgan 2006

[55]   Enkel, Gibbert, Makarevitch &Vassiliadis 2002

[56]   Weick & Blackler, 1995

organisational activities that positively affect knowledge creation".[57] Therefore it is important to know which organisational culture type is supportive of knowledge creation.

According to Myers, knowledge can provide a firm with a sustainable competitive advantage if it is independent from any given individual.[58] An organisation should provide an environment that enable individuals to contribute to organisational knowledge. Maasdorp states that organisational knowledge can be identified and then managed only to the extent it has been captured by an organisation's systems, processes, products, rules, and culture.[59] Again culture plays a role on the management of organisational knowledge.

According to Nonaka and Takeuchi, the West views of knowledge as necessarily "explicit" which is something formal and systematic and Japanese companies recognize that the knowledge expressed in words and numbers represents only the tip of the iceberg. They view knowledge as being primarily "tacit" which is something that is not easily visible and expressible. Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others.[60] This Western view of knowledge disembodies knowledge and treats it like information[61] and the Japanese view treats knowledge as personal. In this instant, individual knowledge can be beneficial to organisation if there is right organisational culture that appeals to individuals to contribute what they know.

Nonaka and Takeuchi posit that knowledge is created by bring together the epistemological and ontological dimensions of knowledge creation processes. This involves different patterns of interaction between tacit and explicit knowledge at epistemological dimension and social interaction between individuals on ontological dimension.[62] Tacit knowledge and ontological dimension are socially inclined hence sensitive to dominant organisational culture type. Nonaka and Takeuchi's knowledge conversion requires "*ba*" which is translated as a notion of providing a "place". According to Scharmer, the single most important factor shaping the

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[57] von Krogh, Ichijo & Nonaka, 2000:vii

[58] Myers,1996:2

[59] Maasdorp, 2002

[60] Nonaka & Takeuchi, 1995

[61] Maasdorp, 2001

[62] Nonaka, 1994, Nonaka & Takeuchi, 1995

quality of knowledge creation is the quality of place.[63] According to the Japanese philosopher Kitaro Nishida, each *ba* has a physical, a relational, and a spiritual dimension. The relational dimension has a social element which is influenced by culture. According to Prusak and Cohen many approaches to knowledge management have focused on the relational dimension by emphasizing the mental and social conditions of knowledge networks and respective communities.[64] The impact of social condition may be influence by culture.

Scharmer posit that the company is reframed as arising from a dynamic system of places as an organic configuration of *ba*. The leadership role is to generate an evolving system of interwoven *ba* such that it enables its participants to tap into their best individual and collective sources of creativity and innovation.[65] An organisational culture should be able to play a part this knowledge creating system of interwoven *ba*.

Since tacit knowledge cannot be always captured, this does not mean that it cannot be managed at all. In this context, de Judicibus proposes that human relationships can be used as the main mechanism to deploy tacit knowledge.[66] The ensemble of tacit knowledge, culture and human relationships is a relevant social capital for an organisation. By having the right culture, tacit knowledge can be released to drive knowledge creation, hence innovation. One of Polanyi's famous aphorisms is: "We know more than we tell" and tacit knowledge consists often of habits and culture that we do not recognize in ourselves. Again this confirms the major culture can play in making tacit knowledge available in knowledge creation processes.

Spender analysed the tacit dimension of knowledge to the level of organisational knowledge and identified three tacit forms of knowledge.[67] Firstly, he identified conscious and individual practical knowledge that is gained through experience and usually applied as skill or know-how. Secondly, the individual automatic knowledge, which is accumulated through experience, is usually taken for granted and applied automatically. This type of knowledge is especially important in routine tasks and corresponds with pattern matching abilities. Often

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[63]   Scharmer, 2001

[64]   Prusak & Cohen, 2001

[65]   Scharmer, 2001

[66]   de Judicibus, 2002

[67]   Spender, 1996

people who have a lot of experience in a given line of work can intuitively decide on the correct course of action. The automatic application is characterised by effortlessness. The actor can concentrate on the goal of the task, rather than on the execution itself. Automatic knowledge complements whatever conscious knowledge an actor needs to complete a task. The third form of tacit knowledge is a form of collective knowledge that is accumulated culturally and drawn upon by individuals without necessarily thinking about it.[68] Organisational knowledge is both embodied in the individuals and embedded in an organisation's culture, in the worldview and it is a general way of doing things. Knowledge creation in an organisational context has culture as a guide of how things are done and therefore support knowledge creation enablers.

Tacit knowledge is not viewed as a mere embodied skill, but rather as a collective cognitive resource distributed among members of a team or an organisation. Thus conceived, collective tacit knowledge becomes a principle factor in shaping an organisation's self identity and hence its interaction with its environment. This self identity is connected to the culture of an organisation. According to Maasdorp, an organisation accumulates its tacit knowledge and uses it within its cultural context in a manner that will minimize internal conflict.[69] A best fitting culture can make tacit knowledge available for knowledge creation.

According to Berman, Down and Hill, tacit knowledge underlies many competitive capabilities. The experience, stored as tacit knowledge, often reaches consciousness in the form of insights, intuitions, and flashes of inspiration.[70] An appropriate organisational culture should inspire employees. Fischer and Fisher view tacit knowledge as deeply embedded into an organisation's operating practices and called "organisational culture". Therefore tacit knowledge includes relationships, norms, values, and standard operating procedures.[71] Karppinen views the sharing tacit knowledge is non-verbal and it having a cultural implication, which highlights that culture and tacit knowledge, go hand in hand.[72]

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[68] Spender, 1996:60-64

[69] Maasdorp, 2001

[70] Berman, Down & Hill, 2002

[71] Fisher & Fischer, 1998

[72] Karppinen, 2006

According to Tsoukas new knowledge comes from the exercise of judgment, the individual ability to draw new distinctions concerning a task at hand, typically in the context of a group. New distinctions may be developed since human experiences already involve a certain level of articulation and as such they admit further articulation.   The process of articulation develops through organisational members engaging in three kinds of dialogical encounters: with real others, with imaginary others and with artefacts[73]. This individual's enactment is social in nature which means that for it to be effective; the culture should be appropriate and supportive.

Cook and Brown view the creation of organisational knowledge as the process of "generative dance" between epistemology of possession and epistemology of practice.[74] This presents the co-equalism of explicit, tacit, individual and group knowledge. The social elements of individual and group knowledge are connected to culture with equal treatment giving the same status to epistemologies of possession and practice. The bridging epistemology model strengthens the link between the creation process and the eventual product thereof. The ways of "knowing" reflected in the interaction of workers with each other and their objects of work are essential.[75] This shows off the dominant culture that guides the interaction of workers.

Castells state that the informational economy has created a specific culture.[76] People have to cope with huge volumes of information, make sense of it and create knowledge. In this coping process people learn to behave in a certain way to be effective. The knowledge creation through sense making process has a culture that makes it happen. Boisot put forward the technological aspects of culture that highlight four culture types, clan, market, hierarchy and adhocracy[77].   This presents an interconnection between, technology, culture and knowledge.

Obviously there is connection between knowledge and culture. Globalisation, constantly changing environment, technology and information impact on culture and success of knowledge creation process. This impact is a complex one due to the interrelationships of the above factors. Conducting a research specifically on Nonaka and Takeuchi's knowledge

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[73]   Tsoukas, 2000

[74]   Cook & Brown, 1999

[75]   OUBS, 2001

[76]   Castells, 2000

[77]   Boisot, 1999

creation enablers in relation to Cameron and Quinn culture types is important to begin to understand these complex interrelationships.

1.5   Research question and hypothesis

The research is aimed at understanding the relationship between Nonaka and Takeuchi knowledge creation enablers and Cameron and Quinn organisational culture types.   The research should answer the question of which organisational culture types are more supportive of knowledge creation enablers as proposed by Nonaka and Takeuchi.

The main hypothesis: competitive organisations have knowledge creation enablers and appropriate dominant organisational culture to drive innovation.   Under the main hypothesis, there are small hypotheses matching individual knowledge creation enabler to individual organisational culture type.   There are twenty four sub-hypotheses (*Table 1*) linking knowledge creation enablers with individual organisational culture type. Each organisational culture type will negatively or positively affect each knowledge creation enabler. An organisation may have characteristics of all organisational culture types, but usually one of the culture types can be seen as dominant. It is expected that the market culture type will be dominant in competitive organisations and that it will support all the enabling conditions for knowledge creation.   Therefore one major sub-hypothesis is that the market culture type supports knowledge creation the best.

Table 1

CULTURE TYPES ENABLERS	1. Hierarchy	2. Clan	3. Market	4. Adhocracy
1. Intention	β_{11} (+)	β_{12} (+)	β_{13} (+)	β_{14} (-)
2. Autonomy	β_{21} (-)	β_{22} (+)	β_{23} (+)	β_{24} (+)
3. Fluctuation & creative chaos	β_{31} (-)	β_{32} (-)	β_{33} (+)	β_{34} (-)
4. Redundancy	β_{41} (-)	β_{42} (-)	β_{43} (+)	β_{44} (-)
5. Requisite variety	β_{51} (-)	β_{52} (-)	β_{53} (+)	β_{54} (-)
6. "Ba"	β_{51} (-)	β_{62} (+)	β_{63} (+)	β_{64} (-)

Research questionnaires will be simultaneously sent out to selected organisations to be distributed to middle management staff members by the central contact person per organisation. A total of 120 questionnaires will be sent out. The responses to questionnaires will be emailed or faxed back.

1.6 Research Design and Method

The research is on a questionnaire survey that is targeted at middle management of selected organisations in competitive sectors of the South African economy. The research questionnaire will have two sections. The first part of the questionnaire will assess the presence of knowledge creation enablers[78]. This section of the questionnaire will assess for the presence of enablers of knowledge creation by interpreting each description of the enablers into appropriate statements that measure for that enabler. The usefulness of this part of the question will be judged after carrying out the reliability test per organisation which will be the degree of variation of responses per organisation. Firstly, data will be analysed for prevalent rankings for knowledge creation enablers and organisational culture profile

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[78] Nonaka & Takeuchi 1995 enablers which are organisational intention, autonomy, fluctuation and creative chaos, redundancy, requisite variety and *ba* as a concept of sharing knowledge

responses. Secondly, the nature of relationship, strength, reliability and completeness between knowledge creation enablers and organisational culture types will be analysed. The research is predominantly quantitative but there will be qualitative analysis of results that will be based on the nature of these organisations, the markets they participate in and history.

The second part will assess for the organisational culture. In this section, the validated organisation culture assessment instrument by Cameron and Quinn will be used. This instrument is based on competing value framework supporting organisational effectiveness. The enablers of knowledge creation are matched to individual culture type (*Fig.1*)

Fig.1

Research Model: Knowledge Creation and Organizational Culture

Enablers of Knowledge Creation		Culture Types	Dimensions of Organizational Culture
•Intention	①	•Hierarchical	1. Stability, control, order & mechanistic (steadiness & durability) vs. Flexibility, Discretion & Dynamism (versatility & pliability)
•Autonomy	②	•Clan	2. Internal orientation, integration & unity (harmonious internal characteristics) vs. External orientation, differentiation & rivalry (Interacting or competing outside boundaries)
•Fluctuation & creative chaos	③	•Market	
•Redundancy	④	•Adhocracy	
•Requisite variety	⑤		
•"Ba"(creative space)	⑥		

Nonaka & Takeuchi   *Cameron & Quinn*

Although this thesis aims to establish the relationship between knowledge creation enablers and dominant organisational culture types in the selected organisations, there is a need to review literature dealing with knowledge creation models. These models will be examined for their implicit support of Nonaka and Takeuchi's knowledge creation enablers. This will assist to strengthen the rationality of this research. Nonaka's knowledge creation model enjoys support but not without controversy. Nonaka's knowledge creation enablers have not been part of this controversy and criticism by various authors. Also important is to understand knowledge, knowledge creation and how these link with innovation. Competitiveness and innovation are behind knowledge economy. Organisational culture will be reviewed from its definition to culture types and levels. It is important to know where

organisational culture fits in knowledge creation. In this literature review, it will be important to find the link between knowledge and culture, specifically the organisational culture. The ability to fit all these pieces together will make this research worthwhile.

1.7 Limitations

The research will be conducted on four selected organisations that find themselves in a highly competitive environment. The questionnaire will be based on the model of organisational knowledge creation by Nonaka and Takeuchi and the organisational culture assessment instrument by Cameron and Quinn. The sample will be limited to middle management per organisation, as this is the management layer that matters most to organisational knowledge creation according to Nonaka. The assessment of culture will focus on identifying dominant culture types without focussing on the levels of culture.

Chapter 2

Literature Review on Knowledge Creation and Organisational Culture

Nonaka's knowledge creation model has been reviewed and criticised by many authors, especially the epistemological dimension of tacit-explicit knowledge dialogue. The focus of this thesis is on Nonaka's knowledge creation enablers which enjoy acceptance by many authors. Since the thesis is about knowledge creation and organisational culture, various knowledge creation models will be reviewed in respect of how these models play along Nonaka's knowledge creation enablers. The research focuses on Nonaka knowledge creation enablers which are intention, autonomy, fluctuation and creative chaos, redundancy, requisite variety and *ba*. In brief these enablers describe how organisations will guide individuals and teams in response to environment. The focus area of research is in middle management, therefore Nonaka's middle-up-down management and hypertext organisation is considered.

Knowledge creation is a precursor to innovation; therefore the connection between the two will also be part of discussion. The thesis focuses mainly on knowledge creation in an organisation, although the national innovation system on a country-level may be touched on briefly. The organisational culture review focuses on culture as a concept, organisational culture types, levels of culture, culture as technology and knowledge asset.

2.1 Knowledge, knowledge creation and innovation

Knowledge and knowledge economy has become a critical element in driving competitiveness in the world today. Knowledge creation, innovation and competitiveness are critical for effective response to environment. The European Union through the Lisbon Agenda of 2000 is taking action to ensure that Europe is the most competitive and dynamic knowledge economy in the world by 2010. According to the Netherlands Knowledge Economy Monitor, for knowledge economy to happen it needs the infrastructure to move ideas around, it needs culture that is pro-innovation and supporting creativity and institutions that are organized to promote innovation.[79]

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[79] Time to choose: Knowledge Economy monitor, 2003 (The Netherlands)

Fig. 2
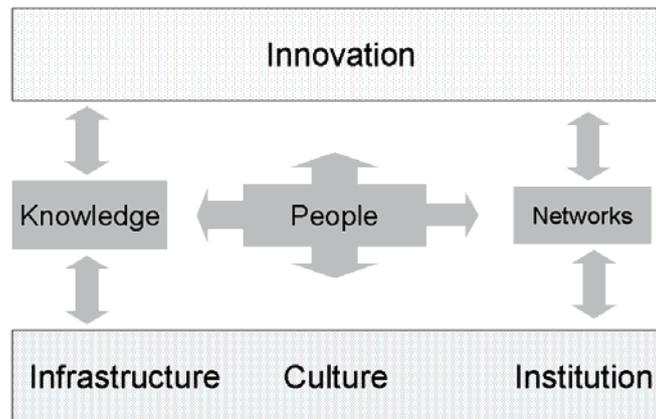
Adapted from: KNOWLEDGE ECONOMY MODEL – Knowledge Land, The Netherlands, 2003

According to Baldwin and Hand, innovation is the economics of knowledge creation and its application.[80] As the above knowledge economy model (*Fig.2*) indicates, innovation will include people, knowledge and culture. This creates an innovation ecosystem where knowledge, people and networks co-exist with infrastructure, culture and institutions; together providing the necessary environment for innovation to thrive. If knowledge creation occurs in organisations and if organisations have cultures in the anthropological sense – then the question is how organisational culture impacts on knowledge creation? This chapter looks at this question by initially investigating organisational knowledge, the creation of knowledge, the linkages between knowledge creation and innovation and lastly, the linkages between organisational culture and knowledge creation.

Understanding knowledge for the purpose of knowledge creation creates a foundation for sustainable competitiveness through innovation. Being innovative as an organisation means that ideas are being generated to create value for the organisation itself, and ultimately for its suppliers and consumers too. Popaduik and Choo state that innovation is never a one-time phenomenon, but a long and cumulative process of a great number of organisational decision-making processes, ranging from the phase of generation of a new idea to its implementation phase[81]. According to Popaduik and Choo, innovation consists of the generation of a new idea and its implementation into a new product, process or service, leading to the dynamic

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[80]   John R. Baldwin and Petr Hand 2003. Statistics Canada. Cambridge Press

[81]   Popaduik and Choo, 2001: 309

growth of the national economy and the increase of employment as well as to a creation of pure profit for the innovative business enterprise.[82] Garcia, Fernando, de Castro and Pedro state that the capability to create and apply new knowledge successfully constitutes the source of competitive advantage of the firm.[83]

Fig.3

Adapted: Enkel,Gibbert,Makarevitch,& Vassiliadis,2002
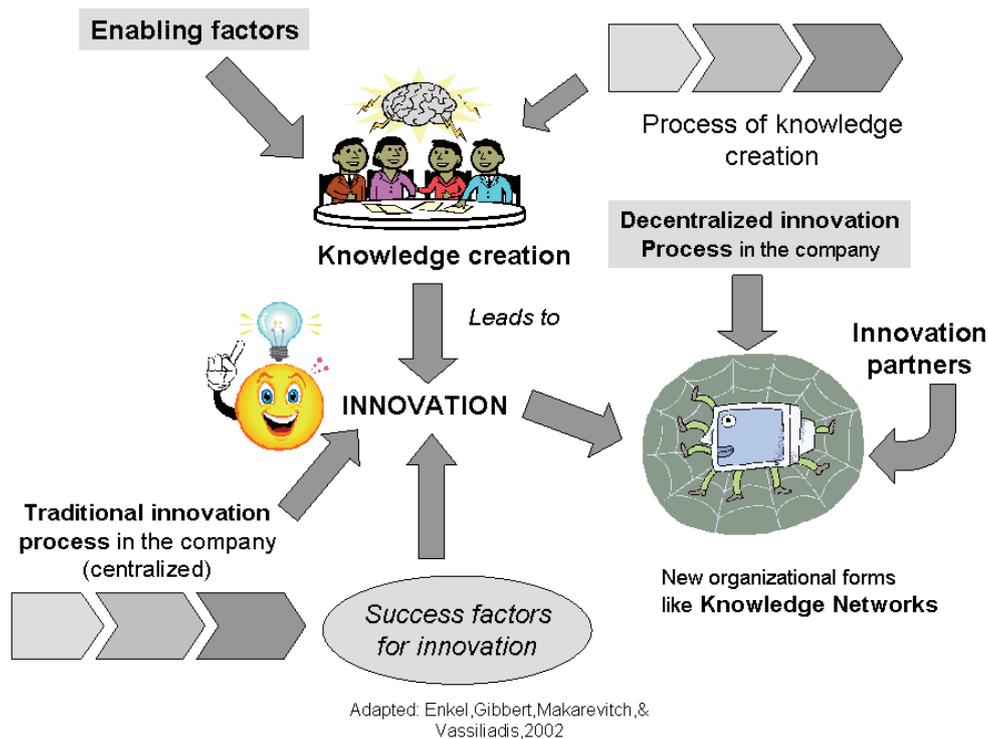
The enabling factors of knowledge creation and internal processes allow for creation of knowledge which leads into innovation (*Fig.3*). In this model above, a firm can have centralised or decentralised innovation process. According to Enkel, Gibbert, Makarevitch and Vassiliadis, it is possible to distinguish several levels of social interaction at which the knowledge created by an individual is transformed and legitimized. In the first instance, an informal community of social interaction provides an immediate forum for nurturing the emergent property of knowledge at each level and developing new ideas. Since this informal community might span organisational boundaries, for example, to include suppliers or customers, it is important that the organisation is able to integrate appropriate aspects of emerging knowledge into its strategic development. Thus, the potential contribution of informal groups to organisational knowledge creation should be related to more formal

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[82] Papaduik & Choo, 2006:303

[83] Garcia, Fernando, de Castro & Pedro, 2002:3

notions of a hierarchical structure. If this is done effectively, new knowledge associated with more advantageous organisational processes or technologies will be able to gain a broader currency within the organisation. In addition to the creation of knowledge within an organisation, it is also possible that there will be formal provisions to build knowledge at an inter-organisational level. This might occur if informal communities of interaction, that span the link between customers, suppliers, distributors, and even competitors, are put on a more formal basis, for example, through the formation of alliances or outsourcing.[84] The processes of knowledge creation in support of innovation spans across boundaries of enterprise to link with suppliers and customers with results felt across the national economy.

Gassmann and Zetwitz observed that the structure of companies is often not flexible enough to involve different outside resources and to integrate a decentralized innovation process.[85] This leads to the conclusion that the conventional organisation of a firm is inadequate to fulfil the requirements of fostering innovations because it is constrained by hierarchical and regional barriers. It seems a common assumption that designing an organisation in a hierarchical manner and with compartmentalisation hinders knowledge creation.

2.1.1   Knowledge

To understand knowledge creation process, a deeper understanding of knowledge is important. According to Kinghorn, knowledge as a category is defined as an outcome of human thinking in a symbolised form.[86] Knowledge is further described as codified in characters, embodied in processes, actions and traditions, and embedded in artefacts.   In sociological terms, knowledge is defined as a capacity to act and it is anchored in human action. Knowledge is also philosophically defined as "justified true belief". The traditional epistemology definition focuses on "truthfulness" as the essential attribute of knowledge. Popaduik and Choo state that knowledge is dynamic, relational, and based on human action; therefore it depends on the situation and people involved rather than on absolute truth or artefacts.[87]

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[84]   Enkel, Gibbert, Makarevitch & Vassiliadis, 2002

[85]   Gassmann & Zetwitz, 1998

[86]   Kinghorn, MIKM Lecture notes, 2006

[87]   Papaduik & Choo, 2006

Nonaka and Takeuchi adopt the definition of knowledge as ''justified true belief'' that increases an organisation's capacity for effective action.[88] Mitri describes knowledge that is relevant to business organisations to include facts, opinions, ideas, theories, principles, models, experience, values, contextual information, expert insight, and intuition.[89] According to Davenport and Prusak, knowledge is a fluid mix of framed experiences, values, context information, and expert insight that provides a framework for evaluating and incorporating new experiences and information.[90] Knowledge as a fluid mix adapts to maintain relevance to business requirements as responses to environment.

Choo defines cultural knowledge as the ''assumptions and beliefs that are used to describe, and explain reality, as well as the conventions and expectations that are used to assign value and significance to new information''[91] This form of knowledge assists with sense making and transformation of information to relevant knowledge.

According to Dilkir, knowledge has four characteristics which are: the use of knowledge does not consume it, transfer of knowledge does not result in losing it, knowledge is abundant, but the ability to use it is scarce and much of an organisation's knowledge walks out the door at the end of the day.[92] The last characteristic highlights the importance of tacit form of knowledge as major component whose presence in an organisation is diminished by a process of attrition. According to Davenport and Prusak, the only sustainable advance in a firm comes from what it collectively knows, how efficiently it uses what it knows, and how quickly it acquires and uses new knowledge.[93] The transformation of individual knowledge to collective knowledge is of value to an organisation. Tsoukas defines knowledge as individual's capability to draw distinctions, within a domain of action, based on the appreciation of context or theory, or both. This is extended to define organisational knowledge as the capability members of an organisation have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalizations whose application depends on historically evolved collective understandings.

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[88] Nonaka, 1994; Nonaka & Takeuchi, 1995

[89] Mitri, 2003

[90] Davenport & Prusak,

[91] Choo, 1998

[92] Dalkir, 2005:2

[93] Davenport & Prusak, 1998

He goes further to define organisational self knowledge as the degree to which individuals have knowledge of what they as individuals know and what individuals surrounding them know.[94] Individuals and organisations make sense of the situation they are in and act on provided options.

Marakas defines knowledge as an organized combination of ideas, rules, procedures, and information. In a sense, knowledge is a "meaning" made by the mind. Therefore without meaning, knowledge is inert and static therefore a disorganized information.[95] For information to be transformed to knowledge, a meaning should be crated in a person's head.

Knowledge itself is dynamic, complex and distributed. Tsoukas posits that complex social systems require complex forms of knowing; namely, forms of understanding that are sensitive to context, time, change, events, beliefs and desires, power, feedback loops, and circularity.[96] The dynamic and complex nature of knowledge provides a requisite variety to deal with complexity which is more of a norm in a globalised economy.

In this thesis, Nonaka and Takeuchi's definition of knowledge as justified true belief is used.

2.1.2   Tacit knowledge and knowledge creation

Nonaka and Takeuchi posit that knowledge creation happens through dialogue of two forms of knowledge, which are tacit knowledge and explicit knowledge.[97] Explicit knowledge is expressed in symbolized form which is something that could be captured in an information system. This form of knowledge can be coded, documented and communicated or stored. Tacit knowledge is knowledge that people carry in their heads, difficult to access and often people are not aware that they possess it. Tacit knowledge is more valuable because it provides context for people, places, ideas, and experiences.[98] Tacit and explicit is the major characteristics of knowledge with knowing as an indispensable personal component. According to Polanyi, tacit knowing is similar to 'knowing by acquaintance' and explicit

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[94]   Tsoukas, 2006:119

[95]   Marakas, 1999:264

[96]   Tsoukas 1994; Tsoukas 2006:3

[97]   Nonaka 1994 ; Nonaka & Takeuchi 1995

[98]   Nonaka & Takeuchi 1995

knowledge is by definition some thing that is made 'visible' thus knowing by seeing or 'knowledge about'. According to Polanyi, tacit knowledge underlies all explicit knowledge "we know more than we tell" Polanyi maintains that all knowledge is gained through tacit power.[99] Tacit knowledge is that component that helps us transform information into knowledge. Tsoukas views tacit and explicit knowledge as mutually constituted and connected and distinguishing them in the knowledge creation model is irrelevant.[100] The connection between the two cannot be easily differentiated in process of knowing when demarcation between possession and expression becomes a blurr. The sharing of tacit knowledge is non-verbal[101] and has cultural implication. Karppinen views tacit knowledge as a silent knowledge[102]which means you can have it without being aware of its existence in you.

According to Maasdorp, bridging of individual and organisational knowledge is made possible by the notion of tacit knowledge. The universal disembodiment of knowledge obscured the human aspect of knowledge and led to the equation of knowledge with information.[103] Maasdorp further states that the notion of tacit knowing presents a counterweight primarily based on the creation, manipulation and application of knowledge. Advances in codification, storage and dissemination of knowledge not only increased the stock of available theoretical knowledge, it also changed the role of knowledge in society. The massive availability of information presents an opportunity to differentiate one's organisation by sharpening sensemaking processes that transform this information to organisational knowledge. Maasdorp views that the role of knowledge in society shifted from a resource for meaning towards a resource for production.[104] According to Popaduik and Choo, organisational knowledge creation should be understood in terms of a process that organisationally amplifies the knowledge created by individuals, and crystallizes it as a part of the knowledge network of organisation.[105] This is connecting what individuals are creating to the organisation as whole, which should be facilitated if knowledge creation is to be meaningful.

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[99] Polanyi 1983:4-5

[100] Tsoukas 1996

[101] Sharing tacit knowledge is non-verbal highlights the impact of culture in increasing tacit knowledge

[102] Karppinen, 2006:53

[103] Maasdorp, 2001

[104] Massdorp, 2001

[105] Popaduik & Choo, 2006:308

Büssing, Herbig and Ewert state that it is not commonly accepted that the articulation of tacit knowledge is possible at all. There are two conflicting positions: the "no-access" versus the "possible-access" position.[106] The "no-access" position claims that tacit knowledge is not accessible to consciousness. For example, tacit knowledge cannot be transformed into explicit knowledge; it might help to create explicit knowledge, confirming Cook and Brown bridging epistemology theory.[107] The "possible- access" position claims that at least parts of tacit knowledge can become conscious as confirmed by Nonaka, Hacker, Büssing, Herbig and Ewert [108]. In line with the latter position, Tuomi assumes that it is possible to make parts of tacit knowledge conscious, in the sense that some parts of tacit knowledge become focal points of attention.[109] This consciousness enables articulation and thus externalization of tacit knowledge and non-conscious communication through socialisation. It has to be clarified which dimension of tacit knowledge can become a focal point. According to Nonaka and Konno, the two dimensions of tacit knowledge are distinguished as the technical dimension, i.e. the know-how, and the cognitive dimension, i.e. beliefs, ideals, values, mental models and schemata[110]. "While difficult to articulate, this cognitive dimension of tacit knowledge shapes the way we perceive the world"[111]. Senge termed cognitive dimension as mental models[112]. These models shape people's actions and are, vice versa, shaped by them. Japanese consider knowledge as primarily tacit whereas the West takes it as explicit, which creates a different focus.

2.1.3 Knowledge Creation and Innovation

2.1.3.1 Definition of knowledge creation

Popaduik and Choo define knowledge creation as the sharing of mental, emotional and active knowledge in such a way that the results lead to aggregated value. This is used as the working definition for this thesis.

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[106] Büssing, Herbig & Ewert, 2002

[107] Cook & Brown, 1999

[108] Nonaka, 1994; Hacker, 1992; Büssing, Herbig & Ewert, 2002

[109] Tuomi, 1999

[110] Nonaka & Konno, 1998

[111] Nonaka & Konno, 1998:42

[112] Senge, 1996

2.1.3.2 Definition of innovation

Popaduik and Choo define innovation as generation of ideas and implementing them to produce value for the organisation, suppliers and consumers. This is also taken as a working definition for this thesis.

2.1.3.3 Information to Knowledge and Value Creation

The model below (*Fig.4*) demonstrates how knowledge can create value for organisations by utilizing customer and market knowledge. This concept will be explored further in the discussion of the knowledge conversion process.

Fig.4

Values & Strategy: Knowledge to Value
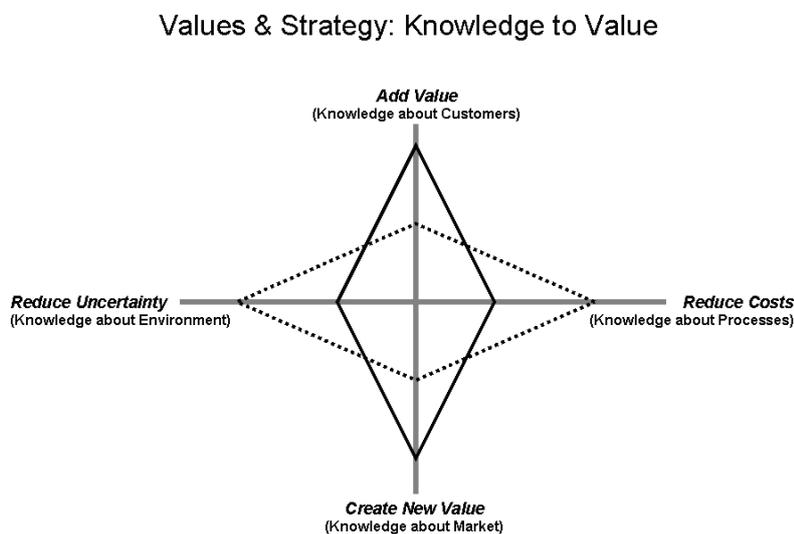
(Adapted from Choo's modification of Marchand and Rayport 2000)

On a daily basis, organisations interact with their environment through data and information. To make decisions, they have to create meaning of the information they are bombarded with and make choices for action required (*Fig.5*). A competitive advantage is gained with the right speed of creating meaning from information followed by carefully selected action. Garcia, Fernando, de Castro and Pedro confirms that the capability to create and apply new knowledge successfully constitutes the true source of competitive advantage of a firm[113]. The information diffusion processes are enhanced by the advances in information communication technologies (ICT) which provide individuals with opportunities of continuous sense making occasions, create meaning and acting.

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[113] Garcia, Fernando, de Castro & Pedro, 2002:3

Fig.5

Data, Information, Knowledge

Adapted from Pointdexter Model
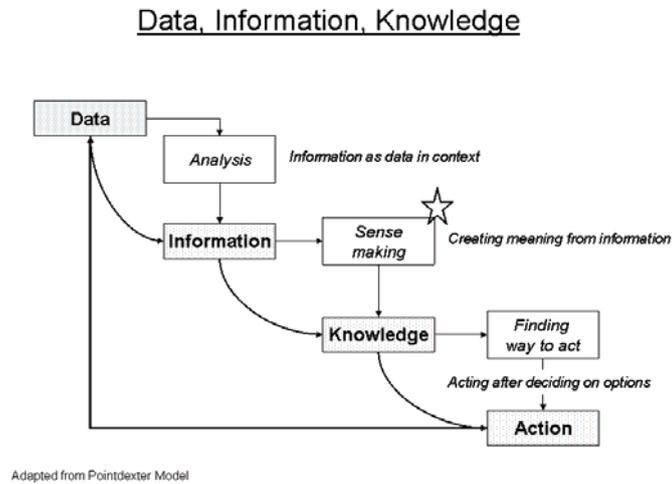
The model above highlights the relevance of information in knowledge creation. It also makes a distinction between data, information and knowledge. Batt concurs that knowledge can be understood as a conversion of information from "being" to "becoming"' which offers businesses a basis to refine and use existing information[114]. Knowledge is a changing reality that is observed and realized through multiple interactions and information exchange. Multiple interactions are important because they facilitate the process of knowing, by allowing organisational members to build different realities and readjust their belief systems in fast changing environments. This is also in line with Davenport and Prusak definition of knowledge as a fluid mix of various frames.

2.1.3.4 The concept of knowledge creation

Organisational knowledge creation was popularised by Nonaka as a concept. Subsequently many authors have concurred or disagreed with Nonaka's model of knowledge creation. In the section that follows this literature on knowledge creation is reviewed by considering various models derived from Nonaka within the context of the knowledge creation enablers they identify.

Within the context of knowledge creation, Teece claims that firms are passive entities in an environment that take information and produce products and services. In other words, they

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[114] Batt, 2000

merely adapt to the environment and never try to shape it[115]. On the other hand, Nonaka and Toyama view firms as dynamic knowledge-creating entities that interact with the environment as an ecosystem of knowledge, reshaping the environment and even itself by creating and in taking knowledge assets and the environment as an ecosystem of knowledge and multilayered "*ba*," through knowledge creation[116]. This in line with the thinking that as we respond to an environment, we shape it. Furthermore in organisational knowledge-creation process, individuals interact with each other to transcend their own boundaries and, as a result change themselves, others, the organisation, and the environment[117]. Similarly, Suchman views knowledge creation as situated action[118]. Therefore knowledge is not created in a vacuum; it is a response to a specific situation. The knowledge-creating process is always context-specific in terms of time, space, and relationships between people. As Schoenhoff states, information becomes knowledge when it is interpreted in context[119] and Ueno views such context as interactive[120]. These authors' views fit with the enabler of knowledge creation called fluctuation and creative chaos. It can be seen as an osmotic interaction between environment and an organisation.

Nonaka and Takeuchi posit that knowledge-creation theory treats knowledge as fallible and influenced by subjective factors. However, in organisational knowledge-creation this subjective tacit knowledge, held by individuals, is externalized into objective explicit knowledge to be shared and synthesized within and beyond organisations, and newly created knowledge is in turn embodied by individuals to enrich their subjective tacit knowledge. Organisational knowledge-creation is an ongoing social process of validating the truth in which knowledge keeps expanding[121]. In this context, Nonaka and Takeuchi view knowledge creation through fluctuation and creative chaos as dependent on the individual's tacit knowledge.

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[115] Teece, 2003

[116] Nonaka, Toyama & Konno, 2000

[117] Nonaka, Toyama & Konno, 2000

[118] Suchman, 1987

[119] Schoenhoff, 1993

[120] Ueno, 2000

[121] Nonaka & Takeuchi, 1995

Nonaka and Toyama state that knowledge creation is guided through the synthesis of contradictions[122], accepting dualities and synthesizing them through dialectical thinking and action in dialogues. Contradictions that cannot be solved through objective analysis alone can be solved by synthesizing subjective views and intuitions that have accumulated through practice. This is also emphasising the significance of tacit knowledge in dealing with fluctuation and creative chaos.

According to Nonaka and Toyama, a foundation for knowledge-creating activity is *ba* which is a shared context in motion at certain time and space. At *ba* one can be open to others by losing oneself, seeing oneself in relation to others, accepting their views and values. The boundary of *ba* must be permeable so that it can accept new contexts. *Ba* needs the participation of multiple perspectives[123]. They further argued that the ecosystem of knowledge consists of multilayered *ba*, which exists across organisational boundaries and it is continuously evolving. A knowledge-creating firm needs to manage a multilayered *ba*, which stretches across organisational boundaries. At the same time a firm needs to protect its knowledge assets as sources of competitive advantage[124]. Overall, the socialisation aspect of knowledge creation is not limited to the firm but extends to customer and suppliers. The sharing of context has its specific relevancy. The sharing process yields social capital for organisation.

Nonaka and Toyama posit that knowledge assets are not knowledge just created but it also includes social capital that is shared in the organisations. One of the most important knowledge assets is firm-specific *kata*, which is a pattern or a way of doing things in dialogues and practices. There are three steps of *kata* or creative routines, which are: *shu* (learn), *ha* (break) and *ri* (create)[125]. The socialisation aspect of knowledge creation allows for routines that are specific to the firm, which cannot be duplicated by competition hence creating a recognisable social capital. The response to environment can be coordinated through creative routine. This can enhance the impact of fluctuation and creative chaos on knowledge creation.

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[122] Nonaka & Toyama, 2003

[123] Nonaka & Toyama, 2003

[124] Nonaka & Toyama, 2003

[125] Nonaka & Toyama, 2003

According to Davenport and Prusak, knowledge generation refers to activities that increase the stock of organisational knowledge. There are five modes of knowledge generation. These are acquisition, dedicating resources, fusion, adaptation, and building knowledge networks. These modes combine fluctuation and creative chaos and requisite variety of Nonaka's knowledge creation enablers. Individuals create knowledge in response to environment, in this process they gain adequate requisite variety to deal with complexity. Also organisations may acquire knowledge by hiring individuals, buying another organisation, renting or leasing external knowledge[126]. At the same note, there are seven culture related barriers to knowledge transfer; these are: lack of trust, different cultures, vocabularies, and frames of reference, lack of time and meeting places, status and rewards going to knowledge owners, lack of absorptive capacity in recipients, belief that knowledge is the prerogative of particular groups, the "not-invented-here" syndrome, and intolerance for mistakes or need for help[127]. These barriers are culture related.

2.1.3.5 Knowledge creation: The social learning cycle (SLC)

The information space (I-Space) depicts the dynamic movement of data under the social learning cycle (SLC) to create knowledge assets. The data movement in I-space is towards greater codification, abstraction and diffusion. According to Davenport and Prusak, it is equally likely that codified data over time is internalized and become tacit, abstract data get applied to concrete problems, and diffused data gives rise to unique insights which are appropriated by well placed individuals[128]. The internalisation of diffused information can take a form of absorption or accumulation when the information is made useful after modification.

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[126] Davenport & Prusak, 1998

[127] Davenport & Prusak, 1998

[128] Boisot, 1999:58-61

Fig.6

Boisot I-Space Social Learning Cycle (SLC)
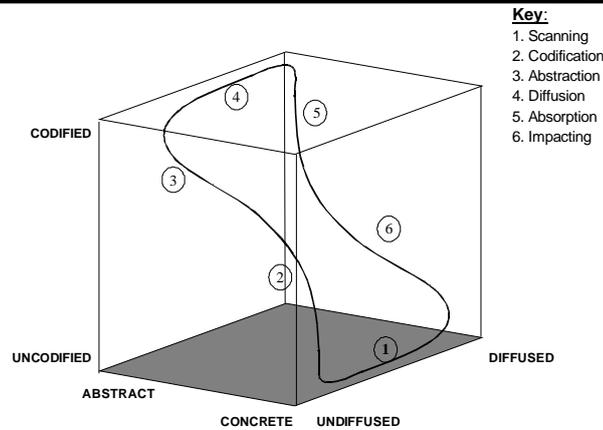
Fig.6 shows how the creation and diffusion of new knowledge effectively activate all three dimensions of the I-space in a particular sequence:

1) Scanning: is identifying threats and opportunities often in fuzzy data and weak signals. Data is often public, interpretations are not and they are often unique. Group pressure can distort the scanning process. This is about checking internal and external business environment for fluctuation and creative chaos. This proceeds to step by step preparation and responding to scanned data.

2) Codification: is a response to what is scanned. It gives structure and coherence to the response. It reduces uncertainty and ambiguity. It sheds uncodified data along the way and sometimes generates conflict by forcing selection of what is relevant.

3) Abstraction: is a move from the specific and concrete to the general and abstract. This reduces the number of concepts and categories that one has to deal with. It saves time for the agent in data processing. Abstraction seeks out the structure that underlies appearances. It has a hypothetical character and a conflict-laden process.

4) Diffusion: is a rapid movement of data around in controlled situations. It will only register with those who know the codes. The data is de-contextualized when it is codified and abstracted. Diffusion reduces scarcity, hence value.

5) Absorption: the newly diffused data is applied in learning by doing "fashion" and uncodified stock of practical and "situated" experience builds up around the codified data. The absorption process is a diversity-generating process. The codified data may or may not match the "common sense" world of the user. If it does not, a new round of scanning and learning is initiated.

6) Impacting: is a move from the general and abstract to the specific and concrete to contextualized knowledge. This increases the number of concepts and categories one has to deal with. Like absorption, it is a diversity-generating process. It tests abstract hypotheses and resolves the conflicts generated by abstraction. If it does not, then a new SLC is initiated.

Both the Pointdexter model (*Fig.5*) and Boisot's SLC (*Fig.6*) indicate how new knowledge can be created by focusing on individuals who receive information and create meaning out of it.

Popaduik and Choo define knowledge creation as sharing of mental, emotional and active knowledge in such a way that the results lead to aggregated value[129]. This type of sharing involves mental, emotions and active knowledge, requires preconditions of people trusting each other and working as a team. This brings autonomy as knowledge creation enabler and commitment to the intention of the organisation. It works on a principle of sharing experience and continuous learning that is in line with *ba*. This in Nonaka and Toyama's terms means continuous interaction of dialogue and practice. In Drucker's view, the interdependency of specialised knowledge makes it impossible for a knowledge professional to be productive in isolation[130]. The diffusion process breaks down isolative barriers. This diffusion process can be osmotic if it happens selectively in one direction. According to Maasdorp, what turns the entrepreneur or inventor into a businessperson is the phenomenon of organisation. It is in the organisational context that the knowledge "in-the-heads" of the knowledge workers is coordinated and focused to produce value[131]. This requires awareness of organisational intention as an enabler. This organisational context is supported by the

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[129] Popadiuk & Choo, 2006

[130] Drucker, 1993

[131] Maasdorp, 2001

dominant culture of the organisation. The culture brings in sustainability of value creation processes.

2.1.3.6 Nonaka and Takeuchi Model of Knowledge Creation

It is the Nonaka and Takeuchi model of knowledge creation that popularized the epistemology of knowledge creation. Although Nonaka's knowledge conversion model has been criticised mainly on the tacit-explicit dialogue and conversion processes, it has created extensions from this concept that are useful in better understanding of organisational knowledge creation. In Karppinen's view this model was popularized in the West during the boom of Japanese management studies followed by western researchers[132]. This was done with understanding of the original context in which this model was written. The original book by Nonaka written on the subject was published in Japanese in 1990 with the title "Epistemology of Japanese Enterprise". In fact Nonaka's theory of knowledge creation[133] targeted the interaction between explicit and tacit knowledge[134].

Nonaka and Takeuchi describe how knowledge conversion takes place through an iterative and spiral process of socialization, externalization, combination and internalization (SECI) as an effective means of making individuals' tacit knowledge available to the broader organisation in order to create new knowledge and then apply this new knowledge within business processes towards achieving the organisation's vision, objectives and business performance. According to Nonaka and Takeuchi knowledge creation happens in five phases: sharing tacit knowledge, creating concepts, justifying concepts, building an archetype, cross-leveling knowledge for organisational knowledge creation. Nonaka and Takeuchi then go on to describe a new management approach that combines and compliments the best attributes of top-down and bottom-up management within what the authors refer to as "middle-up-down" management. The authors describe the key roles of top management, mid-level management and line staff as well as their respective qualifications for managing knowledge creation.

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[132] Karppinen, 2006

[133] 1990; Nonaka1991a; 1991b; Nonaka and Hedlund 1991; Hedlund and Nonaka 1993; Nonaka 1994; Nonaka and Takeuchi 1995

[134] Karppinen, 2006

Nonaka and Takeuchi then go on to describe a new organisational structure called the "hypertext organisation" which blends the strengths of bureaucratic efficiency and standardization with those of task force flexibility and dynamism. The hypertext organisation is comprised of the "business system layer" or internal process where work gets done and where the bureaucratic model is most effective, the "project team layer" or open system, where new ideas or products are developed and where the task force model is most effective, combined with a value-added feature of the hypertext organisation called the "knowledge base layer" or rational goals, a market culture where information and knowledge are catalogued, categorized and synthesized in accordance with organisational priorities for the future. The authors also point out the challenge that the hypertext organisational structure presents, namely, that staff must be capable of moving between these three layers with relative ease and, for the most part, with the ability to clearly separate her or his mindset and business practice from one layer to the next. The hypertext organisation provides the capability to create knowledge, manage the embedding of this created knowledge to routinized levels which are bureaucratic in nature. The hypertext organisation brings knowledge creation enablers to life by fostering efficiency through bureaucratic business system layer, responding to environment through project or open system layer, and ensuring effectiveness through the knowledge base layer.

This model of knowledge creation process presents two dimensions of knowledge creation. The one dimension is the interaction of two types of knowledge, tacit knowledge and explicit knowledge. The second dimension is ontological focusing on social interaction. This dimension facilitates dialogue and justification. Fundamentally, knowledge is created by individuals with the support from the organisation which creates the context. Organisational knowledge creation emanates from the amplification of knowledge created at individual level. The individual's knowledge amplification happens in groups, inter-groups, the whole organisation even spanning the organisational boundaries to include suppliers and customers. This can be linked to hierarchal or informal structures. Proper management of the ontological dimension can give the organisation a required competitive advantage. According to Bhatt, an uncooperative and competitive organisational culture can negatively affect the process of knowledge creation in organisations[135]. Adler posits that the main task of the management becomes to create an environment of interaction between individuals and the

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[135] Batt , 2000

organisation for strengthening each other's knowledge base[136]. The organisation should facilitate the iterative interaction between dialogue and practice spanning across boundaries.

For the process of organisational knowledge creation to succeed, individuals continuously demonstrate commitment and respond to environment accordingly. The generation of new knowledge is driven by this commitment. According to Nonaka, there are three basic factors that induce individual commitment in an organisational setting[137]. These are: intention, autonomy and fluctuation to some degree in the environment. Intention is concerned with how individuals form their approach to the world and try to make sense of their environment. Autonomy in the individual, group, and organisational levels, either separately or all together, provides freedom to respond to the environment. However, individuals within the organisation may have different intentions. Fluctuation in the environment is important for the individual to create knowledge as the individual continues interaction with the external world. In this connection, chaos or discontinuity can generate new patterns of interaction between individuals and their environment. Individuals recreate their own systems of knowledge to take account of ambiguity, redundancy, noise, or randomness generated from the organisation and its environment. Sometimes responding to unstable environment increases the level of chaos in the environment.

Knowledge Conversion (SECI Model) and the Spiral of Knowledge

According to Nonaka and Takeuchi knowledge creation happens in epistemology and ontology dimensions. The epistemology dimension which talks about knowledge conversion has been a subject of criticism by other authors; mainly that knowledge cannot be transformed from one form to another. However this thesis is not about the conversion and spiral of knowledge but it is about the enabling conditions for knowledge creation.

The two dimensional system of knowledge creation brings together epistemology of knowledge creation which is the continuous dialogue between tacit knowledge and explicit knowledge on one dimension and ontological dimension which amplifies the knowledge on another dimension. The amplification of created knowledge involves individuals, groups,

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[136] Adler 1999

[137] Nonaka, 1994

inter-groups, organisation and spanning organisational boundaries. Fig.7 shows the epistemological dimension of knowledge creation, which focuses on tacit-explicit knowledge dialogue.

Fig.7
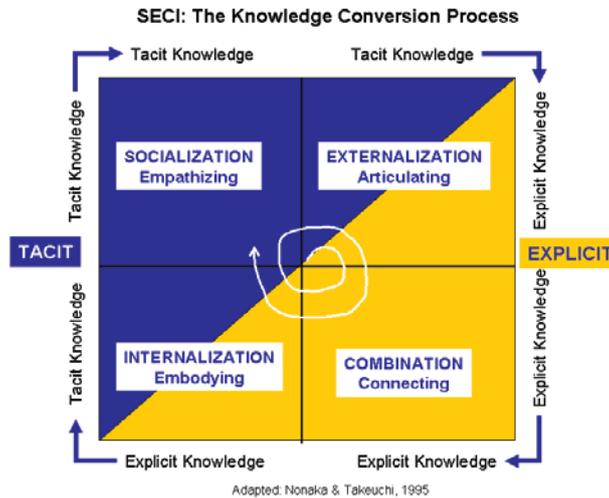
The SECI (socialization, externalization, combination and internalization) model of knowledge conversion involves:

1   *Socialization*, which is tacit to tacit knowledge conversion. This conversion has the empathising aspect with organisational culture having a significant role to play.

2   *Externalization*, which is tacit to explicit knowledge conversion. Surely tacit knowledge assists with the expression of knowledge. This should be facilitated by organisational response to environment. According to Cook and Brown, this does not mean that knowledge forms are switched from tacit to explicit.

3   *Combination*, which is explicit to explicit knowledge conversion. This conversion process is dependent on social elements that will promote dialectic conversation which will build social capital.

4   *Internalization*, which is explicit to tacit knowledge conversion. This is a predominantly personal process driven by the individual's commitment and better understanding of organisational intentions.

For these processes to happen, they need knowledge creation enablers irrespective of agreeing or not agreeing with the knowledge conversion processes.

Fostering Ba to Enhance Knowledge Creation

Ba is the most important factor in knowledge creation from individual, to group to organisational level. *Ba* facilitates the human interaction in organisation. *Ba* cuts across all knowledge creation enablers, the intention of the organisation, autonomy given to individuals and teams, fluctuation and creative chaos in response to environment, redundancy facilitation and building requisite variety to deal with complex problems.

For knowledge conversion to occur there should be an interactive space, called "*ba*"[138] which is translated as the providing of a "place". This should be either a space of place or space of flow[139]. This *ba* can also involve a mental place. The space of place can be a physical place where individuals or group meet for SECI conversion processes. The place of flow can be the provision of virtual space to facilitate SECI conversions. Originating *ba* supports the socialization process through interpersonal and physical relationships. Interacting *ba* supports externalization through conversation and dialogue rich in metaphors. Cyber *ba* supports combination deriving from a virtual world. Landry views internalization as built through exercising *ba*[140]. According to Nonaka, *ba* is not a physical space itself, but meanings that emerge from the contexts shared in such a space with the context as the relationship of time, space, participants and artefacts. Through sharing contexts, participants become one with *ba*. At *ba*, participants sympathize with emotions and values of each other, and create meanings that go beyond one's own. A foundation for knowledge-creating activity is *ba*, a shared context in motion at certain time and space. At *ba* one can be open to the others by losing oneself, seeing oneself in relation to others, accepting their views and values. This demands individual's flexibility in balancing reflection and advocacy. This allows for creation of requisite variety demanded by complex situation. The boundary of *ba* must be permeable so that it can accept new contexts. The permeability should be diffusive rather than osmotic. *Ba* needs the participation of multiple perspectives. The diversity in discussion is a building block for knowledge creation.

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[138] Although ba is translated as place, it is the most important factor to provide context for knowledge creation. This is more important for benefiting from the personal nature of knowledge.

[139] Castells, 1996

[140] Landry, 2000

This sharing in a *ba* can be facilitated by the Ladder of Inference model (*Fig.8*) by Rick Ross[141] which follows the process of reflection, enquiry and advocacy[142]. The balancing of reflection, inquiry and advocacy creates a better understanding and the sharing of meaning as facilitated by *ba*. One should be aware of one's thinking and reasoning (*reflection*), make one's thinking and reasoning more visible to others (*advocacy*) and enquire about others thinking and reasoning (*inquiry*). *Ba* is here defined as a shared context in motion in which knowledge is created, shared, and utilized[143].

Fig.8

LADDER OF INFERENCE

I take ACTION base on my beliefs

I adopt BELIEFS about the world

I draw CONCLUSIONS

I make ASSUMPTIONS on the meaning I added

I add MEANINGS (cultural & personal)

I select "DATA" from what I observe

Observable "data" and experience

Adapted from Rick Ross. The Fifth Discipline Fieldbook 1994
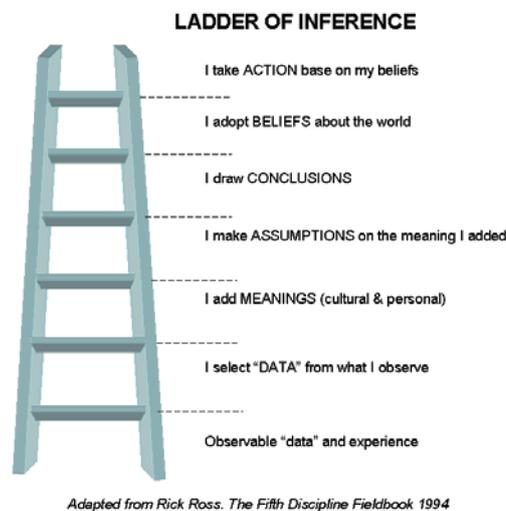
According to Shimizu, Nonaka, Toyama and Konno, leaders can build *ba* by providing time, space, attention, and opportunities for relationship-building. They can provide physical space such as meeting rooms, cyberspace such as a computer network, or mental space such as common goals to foster interactions. Creating mental space that fosters "love, care, trust, and commitment" among organisational members is important because it forms the foundation of knowledge creation[144].

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[141] Reflection and enquiry was part of "action science" work by Chris Argyris and Donald Schön to explore the reasoning and attitudes which underlie human action, an produce more effective learning in organisations and other social systems

[142] Senge, Ross, Smith & Kleiner,1994

[143] Shimizu, 1995 & 1999; Nonaka, Toyama & Konno, 2000

[144] von Krogh, Ichijo & Nonaka, 2000

Scharmer proposes the following ten principles and practices for leaders to follow if they want to promote profound innovation and knowledge-creation *ba*:[145]

1. The Power of Place: Create places that have their own field and atmosphere, that help people and teams focus on what is most important, and that provide access to their deeper sources of creativity. These places need an open boundary that on the one hand provides a cocoon in which to do creative work and on the other hand provides openness and a flow of new perspectives, people, and ideas that come with it.

2. Prototyping: Create physical embodiments of the real work. A good *ba* happens not outside but in the midst of the real work. A good *ba* allows for the real work to move to centre stage. In the case of product development teams this often translates into simultaneous engineering and rapid prototyping processes in which the object of co-creation becomes the catalyzing object around which the *ba* develops and unfolds.

3. Relational Place: Harness the diversity of experience and talent across the whole system. A good *ba* embodies the diversity of experience and talent throughout the system. Innovation teams often are most successful when they are composed of people who embody the experiences of those on the periphery of the system, younger people, recent hires, and or people who are distant from the head offices or even outside the organisation, because it is on the periphery where the new shows up first.

4. Sphere: Everyone has equal access to the centre. Every participant in a good place is at the same distance from the centre. However, the centre is not a fixed point. In a *ba*, anyone has the potential to be at the centre, and the centre can change as the context evolves. *Ba* is a sphere that is constantly moving along an evolving trajectory.

5. Purpose: Uncover a powerful purpose and intention. This is started by focusing on and building a powerful sense of mission and purpose for the overall project or the business plan.

6. Co-creation: A good *ba* needs creative chaos, care, and love in order to tap into people's highest level of energy and commitment. The energy of *ba* is provided by its self-organizing nature. To make a *ba* a self-organizing place, leaders need to create conditions that allow for

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[145] Scharmer, 2001

autonomy, chaos, redundancy, and variety and that foster the development love, care, trust, and commitment.

7. Imaginative Seeing: Innovation and inspiration start with seeing differently. The capacity to see differently and deeply is crucial and yet difficult to develop. It involves suspending one's judgment and allowing the reality to emerge. For example in teams consisting of members with different perspectives. They also continually developed their capacity to sense the emerging opportunities that presented themselves throughout their project.

8. Dialogue: Foster high-quality conversations as a key for integrating multiple viewpoints, experiences, and disciplines. A good place enables essential dialogues, which allow participants to share their views and experiences and to see themselves through one another. The quality of people's conversations is one of the most important measures of the quality of place and the vitality and health of a system.

9. Self-transcendence: Become part of a whole larger than oneself. A good *ba* is like an instrument. The music comes through the instrument when someone plays it skilfully. Such is the *ba*. The ba is a vehicle that, if "played on" in the right way allows teams to connect to their highest creative possibilities and 'music.' Accordingly, *ba* allows groups to transcend the habitual patterns of the past and to move into the uncharted waters of new interpretations and identities.

10. Synthesizing by connecting different ba to an evolving larger whole: Knowledge creation needs many *ba*, which exist on multiple levels and are connected to each other organically to form a greater *ba*. An organisation is an organic configuration of *ba* in motion, where various *ba* form a fractal. Hence, leaders have to facilitate the differentiation and interweaving among various *ba* and synthesize the knowledge that emerges from the larger *ba*.

According to Ross, the ability to achieve results that are truly desired is eroded by our feeling that our beliefs are the truth, the truth is obvious, our beliefs are based on real data and the data we select is the real data[146]. Therefore failure or success is self imposed. *Ba* provides the avenue to test the truth and beliefs with other.

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[146] Ross, 1994

2.1.3.7 The five steps in knowledge creation[147]within the context of knowledge creation enablers:

Sharing Tacit Knowledge (Socialization): In order to share tacit knowledge the organisation must create the time, space and expectation for individuals to come together to exchange experiences via a shared experience. These moments of exchange may be self-organized or company organized, but successful Japanese companies tend to conduct these exchanges off-site and combine them with some sort of shared physical experience, embodying the "oneness of body and mind". These exchanges tend to be fairly informal gatherings but with an expressed purpose of exchanging. The coming together is guided by intentions, commitment of individuals in a group and autonomy to think and act.

Creating New Concepts (Externalization): The exchange of tacit knowledge evolves into making the knowledge explicit either through metaphors, analogies, or diagrams and working this explicit knowledge towards the development of a new concept that has the potential of contributing to organisational intent i.e. vision, objectives, performance expectations. This is a process of dialogue and collective reflection with the intention not of "buying into" one person's experience or knowledge but rather coming up with something new and innovative. This gives a better response to fluctuation and creative chaos within and outside the organisation.

Justifying Concepts (Externalization leading towards Combination): Successful companies do not just solicit random concepts from its people, but rather seek to generate new ideas and concepts that align with – and contribute to – the organisation's intent. Therefore, every new concept must be justified in terms of its ability to meet organisational intent.

Building an Archetype (Combination): Each justified concept is then developed into an archetype, be it a product, process or system. Building an archetype requires networking across multiple functional units within the organisation and linking a diverse array of explicit knowledge. The archetype allows the organisation to engage with the new concept using its sensory capabilities to see, feel, smell, hear, and even taste the new concept. Building an archetype also allows for more detailed analysis of what it will take to produce and market

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147 von Krogh, Ichijo & Nonaka 2000

the new concept, always in keeping within the organisational intent and required response to environment.

Cross-levelling Knowledge (Combination): Once the archetype has been deemed to both fulfil organisational intent and be feasible to produce and market, it is then subjected to an intra- and inter-organisational socialization process. Cross-levelling not only contributes to possible enhancements of the archetype but it also contributes to socializing and externalizing the new knowledge that was generated throughout the process. That is, new value adding knowledge for the organisation is not simply manifested in the end result, the product, process or system but rather emerges and is captured all along the way.

2.1.3.8 Knowledge creation by bridging epistemic differences: the Cook and Brown Model

Cook and Brown model on knowledge creation is based on criticism of Nonaka's knowledge conversion and spiral of knowledge. This model does not interfere with Nonaka's knowledge creation enablers. Cook and Brown posit that new knowledge is created through processes of synthesis or bridging epistemic differences. Organisational knowledge is created by the process of "generative dance" between epistemology of possession and epistemology of practice[148]. According to this metaphor, knowledge creation does not simply rely on an inventory of knowledge elements or possession, but on the ability to use those as tools or action. They argue that organisations are better understood if explicit, tacit, individual and group knowledge are treated as four distinct and coequal forms of knowledge. Each is doing work the other cannot do. They view knowledge and knowing as mutually enabling, not competing. This framework put knowledge in an organisational context. Their model strengthens the link between product and process innovation. All forms of knowledge are distributed among individuals and groups and the ways of "knowing" is reflected in the interaction of individuals with each other. Generative dance happens because of organisational intention. The organisation should foster autonomy and redundancy for individuals and groups to create knowledge.

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[148] Cook & Brown, 1999

Fig.9

Bridging Epistemologies (Cook & Brown)
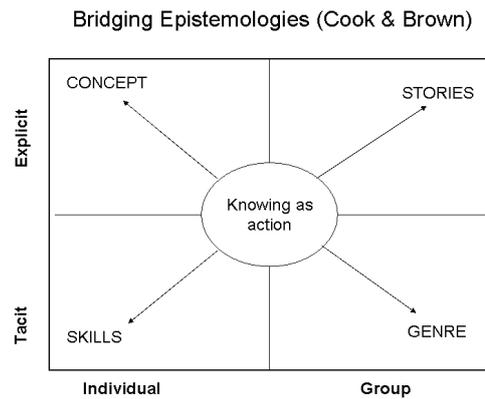
This Cook and Brown model can be applied in knowledge creation as follows (Fig.9):

- Knowledge as concepts - theory known by individuals,
- Skills - the ability,
- Stories - how things are made around here, and
- Genre - the context within which the work is done

These fit well in Nonaka's knowledge creation enablers, the intention, autonomy and requisite variety.

The basic assumption of this bridging epistemologies model is that knowledge cannot be transformed from its various forms but exist in distinct forms. This model of bridging epistemologies was developed from Polanyi's distinction of tacit and explicit knowledge. The model has knowledge as a concept covering theory known by individual, skill as ability of individual to perform a specific task, stories as how things are made and genre as the context when or where knowledge is put into practice.

2.1.3.9 Knowledge Creation by Dialogue: Tsoukas's Approach

Tsoukas criticises Nonaka's knowledge conversion model by stating that since tacit and explicit knowledge are mutually constituted and connected, distinguishing them in the knowledge creation model is irrelevant[149]. It is commonly accepted that new knowledge is created through processes of bridging epistemic differences therefore it is important to understand the generative mechanisms that account for new knowledge creation in organisations. The dialogical approach to knowledge creation holds that new knowledge comes from the exercise of judgment i.e. the individual ability to draw new distinctions

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[149] Tsoukas, 1996

concerning a task at hand, typically in the context of a group. This is individuals' understanding of organisational intention and commitment. New distinctions may be developed since human experiences already involve a certain level of articulation and as such they admit further articulation. The process of articulation develops through organisational members engaging in three kinds of dialogical encounters: with real others, with imaginary others and with artefacts[150]. The articulation process is facilitated by *ba*.

2.1.3.10 Knowledge Creation: von Krogh and Roos Model of Organisational Epistemology

Von Krogh and Roos model distinguishes between individual knowledge and social knowledge, and they take an epistemological approach to managing organisational knowledge[151]. A number of issues need to be addressed:

- How and why individuals within and organisation come to know,

- How and why organisations as social entities, come to know,

- What counts for knowledge of individual and the organisation, and

- What are the impediments in organisational knowledge management.

According Dalkir, this model adopts a connectionist approach. In this model individuals form nodes in a loosely connected organisational system, and knowledge is an emergent phenomenon that stems from the social interactions of these individuals. This social interaction is driven by organisation intention, fluctuation and creative chaos and *ba*. Knowledge resides not only in the mind of individuals but also in the connections among individuals. A collective mind is formed as the representation of this network in which lies the core of organisational knowledge[152]. Knowledge resides both in the individuals of the organisation and at the social level, in the relations between the individuals[153]. The socialization that enables these connections provides the embedding of knowledge in connections.

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[150] Tsoukas, 2000

[151] von Krogh & Roos, 1995

[152] Dalkir, 2005

[153] Von Krogh & Roos, 1998

2.1.3.11 Knowledge Creation: Choo Sensemaking Model

This Choo Sensemaking model stresses sense making, knowledge creation of Nonaka and Takeuchi and decision making based on among other concepts, bounded rationality[154]. The model looks at how information elements are selected and subsequently fed into organisational actions. Organisational action results from the concentration and absorption of information from the external environment into successive cycle. This is in line with Nonaka's knowledge creation enabler of fluctuation and creative chaos. Each phase, sense making, knowledge creation, and decision making has an outside stimulus or trigger. The trigger can be organisational intention. Choo presents the sense making process as consisting of integrated processes:

- *Ecological change:* organisational actors enact their environment by attempting to closely examine elements of the environment and responding to fluctuations.

- In the *enactment*, people try to construct, rearrange, single out, or demolish specific elements of the content. Enactment clarifies the content and issues to be used for the subsequent selection process.

- *Selection* and *retention* are phases in which individuals attempt to interpret the rationale for the observed and enact changes by making selection or undergoing "creative destruction."

2.1.3.12 Knowledge Creation: Wiig[155] Model for Building and Using Knowledge

According to Dalkir, Wiig model follows the principle that if knowledge is to be useful and valuable, it must be organised. Knowledge should be organised differently depending on what use will be made of the knowledge. For example, in our mental models, we tend to store our knowledge and know-how in the form of semantic networks. We choose the appropriate perspective based on the cognitive task at hand[156]. This can be guided by organisational intention and commitment of individuals. Knowledge organized within the semantic network can be assessed and retrieved using multiple-entry paths that map onto

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[154] Choo, 1998

[155] Karl Wiig worked with the concepts embodied by knowledge management since before the term was even coined

[156] Wiig, 1993

different knowledge tasks to be completed. Dalkir presents some useful dimensions to consider in Wiig's model include:

- *Completeness*: addresses how much relevant knowledge is available from the source. The source as human mind or knowledge base such as tacit or explicit knowledge. This can be facilitated by requisite variety requirement and *ba*.

- *Connectedness*: well understood and defined relations between the different knowledge objects – highly connected knowledge base, the more coherent the content, the higher the value.

- *Congruence*: all facts, concepts, perspectives, values, judgements, and associative and relational links between knowledge objects are consistent.

- *Perspective* and *purpose*: the phenomenon through which we "know something" but often from a particular point of view or for a specific purpose.

In this model, there are three forms of knowledge[157]:

- public knowledge which is explicit, taught, and routinely shared knowledge available in the public domain,

- shared expertise as proprietary knowledge assets exclusively held by knowledge workers, shared in their work or embedded in technology, finally;

- personal knowledge, the least accessible knowledge but the most complete.

Shared and personal knowledge can be utilized within the context of organisation intention and *ba*.

2.1.3.13   Knowledge Creation: Complex Adaptive Systems Model

The discussion on Intelligent Complex Adaptive Systems (ICAS) fits within the context of Nonaka's knowledge creation enablers of fluctuation and creative chaos and requisite variety. Organisations experience fluctuation and creative chaos within and outside environment. The ICAS knowledge management theory views the organisation as an intelligent complex adaptive system[158]. An organisation can be treated as living entity[159]. Viable Systems Model

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[157] Wiig, 1993

[158] Beer, 1987, Bennet & Bennet, 2004

[159] Beer, 1981

(VSM) is based on the principles of cybernetics or systems science which make use of communication and control mechanisms to understand, describe, and predict what autonomous or viable organisation will do.

According to Beer complex adaptive systems consist of many independent agents that interact with one another locally. Their combined behaviour gives rise to complex adaptive system. Complex adaptive systems tend to "self organise" through this form an emergent phenomena. An overall pattern of complex behaviour emerges as a result of all their interactions. Complexity and self-organisation lead into emergence. The organisation needs to possess the level of requisite variety to enable it to cope with complex environment.

Snowden claims that complex adaptive systems theory is used to create a sense-making model that utilizes self-organizing capabilities of the informal communities and identifies a natural flow model of knowledge creation, disruption and utilization[160]. The Cynefin model provides these key types of knowledge: known, knowable, complex and chaotic. Dalkir describes the Cynefin[161] model as less concerned about tacit-explicit conversion because it focuses on descriptive self-awareness rather than prescriptive organisational model[162].

Bennet and Bennet view organisation as a system that is in symbiotic relationship with its environment[163]. The intelligent complex adaptive system is composed of living subsystems that combine, interact, and coevolve to provide the capabilities of an advanced, intelligent technological and sociological adaptive enterprise. Complex adaptive systems are organisations that are composed of a large number of self-organising components, each of which seeks to maximize its own specific goals but which also operates according to the rules and context of relationships with other components and the external world. An organisation's intelligence becomes a form competitive intelligence that helps facilitate innovation, learning, adaptation, and quick response to new unanticipated situations[164]. These environmental fluctuations force organisations to create knowledge.

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[160] Snowden, 2000:1

[161] Cynefin is Welsh which means a place of multiple existence

[162] Dalkir, 2005:69

[163] Bennet & Bennet, 2004

[164] Dalkir, 2005:69

Dalkir argues that understanding and meaning become prerequisites to taking effective action, and they create value by ensuring that the survival and growth of an organisation[165]. This ensures compliance with organisational intention. The key process in the ICAS model can be summarised as understanding, creating new ideas, solving problems, making decisions and taking actions to achieve desired results. This enhances requisite variety to deal with complexity. Dalkir further explains that for organisation to survive and successfully compete also requires eight emergent characteristics:

- Organisational intelligence which refers to the capacity of the organisation to innovate, acquire knowledge and apply knowledge to relevant situations[166],
- Shared purpose and selectivity, filtering incoming information from outside world,
- Optimum complexity and permeable boundaries,
- Knowledge centricity, flow and multidimensionality i.e. flexibility that ensures that knowledge workers have the competence, perspectives and cognitive ability to solve problems.

These characteristics allow for creation of knowledge in the same way as proposed by Nonaka's knowledge creation enablers.

2.1.4 Enablers of knowledge creation

2.1.4.1 Enabling Knowledge Creation

According Nonaka and Takeuchi, the creation of knowledge in an organisation requires certain conditions that will nurture individuals to create knowledge and allow for amplification to take place to create value. Therefore these conditions are critical for individuals and the organisation as whole. According to von Krogh, Ichijo and Nonaka, knowledge enabling includes facilitating relationships and conversations as well as sharing local knowledge across an organisation or beyond geographic and cultural boundaries. At a deeper level, however, it relies on a new sense of emotional knowledge and care in the organisation, one that highlights how people treat each other and encourages creativity – even playfulness[167].

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[165] Dalkir, 2005:70

[166] Dalkir, 2005:70

[167] von Krogh, Ichijo and Nonaka 2000: 4

Knowledge workers cannot be bullied into creativity or information sharing and traditional form of compensation and organisational hierarchy does not motivate people sufficiently for them to develop the strong relationships required for knowledge creation on a continuous basis[168]. Effective knowledge creation depends on an enabling context, a shared space that fosters emerging relationships (*ba*). Knowledge is mutable; it can take many faces in an organisation. According to Nonaka and Takeuchi, knowledge is justified true belief. An individuals justifies the truthfulness of his or her beliefs based on observations of the world and these observations in turn depend on unique viewpoint, personal sensibility and individual experience[169] Because knowledge enabling emphasizes human relationships and good communication, it can have a positive effect on quality of new knowledge, the speed with which new knowledge is created, employee satisfaction, corporate image, and relations with customers, suppliers, and other strategic partners[170].

All these processes that need to happen in an organisation in order to create knowledge are guided by deliberate creation of enabling conditions.

2.1.4.1 Nonaka and Takeuchi Knowledge Creation Enablers

To support knowledge creation, five enabling conditions must be present within the organisational context[171]. It is highlighted that individual commitment is critical for knowledge creation. This commitment encompasses intention, autonomy and fluctuation

Intention

According to Scharmer, every organisation must have a clear direction for the future, generally expressed in terms of its vision, its long-term objectives, and the critical principles or performance expectations. Organisational intention is a combination of lofty aspirations and hard-nosed criteria and standards[172]. The firm's knowledge vision inspires organisation members so that they are encouraged to create knowledge and defines a consistent value system to evaluate and justify the created knowledge within the organisation. Firms need the

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[168] von Krogh, Ichijo and Nonaka 2000: 5

[169] Nonaka and Takeuchi 1995

[170] von Krogh, Ichijo and Nonaka 2000:11

[171] Nonaka 1994; Nonaka and Takeuchi 1995

[172] Scharmer, 2001

concept, goal and action standard as a driving objective of knowledge-creating process that helps to realize the vision**.**

According to Nonaka and Takeuchi, intention is an organisation's aspiration to its goals and provides the most important criterion for judging truthfulness of a given piece of knowledge[173]. Intention is often expressed by organisational standards or visions that can be used to evaluate and justify the created knowledge. The organisation's knowledge vision, intentions, and strategies are developed by top management. The expression of intent can be vague and ambiguous.

For the purpose of research, the presence of this enabler is indicated by having a company's vision that is competitive, which shows itself by the presence of innovation system and aligned knowledge management system.

Autonomy

According to Nonaka and Takeuchi, effective knowledge creation takes place when individuals within the organisation are given and embrace their freedom to act, to make decisions and to have an influence on the organisation. In other words, individuals within the organisation must sense that they will be called upon and will be able to answer the call to lead the organisation into new territory and or into the future. This autonomy is not meant to be synonymous with "independence." Autonomy is always tempered by and framed within organisational intent. Autonomy increases the chance of introducing unexpected opportunities and increases self-motivation while working within teams[174]. Formation of teams as micro communities of knowledge in self organizing manner provides the required enabling condition for knowledge creation.

This study wants to establish the existence of this enabler by questioning the existence of purposeful autonomous work teams in the organisation. These teams should be motivated to energetically achieve company objectives.

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[173] Nonaka, 1994; Nonaka & Takeuchi, 1995

[174] Nonaka, 1994; Nonaka & Takeuchi, 1995

Fluctuation and creative chaos

According to Nonaka and Takeuchi, these conditions stimulate the interaction between the organisation and the external environment, a condition that can occur because of external factors or be created intentionally. The fluctuation in business environment provides conditions for creative chaos that initiates the process of knowledge creation in response to environment[175]. The complexity of the business environment will remain so and the level of uncertainty will not subside; but business will need to continuously respond to these conditions by creating knowledge within the situation of creative chaos. Creative chaos is generated naturally when the organisation faces a real "crisis" such as rapid decline of performance due to various environmental changes or the realization of a significant competitive advantage on the part of a rival firm. It can also be generated intentionally when leaders of an organisation try to evoke a "sense of crisis" among organisational members by proposing difficult and challenging goals. This creative chaos increases tension within the organisation and focuses attention on forming and solving emerging problems. In the information processing paradigm, a problem is simply given and a solution is reached through a process of combining relevant information based on a preset algorithm[176]. Knowledge creation thrives in times of crisis whether in a crisis generated within the operating environment or a crisis generated by organisational intent. In other words, individuals and organisations tend to be more creative when some external stimulus forces them to have to rethink the way they view the world, their mental models, their paradigms, their values, and the way they interact with that world, their attitudes, behaviours, routines[177].

The empirical research section aims to indicate that those who occupy management position are in touch and understand market environment. The response to fluctuating business conditions should be effective. The fluctuating business conditions should show itself in the rate of internal changes and competitive participation in market environment. When this happens, an organisation will be forced to create knowledge and innovate.

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[175] Nonaka & Takeuchi, 1995

[176] Nonaka, 1994:28

[177] Nonaka, 1994

Redundancy

Redundancy in business means deliberate overlapping of company information, business activities, and management responsibilities but in the West it means unnecessary duplication and waste which may sound unappealing[178]. Nevertheless, redundancy[179] plays a key role, especially in the process of knowledge creation at the level of the organisation. According to Nonaka redundant information can be instrumental in speeding up concept creation.

Redundancy promotes the sharing of tacit knowledge, because individuals can sense what others are tying to articulate. Redundancy may be built in several ways, but we will deal primarily with three of them: strategic rotation, knowledge base, and parallel projects[180]. Strategic rotation may be said to be the planned rotation of employees between different parts of the organisation with an aim to make the employees understanding the business from the different perspectives. Strategic rotation is not necessarily strictly strategically founded but stems from a more functional concern. Job rotation creates a broader understanding of business and improves an out of the box thinking of organisational members. The most common way of rotating employees came from putting together interdisciplinary project teams. The second way of obtaining redundancy dealt with in this report is through parallel projects. A final way of realizing redundancy is through giving the employees free access to company information. This might be done by storing all company information in a single integrated database, open to all employees regardless of position. In a sense, redundancy promotes "learning by intrusion" as acceptable behaviour and promotes "boundaryless" organisational dynamics. The redundancy of information refers to the existence of information more than the specific information required immediately by each individual. Redundancy may be instrumental in breaking functional silos in organisation. Redundant information promotes non-hierarchal exchange of ideas promoting knowledge creation and deepens mutual trust among members of the organisation. Sharing of extra information also helps individuals to recognize their location in the organisation, which in turn increases the sense of control and direction of individual thought and behaviour[181].

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[178] Nonaka, 1994

[179] Landau, 1969; Nonaka,1990

[180] Nonaka, 1994

[181] Nonaka, 1994

The important point to note is that redundancy of information makes the interchange between hierarchy and non-hierarchy more effective in problem solving and knowledge creation[182]. It enables all members of the organisation to participate in the process on the basis of consensus and equal preparation. In this sense, redundancy of information is an indispensable element in inducing the "synergetics" and to realize the "principle of redundancy of potential command." Deep, mutual trust between the members of the organisation, the creators of knowledge, can be promoted through information redundancy. If an organisation contains enough redundancy of information to deal with as many contingencies as possible, it can generate various combinations of information flexibly.

Osterloh argues that the cliché "survival of the fittest" is a term ported from evolutionary biology to business. In the concept of redundancy, Darwin argued for two coupled principles: *one*-for-*two* and *two*-for-*one*. Both are expressions of a deeper and profoundly important principle in redundancy. One-for-two means having one organ for example that can perform more than one function, for example the swim bladder of fish can be used for buoyancy, gas exchange, and sound production – one for three in this case. Two-for-one means having one function performed by two organs, for instance breathing through the nose or the mouth. The origin of the Species contains an argument more general or more important than Darwin's recognition that pervasive redundancy makes evolution possible[183].

In researching the presence of redundancy as a knowledge creation enabling condition, this enabler will be indicated by overlapping of the organisation's information, business activities and management responsibilities. Also, there should be job rotation, easy access to company information and information exchange that is non-hierarchal.

Requisite variety

Requisite variety means that an organisation's internal diversity must match the variety and complexity of its external environment. This implies that organisational members should have prompt access to a wide range of information so they can cope with fast-changing contingencies. According to Osterloh diversity enhances knowledge creation. Ideally, an organisation's internal diversity will match the variety and complexity of the environment within which it works. But maximizing variety also means that everyone in the organisation

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[182] Hedlund, 1986; Nonaka, 1994; Nonaka & Takeuchi, 1995

[183] Osterloh on human resource management for knowledge creation

should be assured of the fastest access to the broadest variety of necessary information going through the fewest steps. In short, the organisation's staff composition should allow them to say "we are our market" and everyone in the organisation must have maximum "information at their finger tips" for effective knowledge creation[184].

In research, it should be established whether an organisation can build and sustain requisite variety required to cope with complex environment. This should be through fast access to company information for appropriate response. Knowledge captured through response to environment should be shared and transferred. In this way the organisation continues to build the requisite variety needed to cope with complexity.

The Concept of Ba

The five enablers and *ba* provide the conditions and places for the two dimensional knowledge creation processes that may be conceptualized as a spiral through two dimensional space. A lot has been said about *ba* in the previous sections. *Ba* is not a physical space itself, but meanings that emerge from the contexts shared. Through sharing contexts, participants become one with *ba*. At *ba*, participants sympathize with emotions and values of each other, and create meanings that go beyond one's own

Ba is a Japanese concept which is meant to connect people so that they can share information and knowledge within context of what they do. For ba to come in research, organisations should provide avenues to debate business issues, share experience and transfer skills. Within this context, people should conduct self analysis regarding their contribution and performance towards organisational goals. There should be avenue to discuss and contextualise business activities.

2.1.4.2 Von Krogh, Ichijo & Nonaka: Knowledge Creation Enablers that Appeal to Tacit Knowledge

To complement the known Nonaka's knowledge creation enablers, an emphasis was made for enablers that appeal to tacit knowledge and unleash innovation in organisation. Von Krogh, Ichijo and Nonaka posit that the mystery of tacit knowledge can be unlocked and release the

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[184] Osterloh, 2006

power of innovation on five enablers of knowledge creation, instilling knowledge vision, mobilizing knowledge activists, creating the right context, managing conversations, and globalizing local knowledge[185]. In this, there are five steps of knowledge creation: sharing tacit knowledge, creating concepts, justifying concepts, building prototype, and cross levelling knowledge. Knowledge creation is social as well as individual process[186]. Instilling knowledge vision legitimizes knowledge creation initiative across the company. This is done through a clearly articulated vision which supports concepts justification. Vision encourages better utilization of knowledge and legitimizes knowledge transfer processes. The mobilization of knowledge activists help to coordinate the people who trigger knowledge creation and knowledge creation processes. Knowledge activists coordinate the participation of communities of practice in the knowledge creation processes. Creating the right context or *ba* is what enabling knowledge creation is all about. This must focus on care in the organisation. In Toyota Way, the principles of respecting others, making every effort to understand each other, take responsibility and do one's best to build mutual trust form the foundation of how Toyota want their employees to behave. For Toyota this brings about the care the organisation requires for knowledge creation. Local knowledge is globalized by emphasizing the dissemination across organisational levels and functions.

According to von Krogh, Ichijo and Nonaka, there are five knowledge creation enablers that appeal to tacit knowledge and support innovation in organisation:[187]

- *Instilling knowledge vision*: Legitimizes knowledge creation initiative through the organisation. This enabler has a relatively low impact on tacit knowledge sharing since the social interplay among community members matters more in this context[188]. The knowledge vision assists more on concept justification phase, when concept must be selected to support the vision. The vision also helps to promote the utilization of knowledge and legitimize knowledge transfer process.

- *Manage conversation*: as the most natural and commonplace of human activities. Good conversations are the cradle of social knowledge in any organisation. Conversation allows for the first and most important step in knowledge creation,

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[185] Knowledge cannot be managed but enabled. This goes with the notion that knowledge is personal; it cannot be conscripted but volunteered. Knowledge is dynamic, relational and based on human action.

[186] Von Krogh, Ichijo and Nonaka, 2000

[187] von Krogh, Ichijo & Nonaka 2000

[188] von Krogh, Ichijo & Nonaka 2000:9-10

sharing tacit knowledge within micro communities. Managing conversations influence all other knowledge creation steps. In productive micro communities, conversations can unleash the creative powers of individual participants and fuel knowledge creation beyond the capacities of a single mind[189].

- *Mobilize knowledge activists:* which emphasizes the people who trigger and coordinate knowledge creation processes. This mobilization helps with broader participation in concept justification and prototype building where knowledge micro community[190] is supplemented with various types of expertise. This enabler also influences the concept creation, with knowledge activists inspiring micro communities of knowledge and coordinate concept creation process, spot redundancies or synergies in the explicit knowledge created, hence help micro communities with alignment to vision.

- *Creating the right context*: is closely tied to an organisational structure, since the ways project teams are formed and interact within the larger confines of a multinational organisation determine the extent to which knowledge is valued. An enabling context or *ba* must be founded on care in the organisation. Establishing the right context is what enabling knowledge creation is all about. It affects all five knowledge creation steps (ref. table 1.) particularly concept justification and cross-levelling knowledge.

- *Globalize local knowledge:* emphasizes dissemination across many organisational levels. Although members of a team or micro community must share tacit knowledge and engage in concept creation, justification, and prototype building, these steps are not essential to getting existing knowledge to the right people or group. Globalizing existing knowledge matters most when knowledge creation and utilization are separated in time and space, and it is instrumental in bringing about organisational knowledge.

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[189] Galvin 1996

[190] "In some ways, using a team as a basic unit of knowledge creation is limited. A micro community of knowledge has more potential to evolve overtime rather than being project or deadline driven; as such it will develop its own rituals, language, practices, norms, and values" Von Krogh, Ichijo and Nonaka 2000:14

2.1.4.4 Five Steps of Creating New Knowledge

Sharing Tacit Knowledge – Socialization:

In order to share tacit knowledge the organisation must create the time, space and expectation for individuals to come together to exchange experiences via a shared experience (i.e., coming together). These moments of exchange may be self-organized or company-organized, but successful Japanese companies tend to conduct these exchanges off-site and combine them with some sort of shared physical experience (embodying the "oneness of body and mind"). These exchanges tend to be fairly informal gatherings but with an expressed purpose of exchanging.

Creating New Concept – Externalisation:

The exchange of tacit knowledge evolves into making the knowledge explicit – either through metaphors, analogies, or diagrams – and working this explicit knowledge towards the development of a new concept that has the potential of contributing to organisational intent (vision, objectives, and performance expectations). This is a process of dialogue and collective reflection with the intention not of "buying into" one person's experience or knowledge but rather coming up with something new and innovative.

Justifying Concepts – Externalisation Leading to Combination:

Successful companies do not just solicit random concepts from its people. Rather, it seeks to generate new ideas and concepts that align with and contribute to the organisation's intent. Therefore, every new concept must be justified in terms of its ability to meet organisational intent.

Building an Archetype – Combination:

Each justified concept is then developed into an archetype – be it a product, process or system. Building an archetype requires networking across multiple functional units within the organisation and linking a diverse array of explicit knowledge. The archetype allows the organisation to engage with the new concept using its sensory capabilities – to see, feel, smell, hear, and even taste the new concept. Building an archetype also allows for more detailed analysis of what it will take to produce and market the new concept – always in keeping within the organisational intent.

Cross-levelling Knowledge - Combination

Once the archetype has been deemed to both fulfil organisational intent and be feasible to produce and market, it is then subjected to an intra- and inter-organisational socialization process. Cross-levelling not only contributes to possible enhancements of the archetype but it also contributes to socializing and externalizing the new knowledge that was generated throughout the process. That is, new value adding knowledge for the organisation is not simply manifested in the end result, the product, process or system but rather emerges and is captured all along the way.

2.1.4.5 **Linking knowledge enabling and knowledge creation steps**[191]

Table 2

Knowledge **Enabling**: The 5 x 5 Grid

KNOWLEDGE CREATION STEPS

KNOWLEDGE ENABLERS	Sharing Tacit Knowledge	Creating a concept	Justifying a concept	Building a prototype	Cross-levelling knowledge
Instil a vision		√	√ √	√	√ √
Manage conversation	√ √	√ √	√ √	√ √	√ √
Mobilize activists		√	√	√	√ √
Create the right context	√	√	√ √	√	√ √
Globalize local knowledge					√ √

Adapted from: Krogh, Ichijo and Nonaka 2000:9

Enabler influence rating
Blank = no influence
√   *= weak*
√ √   *= strong*

From *table 2*, all knowledge enablers strongly influence the cross-levelling of knowledge as the last knowledge creating step. Managing conversation as knowledge enabler influences all knowledge creating steps. Knowledge enabling avoids the pitfalls that are experienced in attempting to manage knowledge through the acceptance of the following basic premises[192]:

- *Premise I***:** Knowledge is justified true belief, individual and social, tacit and explicit. Knowledge is closely attached to human emotions, aspirations, hopes and intentions which is a constructionist perspective.

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[191] von Krogh, Ichijo and Nonaka 2000:9

[192] von Krogh, Ichijo and Nonaka 2000:30-32

- *Premise II*: Knowledge depends on one's perspective. Despite efforts to come up with general measurement tools that apply across many situations, knowledge is scalable[193]. It depends on an individual's perspective and a given context. In fact, everything known is attached to a particular scale of observation, change the scale, the knowledge of a phenomenon also changes. In a business organisation, acknowledging a range of perspectives is essential even if general tools can help define what kinds of knowledge are most relevant to the company.

- *Premise III*: Knowledge creation is a craft, not a science. Knowledge activists and micro communities share in the craft of knowledge creation, it is not the responsibility of one staff officer.

2.1.4.6 The Three Steps of Organisational Development in Knowledge Creation

According to von Krogh, Ichijo and Nonaka, organisational knowledge creation occurs over the following three phases, which are not necessarily sequential: *phase I* – capturing and locating, *phase II* – transferring and sharing and *phase III* – enabling. This happens in three steps which are risk minimization, efficiency seeking and innovation [194](Fig.12).

The first step is risk minimization, which is content specific. It is about capturing and locating knowledge. The focus is on existing knowledge. This happens when an organisation's knowledge is managed under the pretext of risk management i.e. what is the minimum level of organisational knowledge that will be required for the company to still function and be adequately competitive to survive in the market. The second step is efficiency seeking where an organisation is sharing and transferring knowledge. There is a focus on content but looking at the process as well. There is a balance between using existing knowledge and creating new knowledge.

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[193] von Krogh and Ross, 1995a

[194] von Krogh, Ichijo and Nonaka 2000:261

Fig.10

Adapted from: Krogh, Ichijo and Nonaka, 2000: 261
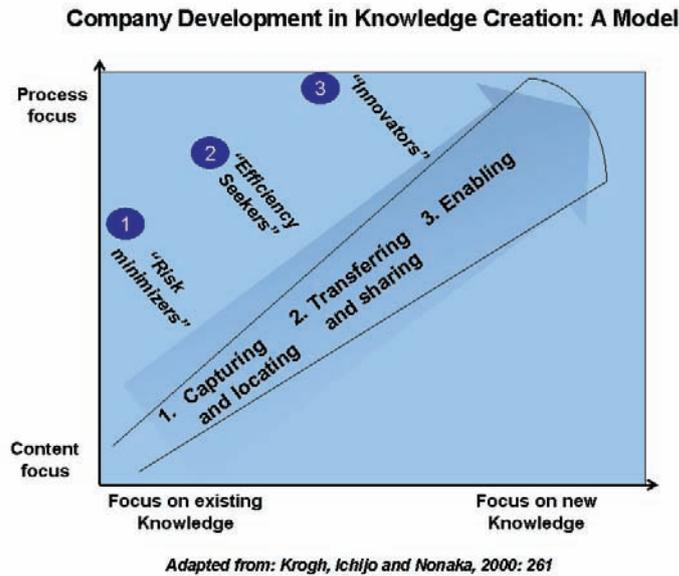
The ultimate is step three, when innovation becomes a focal point. The organisation focuses on the process of creation of new knowledge. The leadership provides enabling conditions for the creation of new knowledge to drive competitiveness.

2.1.4.7   Knowledge Creation Management: Nonaka and Takeuchi model

Middle-Up-Down Management: Leadership for Parallel Process

In using Nonaka's metaphor on middle-up-down management, "top management creates and exploits "space" based on a holistic view of the game as an outsider. Middle management has to find, create and exploit "space" in the field as an insider while sharing a holistic view with the coach"[195].

According to Nonaka and Toyama, leadership of a knowledge creating firm requires active commitment from all members of the organisation, not just from elite members using the middle-up-down mechanisms.   Middle managers break down the vision and driving objectives, create *ba* and lead dialogues and practices. Knowledge is regarded as the source of power that exists outside the hierarchy of organisation. Leaders provide visions, develop and promote sharing of knowledge assets, energize and connect *ba*, protect *ba* from outside

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[195] Nonaka 2001

contexts so that it can develop in its own contexts according to organisation vision, enable the spiral knowledge creation[196].

In Nonaka and Takeuchi's view, middle- up-down management model is suitable for promoting the efficient creation of knowledge in business organisations. The model is based on the principle of creative chaos, redundancy, and requisite variety mentioned above; much emphasis is placed on the role of top and middle management for knowledge creation[197]. The essence of a traditional bureaucratic machine is top-down information processing using division of labour and hierarchy. Top managers create basic managerial concepts and break them down hierarchically in terms of objectives and means to be implemented by subordinates. Top managers' concepts become operational conditions for middle managers who then decide how to realize the concepts and meet company objectives. Again, middle managers' decisions constitute operational conditions for lower managers or supervisors who implement their decisions. Subsequently, the organisation as a whole executes a huge amount of work that can never be done by individuals.

Nonaka and Takeuchi state that in the "top-down" model, it is desirable to organize the whole structure in the way that will conform to the above relations. It is necessary to get rid of any ambiguity or equivocality in the concepts held by top managers. The division of labour taking place within a bureaucratic organisation is associated with a hierarchical pattern of information processing. This hierarchical information processing tends to go through a multi-abstraction process that may diminish the meaningfulness of information at the end. Moving from the bottom to the top of the organisation, information is processed selectively so that people at the peak would get simple, processed information only. Moving in the reverse direction, on the other hand, information is processed and transformed from the general to the particular. It is this deductive transformation that enables human beings with limited information processing capacity to deal with massive information flow. It should be noted that information processing by middle and lower members is of minor relevance to knowledge creation. Only top managers are able and allowed to create information. Moreover, information created by these top managers exists for the sole purpose of implementation. In the bottom-up approach, those who create information are not top

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[196] Nonaka and Toyama 2007. Why do firms differ: The theory of knowledge creating firm. Knowledge Management in Organisations. Oxford University Press.

[197] Nonaka 1994, Nonaka & Takeuchi 1995

managers, but middle and lower managers. According to Pinchot, in a typical bottom-up managed company, intra-company entrepreneurs or "entrepreneurs"[198] are fostered and developed by the system. In this approach, top managers remain sponsors for individual employees who function as intra-company entrepreneurs which includes knowledge creation[199].

The middle-up-down model takes all members of the organisation as important actors who work together across and up-down fashion. This is again a hierarchical processing of information, with the middle layer of the organisational structure being the focal point. According to Nonaka and Takeuchi, knowledge creation is the scope of cooperative relationships between top, middle, and lower managers. No one major department or group of experts has the exclusive responsibility for creating new knowledge. In the middle-up-down model, top management provides "visions for direction" and also the deadline by which the visions should be realized. Middle management translates these visions into middle range visions, which are to be realized in the fields. Top management articulates the dreams of the firm and lower managers look at the reality. It is a leadership style that facilitates the parallel knowledge creation process taking place simultaneously at top, middle, and lower management respectively[200].

2.1.4.8   Organizing for Knowledge Creation – The Hypertext Organisation model

Nonaka and Takeuchi describe a new organisational structure for knowledge creation as the "hypertext organisation" which blends the strengths of bureaucratic efficiency and standardization with those of task force flexibility and dynamism. The hypertext organisation is comprised of:[201]

- the "business system layer" or internal process where work gets done and where the bureaucratic model is most effective,

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[198] Pinchot 1985

[199] Nonaka 1994. A dynamic theory of knowledge creation. Organisational Science. 5(1), 29 – 31

[200] Nonaka 1994, 30-31

[201] Nonaka & Takeuchi 1995

- the "project team layer" or open system layer where new ideas or products are developed and where the task force model of execution is most effective, combined with a value-added feature of the hypertext organisation called,

- the "knowledge base layer" or rational goals layer, where information and knowledge are catalogued, categorized and synthesized in accordance with organisational priorities for the future.

The challenge that the hypertext organisational structure presents is that the staff must be capable of moving between these three layers with relative ease and, for the most part, with the ability to clearly separate individuals' mindsets and business practice from one layer to the next. This is not easy in practice.

2.2 Organisational Culture

According to Lincoln and Guillot "The degree of consensus over and intensity of, cognitive orientations and regulative cultural codes among the members of a population is an inverse function of the degree of structural differentiation among actors in this population and a positive, multiplicative function of their rate of interpersonal interaction, level of emotional arousal, and rate of ritual performance"[202]. Schein describes culture as broad and stable and it is about human relations. He holds that culture content is the sum total of all the shared taken for granted assumptions that a group has learned throughout history and it is the residue of success[203].

2.2.1   Definition of Organisational Culture

According to Morgan, there are two ways of defining organisation culture, the anthropological definition which says organisations have cultures or sociological definition which says organisations are cultures[204]. The idea of a common culture suggests possible problems of whether organisations have cultures. Organisations are only constituent element

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[202] Lincoln & Guillot 2004

[203] Schein 1999

[204] Morgan 2000

of society.   Morgan also explains that people enter organisations from surrounding communities and bring their culture with them but it is possible for organisations to have culture of their own

Schein also defines culture as "*a pattern of basic assumptions*" that are invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems"[205]

Dalkir states that organisational culture can be defined in terms of both its causes and effects[206]. Using an outcomes perspective, culture is defined as a manifest pattern of behaviour, consistent behavioural patterns observed across a group of individuals, or "the way we do things around here."   Culture thus defines consistent ways in which people perform tasks, solve problems, and resolve conflicts, treat customers and employees, and so on[207]. Basic assumptions in organisational culture are usually represented by general and abstract statements that express certain ideas and truth about human beings[208]. The values held express essential meanings of basic assumptions.   Therefore values define a set of its members' organisation expression.

Going back to Schein's anthropological sense, culture is defined as a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way you perceive, think, and feel in relation to those problems[209]. This definition can be expanded and interpreted as a system of shared beliefs, values, customs, behaviours and artefacts that members of the organisation use to cope with their world as an enactment and with one another and that are transmitted from employee to employee through learning.   There is a learning process that brings about culture.   A system of shared beliefs, values, customs, behaviours and artefacts become a premise or third order

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[205] Schein 1999

[206] Dalkir 2005:180

[207] Dalkir 2005:180

[208] Dalkir 2005:181

[209] Schein 1992:12

control for top management according to what top management would like these to be. These are used to cope with the world that exists, the world that can be structures, systems and processes. These are the embodiment of knowledge as artefacts. These include technologies that lead to shared behaviours which create a culture. Boisot thinks that technology has been treated by many anthropologists as an extension of culture[210].

2.2.2   Defining Corporate Culture

According to Schein culture refers to an organisation's values, beliefs, and behaviours. In general, it is concerned with beliefs and values on the basis of which people interpret experiences and behave individually and in groups[211]. Cultural statements become operationalized when executives articulate and publish the values of their firm which provide patterns for how employees should behave. Firms with strong cultures achieve higher results because employees sustain focus both on *what* to do and *how* to do it.

2.2.3   Working definition of Organisational Culture

For this research culture is defined as "a system of shared beliefs, values, customs, behaviours and artefacts that members of the organisation use to cope with their world (enactment) and with one another and that are transmitted from employee to employee through learning"

2.2.4   The Concept of Organisational culture

According to Cameron and Quinn, no organisation in the twenty first century would boast about its constancy, sameness, or status quo compared to ten years ago[212]. They also say that the failure rate of most planned organisation change is dramatic. They estimated that three quarters of reengineering, total quality management, strategic planning, and down sizing efforts have failed entirely or created problems serious enough that the survival of an organisation was threatened. Several studies reported reasons for these failures as the neglect of organisational culture[213]. If culture is stable, it would mean that it is difficult to change.

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[210] Boisot, 1999:117
[211] Schein 1999
[212] Cameron & Quinn 1999
[213] Cameron 1979; Schein 1999

According to Baker, it is sometimes important to build business initiatives around existing organisational culture rather than rather using the initiative to change the culture[214].

According to Cameron and Quinn, using competing value framework there are four types of organisational culture that are responsible for organisational effectiveness point of view. These are market, clan, hierarchy, and adhocracy cultures[215].

Denison put forward four basic views of organisational culture that can be translated into four distinct hypotheses:[216]

- *The consistency hypothesis* – the idea that a common perspective, shared beliefs and communal values among the organisational participants will enhance internal coordination and promote meaning and a sense of identification on the part of its members.

- *The mission hypothesis* – the idea that a shared sense of purpose, direction, and strategy can coordinate and galvanize organisational members toward collective goals.

- *The involvement or participation hypothesis* – the idea that involvement and participation will contribute to a sense of responsibility and ownership and hence, organisational commitment and loyalty.

- *The adaptability hypothesis* – the idea that norms and beliefs that enhance an organisation's ability to receive, interpret, and translate signals from the environment into internal organisational and behavioural changes will promote its survival, growth, and development. This affords the organisation the ability to continuously adapt.

These hypotheses focus on different aspects of culture but more importantly, they stress different functions of culture. The first two hypotheses tend to encourage or promote stability, the second two allow for change and adaptability. The first and third hypotheses see

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[214] It is cited that one of the reasons of the burst of dotcom bubble was the failure to take cognisance of the general human behaviour (existing habits) when designing technologies. New technologies tried to change existing habits which resulted to rejection.

[215] Cameron & Quinn 1999

[216] Denison 1990

culture as focusing on internal organisational dynamics; the second and fourth see culture as addressing the relation of the organisation to its external environment

According to Schein, organisational culture is even more important today than it was in the past. Increased competition, globalization, mergers, acquisitions, alliances, and various workforce developments have created a greater need for:[217]

- Coordination and integration across organisational units in order to improve efficiency, quality, and speed of designing, manufacturing, and delivering products and services,

- Product and strategy innovation,

- Process innovation and the ability to successfully introduce new technologies, such as information technology,

- Effective management of dispersed work units and increasing workforce diversity,

- Cross-cultural management of global enterprises and or multi-national partnerships,

- Construction of meta- or hybrid cultures that merge aspects of cultures from what were distinct organisations prior to an acquisition or merger,

- Management of workforce diversity, and

- Facilitation and support of teamwork.

Baker highlights the importance of culture in addition to a greater need to adapt to external and internal changes as organisational culture has become more important for an increasing number of corporations as intellectual assets constitute the main source of value. Baker further explains that maximizing the value of employees as intellectual assets requires a culture that promotes their intellectual participation and facilitates both individual and organisational learning, new knowledge creation and application, and the willingness to share knowledge with others[218]. In Kaplan and Norton's balanced scorecard under learning and growth perspective, organisational culture is one of the drivers of success in executing organisational strategy[219].

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[217] Schein 1992

[218] Baker 2002

[219] Kaplan & Norton 1996

According to Schein today's leadership is essentially about the creation, the management, and at times the destruction and reconstruction of culture. In fact, the only thing of importance that leaders do is to create and manage culture and the unique talent of leaders is their ability to understand and work within organisational culture[220].

Beliefs predetermine data that is observed, without understanding individually how these beliefs affect our thinking and reasoning, letting others understand where we come from, and then our ability to create knowledge will be negatively affected.

In Nisbett research on national culture, the influence of cultural differences in the way the mind works may be greater than most people suspect[221]. In a diverse group of people from different cultures, you get not just different beliefs about the world, but different ways of perceiving it and reasoning about it. The South African workplace environment is diverse, which brings in many cultures that are moulded into one organisational culture. Understanding the diversity and exploiting the organisational culture created presents opportunities for knowledge creation. On a bigger scale, globalization of economy presents more opportunities for exploitable diversity that can support business performance.

2.2.5   Levels of organisational culture

The strength or depth of culture is represented by three levels which are described by Schein as follows:

Level 1 – Artefacts: This refers to technology, art, visible and audible behaviour patterns. On the surface is what is seen, heard and felt. The visible products are language, technology products creations, and manners of dress, myths and stories shared.

Level 2 - Espoused values and beliefs: This is greater level of awareness. It is tested in physical environment and tested by social consensus. This is characterized by that all group

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[220] Schein 1992:5

[221] Nisbett R. 2003. The Geography of Thought. Free Press. In this book Nisbett wrote "East Asian thought tends to be more holistic" Holistic approaches attend to the entire field, and make relatively little use of categories and formal logic. They also emphasize change, and they recognize contradiction and the need for multiple perspectives, searching for the 'Middle Way' between opposing propositions. "Westerners are more analytic, paying attention primarily to the object and the categories to which it belongs and using rules, including formal logic, to explain and predict its behaviour."

learning reflects original values, those who prevail influence the group. It first begins as shared value then becomes shared assumptions and social validation happens with shared learning which may be initiated by the founder or leader and then assimilated.

Level 3 – Basic assumptions: This is taken for granted, invisible and preconscious. This evolves as solution to problem and repeated over and over again. The hypothesis becomes reality; therefore to learn something new requires resurrection, re-examination and frame breaking. Culture defines what we pay attention to, what things mean, react emotionally, what actions to take when humans need cognitive stability defence mechanisms.

2.2.6   Strategic Implications of Organisational Culture

Kanter states that there is paradox implicit in linking culture with change[222]. On the surface, culture possesses essentially traditional and stable qualities, so how can you have a "culture of change"?[223] Yet this is exactly what the innovative organisation needs, culture change. If real change rather than cosmetic or short-lived change is to occur in organisations, it has to happen at the cultural level.

2.2.7   Culture as knowledge asset

According to Boisot, technology has been treated by many anthropologists as an extension of culture. It has an enabling function and yields useful services that can be considered assets. Since it also embodied socially validated useful knowledge, it can be classed as knowledge asset[224]. According to this view culture can be described as socially embodied knowledge, which can be sometimes transformed to social capital.

Culture in contrast to technology is more problematic, only a small part of what is called cultural knowledge gets itself embedded in technologies and artefacts. A large part is embodied in social processes, institutional practices, and traditions, many of which are carried around people's heads. For this reason, most cultural knowledge has tended to be taken for granted rather than a prized asset to be exploited. At best, it is perceived to be

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[222] Kanter 1989

[223] Fullam 2001

[224] Boisot 1999:116

behaviourally useful knowledge. Japanese competition has brought to the West that much of managerial and technical knowledge they took as universal in its application is often in fact specific to a culture and draws on deeply rooted and value-laden assumptions of how organisations and institutions function. Knowledge embedded in systems and processes as technology, is culture first before it is technology. Cultural action and cultural orientation to action can shape evolution and exploitation knowledge assets.

2.2.7.1 The Social Dimension of Knowledge Assets

According to Boisot, the social dimension of knowledge assets means the structuring and sharing knowledge assets among its potential users and producers, the structuring to facilitate the diffusion of knowledge assets and the expanding the information field to share knowledge assets. [225]

2.2.7.2 Technology as the expression of culture

According to Boisot, there are many definitions of culture of widely varying types. No matter how a definition is formulated, however, most would take the structuring and sharing of information within a population distributed across space and time as a central ingredient[226]. This allows information space (I-space) to be used in the study of culture transmission. Central to the idea of using the I-space in this way is the observation that cultures vary in their propensity to structure knowledge and hence their spatio-temporal reach.

The cultural codes available to data-processing agents will help to demarcate regions of knowledge that will be asymmetrically distributed within a population from those that will be more evenly distributed. Where information asymmetries are strong, the resulting discontinuities will sometimes spawn distinctive subcultures, each of which might usefully give to its own independent I-space representation[227]. In this case we focus on organisational culture not industrial culture or national culture

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[225] Boisot 1999

[226] Boisot 1999:122

[227] Boisot 1999:123

2.2.7.3 Cultures and Institutions in the I-space

Boisot uses the unit of analysis of transaction. Economic and social organisations aim to reduce the cost of transaction by economizing on the cost of data processing and transmission cost, which can be achieved by the transaction away from the origin in the I-space. The transaction can be minimized by not necessarily relocating the transaction in the I-space; instead of modifying the information characteristics of the transaction, it creates a transaction infrastructure that takes such characteristics as a given and secures economies in exchange by exploiting the scale effects[228].

There are four types of transactions that can happen in the I-space (*Fig.11*), market, bureaucracy, fiefs and clan.

Fig.11

Transaction in I-Space
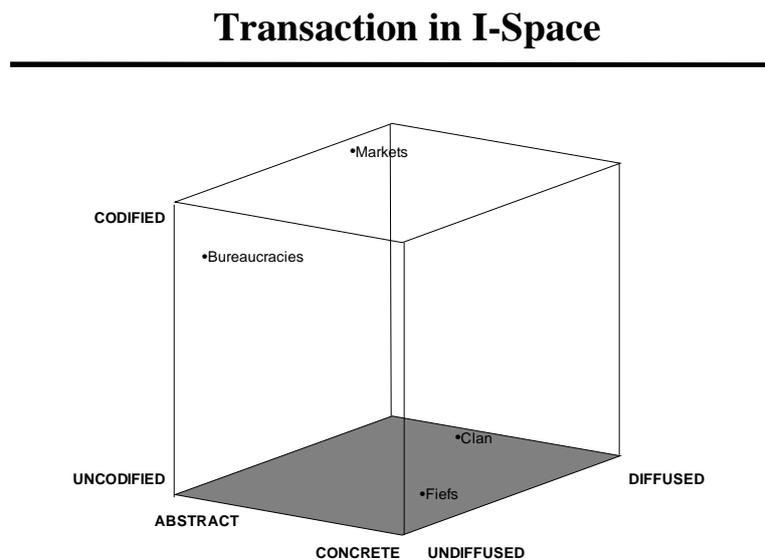
The characteristics of these transactions in the I-space are:[229]

Market transaction: The information is codified, abstracted and widely diffused without any control. The relationships in the transaction are impersonal, competitive and the horizontal coordination is self-regulatory. There are no super-ordinate goals. In this type of transaction there is no need to share values or beliefs.

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[228] Boisot 1999:126

[229] Boisot 1999: 127

Bureaucracies: The information is codified, abstracted with limited diffusion under central control. The relationships are impersonal and hierarchical and there is submission to super ordinate goals. It is not necessary to share values and beliefs.

Fiefs: The information is uncodified and concrete. The diffusion is limited by lack of codification and abstraction to face to face relationship. These relationships are personal and hierarchical. There is submission to super ordinate goals with hierarchical coordination. It is a necessity to share values and beliefs.

Clans: Information is uncodified and concrete. Information diffused but limited by lack of codification abstraction to face-to-face relationships. The relationships are personal but non-hierarchal. Goals are shared through the process of negotiation. The horizontal coordination is through negotiation and there is a necessity to share values and beliefs.

These types of transaction through the I-space will affect how knowledge is created. According to McGregor, if people are treated consistently in terms of certain basic assumptions, they eventually come to behave according to those assumptions in order to make their world stable and predictable[230].

2.2.7.4 Competing Values Framework based Culture Types (Cameron and Quinn)[231]

Cameron and Quinn provide a convincing argument on how culture influences organisational effectiveness in the daily performance of duties. This argument is presented below, using the competing values framework, they came up with easy to understand major organisational culture types. These culture types are based on competing values framework which is linked to organisational effectiveness.

Cameron and Quinn research on extraordinarily successful firms indicate their success is due to the most important competitive advantage, which is the organisational culture. The

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[230] McGregor 1960. The Human Side of Enterprise, Theory X and Theory Y

[231] From Cameron and Quinn 2006. Diagnosing and Changing Organisational Culture. Based on Competing Value Framework (Revised Edition)

sustained success of these firms has had less to do with market forces than company values; less to do with competitive positioning than personal beliefs; less to do with resource advantages than vision. In fact, the success of these recognized leaders in their industry is readily identifiable as due to organisational culture. Every leading firm has developed a distinctive culture that is clearly identifiable by its employees. This culture is sometimes created by the initial founder of the firm; sometimes it is developed consciously by management teams who decide to improve their company's performance in systematic ways. Simply stated, successful companies have developed something special that supersedes corporate strategy, market presence, or technological advantages. These organisations have found the power that resides in developing and managing a unique corporate culture.

It is generally recognized that organisational culture has a powerful effect on the performance and long-term effectiveness of organisations. Empirical research has produced an impressive array of findings demonstrating the importance of culture to in enhancing organisational performance[232]. The impact of organisational culture on individuals, for example: employee morale, commitment, productivity, physical health, and emotional well-being is also well-documented[233].

Cameron and Quinn wrote this book to assist with the way in which culture can be diagnosed and changed in order to enhance organisational performance. Since culture is such a crucial factor in the long-term effectiveness of organisations, it is imperative that those charged with studying and managing organisational culture be able to measure key dimensions of culture and to develop a strategy for changing it.

To understand how culture change can enhance organisational performance, culture is clarified and the framework of the core dimensions of organisational culture is introduced. Along with that framework, an instrument and a method for diagnosing and initiating cultural change is introduced.

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[232] Cameron & Ettington 1988; Denison 1990; Trice & Beyer 1993

[233] Kozlowski, Chao, Smith & Hedlund 1993

The Need for Culture Change

According to Cameron and Quinn, no organisation in the 1990s would boast about its constancy, sameness, or status quo standing compared to the previous ten years. The same applies in the 21st century. Stability is interpreted more often as stagnation than steadiness, and organisations that are not in the business of change and transition are generally viewed as recalcitrant. The frightening uncertainty that traditionally accompanied major organisational change has been superseded by the frightening uncertainty that is now associated with staying the same. The authors also quote researches that identified major failures of well known interventions to improve effectiveness, because of organisational culture. When the culture of the organisations was an explicit target of change, so that major interventions were a part of an overall culture change effort, the interventions were successful. When organisational effectiveness increased, culture change was the key.

The dependence of organisational improvement on culture change is due to the fact that when the values, orientations, definitions, and goals stay constant, even when procedures and strategies are altered, the organisation returns quickly to the status quo. Without an alternation of the fundamental goals, values, and expectations of the organisation, change remains superficial and short-term in duration. Unfortunately failed attempts to change frequently produce cynicism, frustration, loss of trust, and deterioration in morale among organisation members.

The meaning of organisational culture

The reason organisational culture was ignored as an important factor in accounting for organisational performance is that it refers to the taken-for-granted values, underlying assumptions, expectations, and definitions present in an organisation. It represents "how things are around here." It reflects the prevailing ideology that people carry inside their heads. It conveys a sense of identity to employees, provides unwritten and, often, unspoken guidelines for how to get along in the organisation, and enhances the stability of the social system that they experience. Unfortunately, people are unaware of their culture until it is challenged, until they experience a new culture, or until it is made overt and explicit.

There are many kinds or levels of culture that affect individual and organisational behaviour such as global culture or national culture or gender-based cultures or ethnic group cultures or occupational cultures or socio-economic group culture. Each of these cultures is generally reflected by unique language, symbols, and ethnocentric feelings. Inside an organisation, subunits such as functional departments, product groups, or even teams may also reflect their own unique cultures. Difficulties in coordinating and integrating processes or organisational activities, for example, are often a result of culture clashes among different subunits. It is easy to see how these cultural differences can fragment an organisation and make high levels of effectiveness impossible to achieve. Emphasizing subunit cultural differences, in other words, can foster alienation and conflict.

Interestingly, each subunit in an organisation also contains common elements typical of the entire organisation and subunit cultures also contain core elements of the entire organisation's culture in addition to their own unique elements. There is always underlying glue that binds the organisation together. In assessing an overall organisation's culture, therefore, one can focus on the entire organisation as the unit of analysis, or it is possible to assess different subunit cultures, identify the common dominant attributes of the subunit cultures, and aggregate them. This combination can provide an approximation of the overall organisation's culture.

Cameron and Quinn provide a validated instrument for diagnosing organisational culture, a framework or theoretical model for understanding organisational culture and a systematic strategy for changing organisational culture. They also explain the theoretical framework upon which the organisational culture assessment instrument (OCAI) is based. This framework is the competing values framework which explains the underlying value orientations that characterize organisations. These value orientations are usually competing, or contradictory to one another. It is explained how these values (and the accompanying organisational cultures) emerge, change over time, and how the framework is applicable for making sense of a variety of organisational phenomena include structure, quality, leadership, and management skills.

Cameron and Quinn explain step-by-step the process for producing an organisational culture profile, identifying the ways in which the organisation's culture should change, and

formulating a strategy for accomplishing that change. They also provide examples of how certain organisations used the OCAI to diagnose its current and preferred organisational culture, and how it designed a strategy to change the current culture to better match the preferred culture. A five step procedure for guiding a culture change strategy is also presented.

According to Cameron and Quinn, culture exists in four major types, which are hierarchy, adhocracy, clan and market.

Fig.12

EXAMPLE: CULTURE PROFILE
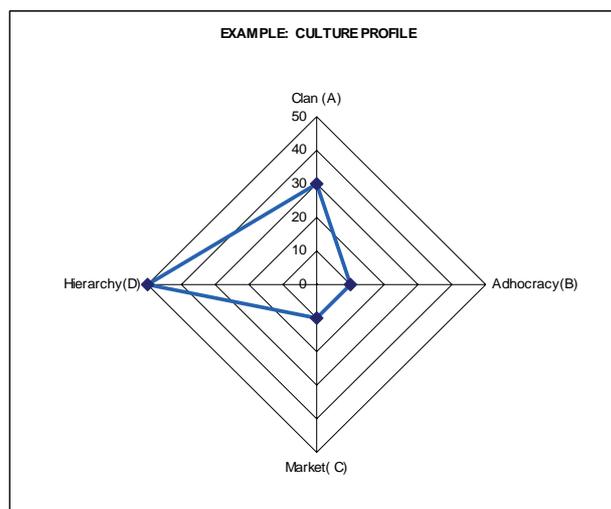
Fig.12 shows a typical example of results of assessing organisational culture using Cameron and Quinn OCAI. The representation of results shows which culture type is dominant in organisation.

The work of Cameron and Quinn also contain a more rigorous and scientifically based discussion of the OCAI and the Competing Values Framework. Its intent is to provide researchers and organisational scholars with the evidence they will need to use this instrument in studying organisational cultures and culture change. Evidence for the validity and reliability of the OCAI is provided as well as a discussion of cultural definitions and the power of cultural change to impact effectiveness.

Fig.13 below shows the combination of culture types of Cameron and Quinn with culture strength as represented by Schein's levels of culture:

Fig.13

Adapted from Cameron & Quinn (1999), Schein (1992)
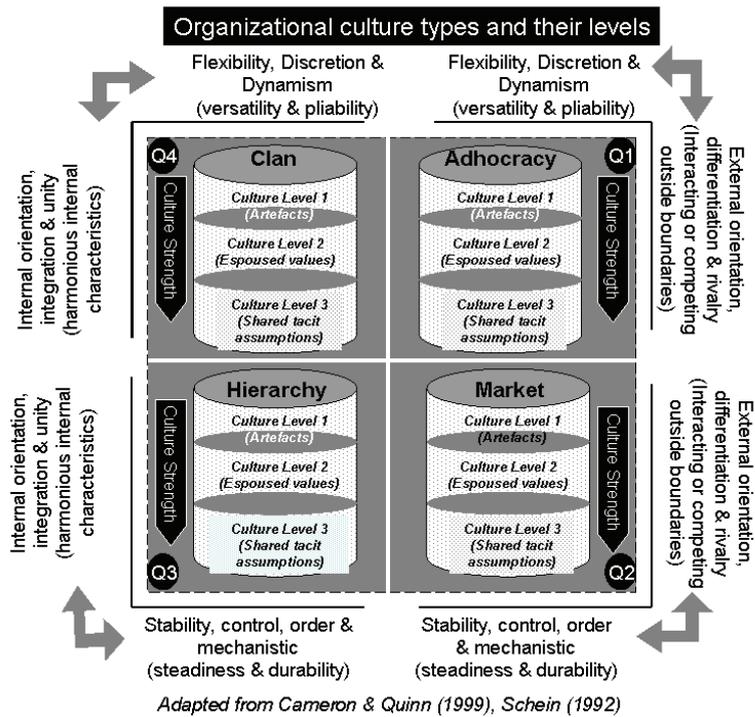
The model above combines organisational culture types in their respective quadrants of competing value dimensions with culture levels as the level of strength per culture type. The cultural strength and congruence are the main cultural dimensions[234].

2.3 Knowledge creation, innovation, competitiveness and organisational culture

2.3.1 Knowledge Creation and Organisational Culture

According to IMD and World Bank competitiveness reports, the competitiveness of the world economy is driven by innovation. There is a correlation between the global competitiveness ranking and knowledge ranking[235]. Tsoukas present the view that organisations are systems of knowledge highlights the crucial role of human interpretation, communication and skills in generating effective organisational action. This enables the move beyond individual to broader social bases like social practices, forms of interaction, values, routines, power

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[234] Cameron and Quinn 1999; Sathe 1983, Schein 1984; Kotter and Heskett 1992.

[235] IMD 1996:12, 2003a, 2003b, 2004; World Bank 2004

structure and organisation of work[236]. This view combines the knowledge and the social aspect of the organisation. The role of human interpretation brings to the fore the impact of organisational culture in sense making and knowledge creation. The interconnectedness of skills and tacit knowledge is the crucial element in maintaining competitiveness. The capability to create and apply new knowledge successfully constitutes the true source of competitive advantage of a firm. The speed of converting data to information, creating meaning and taking action keeps an organisation ahead of its competitors. Innovative processes happen better in an environment with self organizing teams. Creating a culture that allows self organisation facilitates knowledge creation and team members are presented with opportunity to share and create new knowledge.

According to Chou and Tsai, the knowledge management framework is developed based on individual and organisational perspectives[237]. In their research, they identified the impact of user involvement, knowledge cognition, and organisational mechanisms on knowledge creation. Castells states that the development of the informational, global economy is precisely its emergence in very different cultural context[238]. Culture plays a role in the creation of informational society and globalisation of economy. Nonaka and Takeuchi's model of knowledge creation is Japanese in culture but the other sections of the global economic society can adapt it for their individual benefit. Informationalism has brought about technological changes that affect how people perform their daily functions and so mold culture. Wang and Wang put forward five dimensions of knowledge creation capability in a manufacturing firm, which are:[239] access to other individuals and groups to tap into their knowledge, reflection and retrospectively making sense of past experience, absorptive capacity of new knowledge, employees' ability to learn and perceiving the value of pursuing new knowledge. They also state that knowledge creating capabilities of an organisation are facilitated by:

- Organisational environment and climate which encompass organisational culture, type of leadership, trust, management vision and top management support

- Employees' performance culture, redundancy acceptance and education

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[236] Tsoukas 2006

[237] Chou & Tsai 2004

[238] Castells 2000

[239] Wang & Wang 2004

- Organisational learning regarding experimental learning and continuous improvement

- Knowledge creation strategy which supports learning culture integration to human resources management, infrastructure and motivation

Subsequently, Wang and Wang's research on innovation in the Taiwanese manufacturing industry concluded that organisational culture is the most important factor that drives success in innovation.

- Ladd and Heminger's study on the impact of organisational culture on knowledge sharing in the US Air force presented four factors of organisational culture that affect knowledge transfer[240]. These factors are openness to change and innovative culture, task oriented culture, bureaucratic organisational culture and competition or confrontational organisational culture.

2.3.2 Towards an Integrative Model of Organisational Culture and Knowledge Management[241]

Paradoxically, Rebiere and Site identified organisational culture as the main impediment to knowledge management[242] and yet very little is known about how organisational culture contributes to or impedes knowledge creation. There is a lack of theory to elucidate the impact of organisational culture in initiating and sustaining knowledge creation and transfer in organisations.

According to Davenport and Prusak, the creation and transfer of knowledge in organisations depends on an environment that facilitates communication and experimentation[243]. This allows individuals to try new things and be connected to other employees. Nonaka, Toyama and Konno state that the context or *ba* in which knowledge is shared, created, and utilized provides the energy, quality and place to perform the individual conversions and to move

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[240] Ladd & Heminger 2002

[241] Gray & Densten 2004

[242] Ribiere & Sitar 2003

[243] Davenport & Prusak 1998

along the knowledge spiral'[244]. The organisation provides the context to socialise, express, debate and reflect on new encountered knowledge.

The integration of the Competing Values Framework (CVF) of Cameron and Quinn and the SECI model od Nonaka and Takeuchi provides an opportunity to elucidate the impact of organisational culture in the knowledge creation process. Both models present typologies that attempt to account for organisational effectiveness. According to Quinn and Kimberly, the CVF focuses on organisational effectiveness in terms of the deep structure of organisational culture[245], while the SECI model suggests that the creation and transfer of knowledge is driven by organisational intent[246] which is central to organisational effectiveness.

The CVF and the SECI models acknowledge that organisational members must balance conflicting demands. Quinn, Spreitzer and Hart state that the CVF suggests that high performance requires the simultaneous mastery of seemingly contradictory or paradoxical capabilities[247], while Nonaka and Toyama the SECI model proposes that knowledge is created in a process that integrates opposing concepts such as order and chaos, tacit and explicit, and creativity and efficiency[248].

A fundamental assumption which underpins both models is the importance of human relations and socialization processes for knowledge sharing. According to Cameron and Quinn, the CVF emphasizes the importance of managerial leadership behaviours that develop trust and belongingness in a clan culture to facilitate information sharing[249]. Similarly, Nonaka and Takeuchi state that the socialization processes in the SECI model[250] are necessary for tacit knowledge accumulation. According to Denison, Hooijberg and Quinn, the CVF suggests that effective managerial leadership is dependent on the development of capabilities that fulfil roles in all of the four quadrants[251]. Although the SECI model presents

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[244] Nonaka, Toyama & Konno 2002:49

[245] Quinn & Kimberly 1984

[246] Nonaka & Takeuchi 1995

[247] Quinn, Spreitzer & Hart 1991

[248] Nonaka & Toyama 2003

[249] Cameron & Quinn 1999

[250] Nonaka & Takeuchi 1995

[251] Denison, Hooijberg & Quinn 1995

a sequential model of knowledge conversion, all four modes presented in the typology are envisaged to operate simultaneously in a spiral of knowledge conversion[252]. Fig.14 shows the representation of the integration of the two models: The Organisational Knowledge Management Model. Both models recognize that even in companies with well-developed knowledge management infrastructure, people still turn to others to provide solutions to problems. The CVF and the SECI Model both identify that such informal interactions among individuals enable shared experiences to influence organisational effectiveness, knowledge creation and transfer.

Fig.14

Integrative Model: Nonaka SECI & Organisational Culture

Adapted: Gray & Densten, 2004
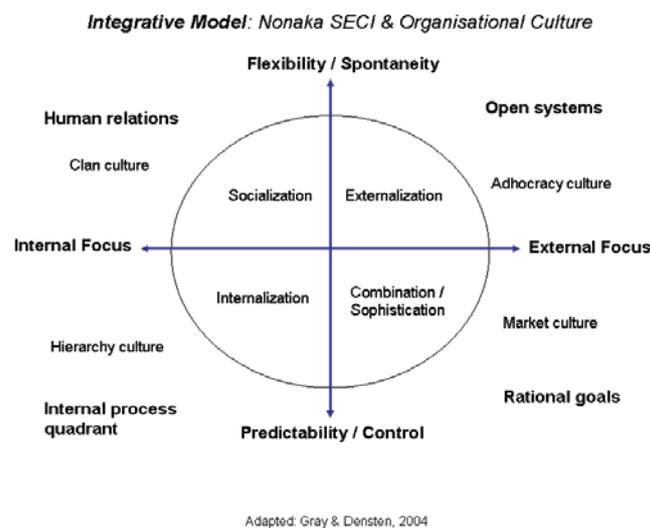
According to Grey and Densten, the open systems culture in competing value framework (CVF) characterized by flexibility, innovation, and creativity and based on the development of external relationships is congruent with the externalization processes involving the conversion of tacit to explicit knowledge[253]. Nonaka and Takeuchi state that for externalization to occur, 'individuals use "discursive consciousness'' and try to rationalize and articulate the world that surrounds them'[254].

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[252] Byosiere & Leuthge 2004

[253] Gray & Densten 2004

[254] Nonaka & Takeuchi 2004:98-99

Fig.15

Integrative Conceptual Process
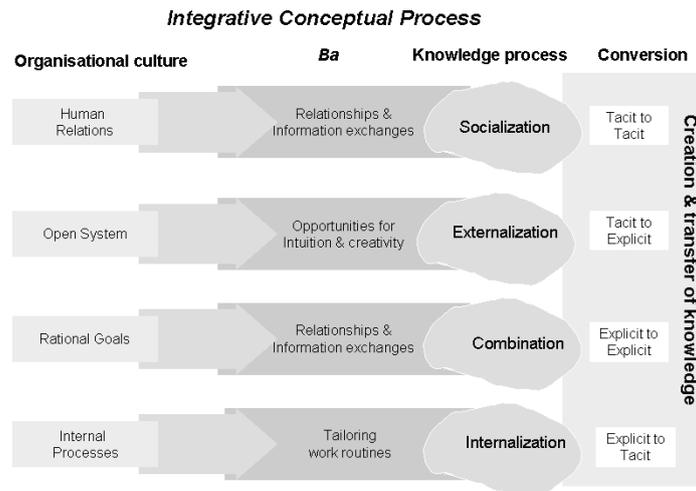
Adapted: Gray & Densten, 2004

Fig. 15 is a representation of the conceptual processes in the integrated model: The Organisational Knowledge Management Model and SECI Model.

The market culture in the CVF is based on rational goals which emphasize competitiveness, productivity, goal clarity, efficiency, and accomplishment. Clear directions provide individuals with knowledge about how their efforts influence organisational outcomes and have a significant impact on organisational effectiveness. Similarly, rationalism is 'an effective method to combine, edit, and break down explicit knowledge' in the combination mode (SECI model) to operationalize corporate knowledge[255].

The CVF was developed to clarify the complex and paradoxical nature of organisational effectiveness, while the SECI process model attempts to account for knowledge creation and conversion in organisations. Integrating knowledge management theory with the Competing Values Framework could provide the means to understand how organisational culture drives or enhances the development of organisational knowledge. Further theoretical development is required to elucidate the processes by which tacit knowledge becomes explicit. According to Dalkir, there is little time spent on sharing tacit knowledge and most of the knowledge is in explicit form which is estimated 20% of the total knowledge[256].

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[255] Nonaka & Toyama

[256] Dalkir 2005

Among the twenty-first-century skills that are frequently talked about are the ability to adapt constantly to different people from diverse cultures and the ability to manage the interconnectedness of today's world. The global workplace requires individuals to be sensitive to different cultures, to interact appropriately with people from different cultures, and to analyze new cultures as they are encountered. To do all this, individuals whether they are abroad or at home need cultural intelligence[257].

What will motivate people to do certain things irrespective of the level of personal knowledge? Cultural intelligence means knowing and trying; being able to do right things; engages in action that is adaptive. Individuals' ability to work and adapt in an environment where assumptions, values, and traditions differ from those they are accustomed to reflect cultural intelligence. Tacit knowledge sharing will involve cultural intelligence. According to Alavi and Leinder, to achieve knowledge creation, individuals not only acquire new knowledge, but also transform existing tacit and explicit knowledge into new knowledge[258]. While tacit knowledge that is rooted in experience, actions, and involvement in a particular context is usually hard to articulate such as know-how, explicit knowledge is codified and communicated in symbolic form or natural language.

Becerra-Fernandez & Sabberwal posit that in well functioning teams sharing of tacit knowledge occurs through "the establishment of shared understanding"[259] and through practice itself[260]. Communities of practice are a well known example of knowledge sharing through "participation" or practicing in a community[261]. Brown and Daguid posit that when separated from practice, which is the case when tacit knowledge has to be exchanged between different communities, sharing becomes more difficult[262]. Additional hindrances are intra- and inter-organisational boundaries, various professions, and different personal and cultural backgrounds.

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[257] Joo-Seng Tao 2004

[258] Alavi & Leinder 2001

[259] Becerra-Fernandez & Sabberwal 2001:21

[260] Brown & Duguid 1999

[261] Lave & Wanger 1991; Wenger 2000

[262] Brown & Duguid 1999

How to achieve knowledge creation effectively remains a problem. This is because knowledge creation entails not only knowledge acquisition but also knowledge conversion. Both of them necessitate complicated social interactions. Since individuals are less likely to share precious insights with strangers, knowledge creation seems infeasible in networks of practice.

2.3.3 Cultural Aspect of Knowledge creation

According to Nonaka and Toyama, tacit knowledge is socially embodied and therefore the social, cultural, and historical context of knowledge is important, otherwise externalization processes can lead to fallacies[263]. Consequently, Chou and Chang argue that individual, social, cultural and historical context must be considered in the process of externalization[264].

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[263] Nonaka & Toyama 2003

[264] Chou & Chang 2008

Chapter 3

Data Collection, Results and Discussions

The empirical components of this research project were listed in chapter one and they are now dealt with in detail.

3.1 The research questionnaire

The first part of the questionnaire assessed the presence of knowledge creation enablers in an organisation (*see Annexure*). The enablers are intention, autonomy, fluctuation and creative chaos, redundancy, requisite variety and *ba*. The respondents have to agree or disagree with each statement pertaining to individual knowledge enablers by assigning an appropriate rating with reference to each statement. The ranking uses a Likert scale item from 1 to 4, with 1 as strongly disagreeing and 4 strongly agreeing. The statements related to each enabler are based on the characteristics that Nonaka and Takeuchi gave of these enablers[265]. This was cross referenced with other authors discussing Nonaka and Takeuchi knowledge creation enabling conditions. The descriptions of enabling conditions were found to be easy to understand[266].

The second part of the questionnaire was on organisational culture. This part uses Cameron and Quinn organisational culture assessment instrument (OCAI) (*see annexure*). This instrument is validated and there was not modification of statements or statement ranking format. The instrument assesses six areas of business that drive organisational effectiveness. These areas are organisational characteristics, organisational leadership, and management of employees, organisational glue, strategic emphasis and criteria of success. Scoring is done out of 100 for each area.

3.2 Sampling and Data Collection

Four organisations were selected from a highly competitive South African environment. The organisations were from the following sectors: fast moving consumer goods, mobile

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[265] Nonaka 1994; Nonaka & Takeuchi 1995

[266] Landry 2000; Scharmer 2001

telecommunications, consumer banking and financial services. Twenty participants in middle management were sampled per organisation, in line with Nonaka's argument regarding the importance of the middle-up-down management model. It also had the additional benefit of limiting the sample size.

3.3   Research model, data reliability and validity

The research took the form of a survey questionnaire using Likert scale items in the part that deals with Nonaka and Takeuchi's knowledge creation enablers. The organisational culture section was based on the validated Cameron and Quinn organisational culture assessment instrument. The results will be discussed according to the table of prediction below.

Table of Predicted Correlation between Knowledge Enablers and Culture Types[267]

CULTURE TYPES ENABLERS	1. Hierarchy	2. Clan	3. Market	4. Adhocracy
1. Intention	β_{11} (+)	β_{12} (+)	β_{13} (+)	β_{14} (-)
2. Autonomy	β_{21} (-)	β_{22} (+)	β_{23} (+)	β_{24} (+)
3. Fluctuation & creative chaos	β_{31} (-)	β_{32} (-)	β_{33} (+)	β_{34} (-)
4. Redundancy	β_{41} (-)	β_{42} (-)	β_{43} (+)	β_{44} (-)
5. Requisite variety	β_{51} (-)	β_{52} (-)	β_{53} (+)	β_{54} (-)
6. "Ba"	β_{51} (-)	β_{62} (+)	β_{63} (+)	β_{64} (-)

The table presents the predicted nature of relationship between knowledge creation enablers and organisational culture type. The β value will give the strength or magnitude of relationship and (+/-) will give the nature of relation as positive or negative. For example,

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[267]   Under analysis section, these observed numbers will then be tested for the level of type I error using *p*-value, significance using *F* test and completeness using the coefficient of determination, R^2

intention is positively related to all culture types with autonomy negatively related to hierarchical culture type but positively related to the other three culture types. The magnitude of relationship, β cannot be estimated at this stage.

3.4   Analysis of data

A total of 140 questionnaires were sent out, but only 60 responses were received. These were adequate for statistical analyses of only two organisations of the four organisations. Data was entered in a spreadsheet for response distribution analyses for both knowledge creation enablers and organisational culture profile. The upper quartile (75th percentile) analysis was chosen as a reflection of the median upper half of data which can indicate the leaning of the upper side responses. Statistical software (STATISTICA) was used for multilinear regression analysis which was performed to establish the nature and strength of relationship between knowledge creation enablers and organisational culture. Data analysis was also used to establish the dependency of knowledge creation enablers on organisational culture. The organisational culture types were treated as independent variables since organisations have cultures that develop in response to environment. Organisations may make efforts to create conditions that support innovation, therefore knowledge creation enablers have to rest on the existing dominant organisational culture. The dominant culture may enhance or act against certain knowledge creation enablers. This means organisational culture types form the basis for the existence of Nonaka's knowledge creation enablers.

The scales used in the instrument had a continuum nature (1 to 4 scoring for knowledge creation enablers and a score out of 100 points for organisational culture type) and linear regression was used to relate the resultant scores. It was expected that the respondents would have a weak or strong feeling per each element of the questionnaire based on experience in a scaled manner i.e. varying degrees of disagreement or agreement. The choice made out of 100 for organisational culture will be affected in a similar manner. The regression analysis was performed to establish the nature and magnitude of these relationships. The observed relationships were analysed for significance and the level of type I error. The organisational culture profiles were plotted for each individual company as well as for both companies combined, using Cameron and Quinn's method.

At this point it should be noted that Company A is a multinational fast moving consumer goods (FMCG) company that has been in existence for about 40 years and Company B is a financial service and management consulting company that has been in existence for less that 8 years, but has grown to be the biggest supplier of a specialized service in Africa.

3.5 Upper quartile responses for both knowledge creation and organisational culture

Table 3

Organisational Culture & Enablers Responses	Overall (Company A & Company B Response	Company A Response	Company B Response
ENABLERS			
Intention	3.8	2.9	4.0
Autonomy	3.8	**3.5**	3.8
Fluctuation	3.8	**3.5**	3.8
Redundancy	3.3	2.8	3.5
Requisite variety	4.0	2.6	4.0
CULTURE TYPES			
Clan	40	21	44
Adhocracy	28	29	27
Market	35	42	29
Hierarchy	20	22	17

The above table (*Table 3*) on upper quartile values indicates that the respondents of company A, which competes on brands, are leaning more towards a high score for autonomy and fluctuation enablers of knowledge creation and the organisational culture leans towards a strong market culture type. This organisation has been participating in this market for over 40 years and its brands are well known. Since these are fast moving consumer products, brand loyalty might be playing to their advantage, hence a focus on autonomy and fluctuation enabling conditions to drive competitive behaviour, which is in line with Nonaka's description of these terms with regards to competitiveness. The market culture is appropriate for the fast moving consumer goods environment. The market share is fought at the retailers' shelves, where the consumer exercises her freedom of choice.

Company B is relatively new. It has been in the business solutions market for about 8 years.
It has been very competitive in this market such that it has become the biggest supplier of a
specific business solution in Africa. This is a medium size company, where every employee
is more like a member of the family. The dominance of the clan culture is appropriate for
this organisation. People tend to work together for the benefit of the whole organisation
rather than individuals. All knowledge creation enablers are generally strong. The responses
on redundancy and *ba* scored lower than the rest, which is in line with observation by Nonaka
that the Western culture tends to consider redundancy as waste[268]. The company has a very
strong vision and exhibits strong characteristics of requisite variety and creative chaos.
Employee teams are multi-skilled; they keep tabs of the market environment and respond
with unique solutions.

The above observation is based on response profile, by just looking at the data distribution
and sensable meaning that can be extracted from it without testing for significance. Maybe
an organisation does not need to have all knowledge creation enablers to compete
successfully in the market. An appropriate organisational culture may be adequate to sustain
enablers for competitiveness. This may also answer the adequacy of knowledge creation in
order to meet market demand, which highlights the pull effect of the market not the push
effect of a firm. Therefore, as long as the dominant organisational culture is appropriate to
support the key knowledge creation enablers, a firm can compete adequately.

3.6 Correlation of knowledge creation enablers with specific organisational culture types

3.6.1 The relationship between a specific organisational culture types and knowledge creation enablers applying to Company A and Company B.

In this section, the culture profile of both Companies are analysed (*Fig 16*). This is to
establish whether the combined of both organisations does show which organisational culture
types are dominant. In the case of these two organisations, Clan and Market culture types are
dominant. Therefore in the regression analysis, it is important to know which of Nonaka's
knowledge creation enablers fits well with these two cultures.

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[268] Nonaka 1994

Fig 16
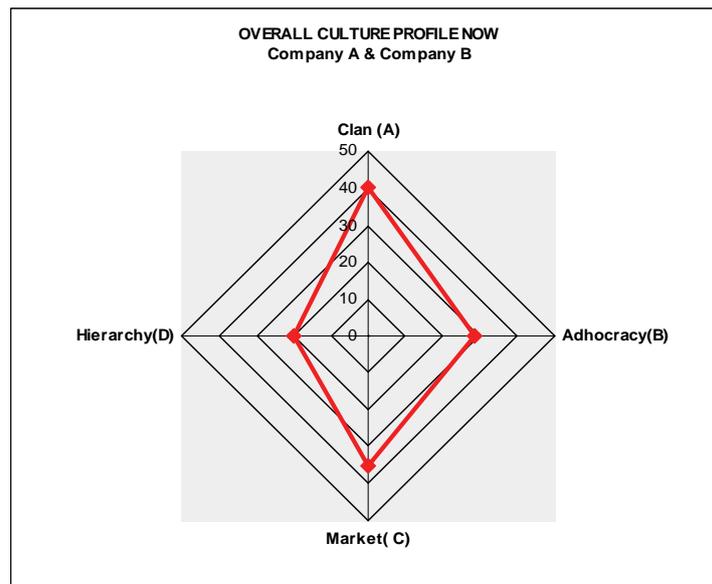
Table 4, tries to establish the nature of relationship between organisational culture types and enablers of knowledge creation.

Table 4

CULTURE TYPES / ENABLERS	1. Clan	2. Adhocracy	3. Market	4. Hierarchy	F	p	R^2
1. Intention	β_{11}: -4.6	β_{12}: -3.2	β_{13}: -4.5	β_{14}: -2.7	1.371	0.276	0.200
2. Autonomy	β_{21}: 1.67	β_{22}: 0.835	β_{23}: 1.07	β_{24}: 0.817	1.256	0.869	0.186
3. Fluctuation & creative chaos	β_{31}: 3.88	β_{32}: 2.54	β_{33}: 3.67	β_{34}: 2.16	0.409	0.505	0.069
4. Redundancy	β_{41}: -2.7	β_{42}: -1.8	β_{43}: -2.4	β_{44}: -1.6	0.229	0.91	0.040
5. Requisite variety	β_{51}: -4.9	β_{52}: -3.2	β_{53}: -5.0	β_{54}: -2.9	*5.809*	*0.002*	0.514
6. "Ba"	β_{61}: -0.64	β_{62}: -0.77	β_{63}: -0.87	β_{64}: -0.64	1.033	0.412	0.158

Knowledge creation factors would have to exist within a predominant cultural environment in an organisation. Culture is not easy to manipulate but knowledge creation factors can be created and sustained within the predominant culture type by an organisation. In the above table (Table 4), it is aimed to establish which knowledge creation factors will thrive in which cultural environment. The nature and strength of relationship between each knowledge creation factor and culture type is denoted by β which can be positive or negative in nature. If the β–value is high, the relation is strong and *vice versa*. The *F*-value denotes the significance of the observed relationship. For the relationship to be highly significant, the value should be far greater than 1 ($\gg$1). The *p*-value denotes the level of type I error of the observed relationship. R^2 denotes how much of the variance in knowledge creation enablers is accounted for by specific culture type. This can be said to be representing the degree of impact of culture on knowledge creation.

The overall picture is that only one knowledge creation enabler, namely requisite variety, has a strong and significant negative relationship with all organisational culture types (see *Table 4*). Although this indicates a strong correlation, the negative nature the relationship indicates that the more dominant a certain culture type becomes, the more the presence of requisite variety weakens in turn. The degree of weakening depends on the magnitude (β) of relationship. The diminishing rate is the highest with market culture and the lowest with hierarchy. Requisite variety is an organisational property that is required to deal with complexity and it is to be assumed that a marketing culture should display the presence of this enabler. However, this is not the case here. The R^2 of 0.51 indicates that 50% of variance in requisite variety as an enabler can be explained by these culture types and the other 50% is from unknown factors. Correlations between culture types and enablers other than requisite variety have high *p*-values which gives a high level of chance factor. The requisite variety relationship with clan and market culture is negative. Clan and market culture types are predominant in these two organisations (see *Fig 16*) may not rely on requisite variety to deal with their complex worlds. Knowledge creation enabler, *ba* has the weakest, negative and insignificant correlation with all the culture types. One would expect *ba* to have strong relationship with clan culture.

Although no conclusion can be made about other knowledge creation enablers except requisite variety, the dominance of combined clan and market organisational cultures above

other culture types remain true. One could describe this as knowledge creating conditions where the clan culture can be seen as facilitating dialogue and the knowledge conversion processes. The market culture supports the fact that the knowledge creation process happens in support of the market demand. Keskin, Akgun and Imamoglu concur that there is a correlation between clan and adhocracy cultures and a tacit knowledge oriented knowledge management strategy[269]. Although adhocracy culture comes into the picture in this statement, the respondents from the two organisations did not highlight it as important. Adhocracy culture is an organisational culture that is most responsive to hyper turbulent environment which fosters innovation and pioneering in the market place. Adhocracy tends to address temporary situations of hyper turbulence in a specialized and dynamic manner. Both these organisations have not experienced this type of environment and were therefore not under pressure to develop a strong adhocracy culture.

3.6.2 Company A: relationship between organisational culture types and knowledge creation enablers

Company A has a strong market culture (*Fig.17*) and uses branded products to compete. In this organisation the clan culture has the lowest strength. It displays fluctuation and autonomy as strongest knowledge creation enablers (*Table 5*). Although the market culture shows a strong relationship across all knowledge creation enablers except "ba", they are generally not significant and mostly negative.

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[269]   Keskin, Akgun & Imamoglu 2005

Fig 17
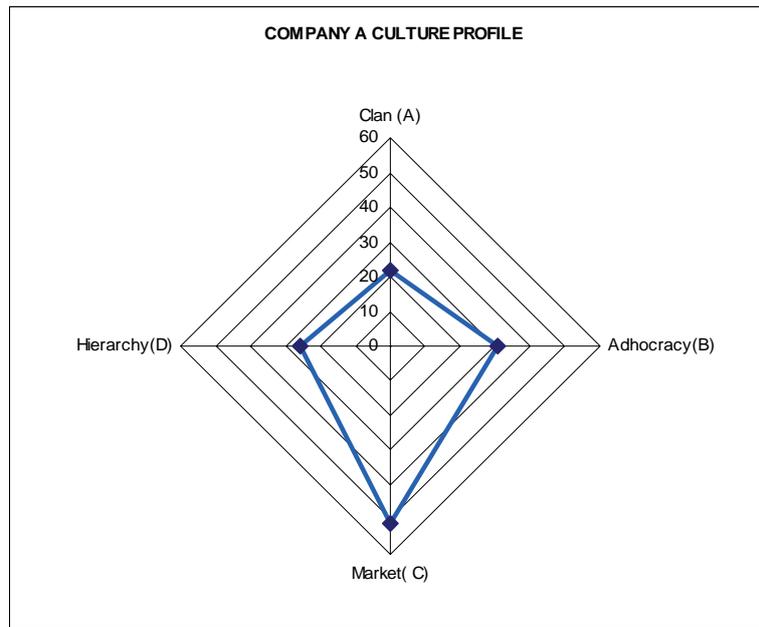
The market culture developed out of a joint response of employees to the market threats. The negative nature of most relationships is difficult to explain.

Table 5

CULTURE TYPES / ENABLERS	1. Clan	2. Adhocracy	3. Market	4. Hierarchy	F	p	R^2
1. Intention	β_{11}: -8.0	β_{12}: -11.0	β_{13}: -16.0	β_{14}: -5.0	1.183	0.460	0.61
2. Autonomy	β_{21}: -3.5	β_{22}: -4.9	β_{23}: -7.9	β_{24}: -2.1	3.035	0.194	0.54
3. Fluctuation & creative chaos	β_{31}: 5.98	β_{32}: 7.98	β_{33}: 12.1	β_{34}: 4.58	1.078	0.495	0.495
4. Redundancy	β_{41}: -6.1	β_{42}: -8.9	β_{43}: -13.0	β_{44}: -4.6	0.405	0.799	0.350
5. Requisite variety	β_{51}: -7.1	β_{52}: -9.8	β_{53}: -15.0	β_{54}: -5.0	2.111	0.283	0.738
6. "Ba"	β_{61}: -2.1	β_{62}: -2.3	β_{63}: -4.2	β_{64}: -0.9	0.283	0.872	0.274

**3.6.3 Company B: relationship between organisational culture types and knowledge creation enablers**

Company B is a competitive participant in the market of providing specialised business solutions. The company exhibits a clan culture (*Fig.19*) and the hierarchy culture has the lowest strength.

Fig.19

COMPANY B CULTURE PROFILE
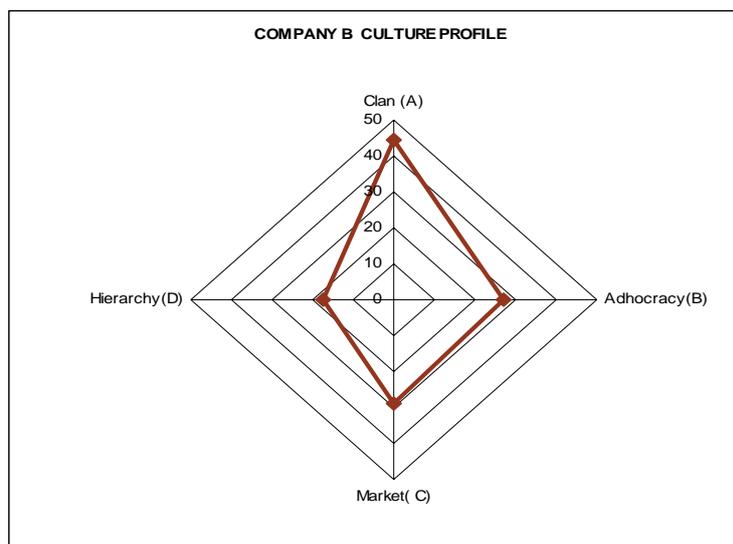
The clan culture is in line with what they want to achieve, providing unique solutions that are developed from a multi-skilled environment. The relationships between knowledge creation enablers and organisational culture are generally positive in nature, but not very strong with the exception of fluctuation and creative chaos (see Table 6). Fluctuation and creative chaos as a knowledge creation enabler shows a significant relationship with organisational culture types with a *p*-value of 0.018 and R^2 of 0.551, which indicates 50% of variance from unknown sources. Most relationships between organisational culture types and knowledge creation enablers are positive except requisite variety and "*ba*". These relationships do not show any dependency as p-values are greater than 0.05.

Table 6

CULTURE TYPES / ENABLERS	1. Clan	2. Adhocracy	3. Market	4. Hierarchy	F	p	R^2
1. Intention	β_{11}: 1.98	β_{12}: 1.49	β_{13}: 1.74	β_{14}: 1.21	0.183	0.943	0.050
2. Autonomy	β_{21}: 1.81	β_{22}: 0.994	β_{23}: 1.58	β_{24}: 0.933	0.539	0.710	0.133
3. Fluctuation & creative chaos	β_{31}: 3.40	β_{32}: 2.59	β_{33}: 3.33	β_{34}: 2.24	4.300	0.018	0.551
4. Redundancy	β_{41}: 1.45	β_{42}: 1.18	β_{43}: 1.71	β_{44}: 0.952	1.870	0.171	0.35
5. Requisite variety	β_{51}: -0.83	β_{52}: -0.43	β_{53}: -0.87	β_{54}: -0.63	0.624	0.653	0.151
6. "Ba"	β_{61}: -1.20	β_{62}: -0.14	β_{63}: -0.70	β_{64}: -1.10	1.151	0.373	0.325

3.7 Summary

To summarize: the Organisational Culture Assessment Instrument (OCAI) of Cameron and Quinn showed that Company A has market culture as the dominant culture type. This fits the description of a company that competes on branded products. Company B has a clan culture type as dominant, which in turn is appropriate for an organisation where people treat each other almost like members of a family.

The analysis of the relationships between organisational cultures and knowledge creation enablers in these organisations indicated that only requisite variety has dependency on all culture types with clan and market culture types having a particularly strong showing. The relationship is negative, which means that as a particular culture type measures stronger, the requisite variety diminishes and 50% of this dependency is from unknown sources. The relationship between organisational culture and knowledge enablers for Company A did not show any dependency of enablers on any of the culture types. For Company B, fluctuation and creative chaos has positive dependency on all culture types and again 50% of this dependency was from unknown sources.

Chapter 4
Outcome, limitation and recommendation

4.1 Outcome of the main hypothesis

The main hypothesis was that competitive organisation knowledge creation enablers are supported by an appropriate organisation culture. Both organisations surveyed have predominant cultures. The organisation that participates in a market that competes on brands has a dominant market which is appropriate for branded products that compete on retailers' shelves where consumers practice the freedom of choice. Both requisite variety and creative chaos and autonomy are knowledge creation enablers that are supported by the market culture. Autonomy is exercised in the form of autonomous work teams which is a strong element of world class principles to drive efficiency and reduce uncertainty. The organisation that competes in a market of business solutions where branding is not an important part of marketing the product, has dominant clan culture. The organisation is of medium size and competes on providing unique solutions to business. People work as teams and feel like part of a family. Knowledge creation enablers, redundancy and *ba* are poor. This can be explained by the fact that in the West redundancy is viewed as waste. *Ba* is a Japanese concept that has not taken hold in Western organisations. Redundancy and *ba* are not significant for knowledge creation. In this study, adhocracy and hierarchy are not good cultures to support knowledge creation. On one to one bases, the nature and the magnitude of relationships between culture types and knowledge creation enablers were inconclusive due to the weakness of dependencies between the two variables.

4.2 Outcome of the major sub-hypothesis

The major sub-hypothesis was saying market culture supports all knowledge creation enablers. From this study, it is market and clan culture that support knowledge creation. An organisation does not need to have all knowledge creation enablers to be competitive when clan and market cultures are dominant. Western organisations which take redundancy as waste and *ba* as a poorly understood Japanese concept can still compete. An appropriate culture combined with certain enablers is adequate to participate in a competitive market.

In a study elsewhere which looked at what type of organisational culture would be appropriate for tacit focus knowledge management strategy, it was found that clan and adhocracy culture were significantly important for the support of tacit knowledge.[270] A clan culture is supportive of tacit knowledge and tacit knowledge is the bases of innovation[271]. Tacit knowledge and the clan culture are supportive of the first step of knowledge creation which is socialisation. It can be concluded that both clan and market culture are supportive of knowledge creation, hence innovation and competitiveness of companies.

4.3 Limitation

The study selected middle management in competitive industry. The observations may change if lower management or top management is selected for the study. The selection of middle management to follow Nonaka and Takeuchi middle-top-down management model limits the size of the sample which is a disadvantage when variation in responses is high. This affects the significance and the reliability of results. Redundancy and *ba* may be irrelevant as knowledge creation enablers in the Western culture which may be the reason for Japanese companies to compete better than the Western companies. This study could not assist with the clarification of this issue. The study excluded organisations that are not participants in highly competitive markets.

4.4 Recommendation

For an internationally accepted conclusion, a study like this should be undertaken in different international companies operating in different countries to prove that clan and market cultures are supportive of knowledge creation. It is also important to prove or disprove that not all knowledge creation enablers need to be present for an organisation to be competitive. It is also important to establish the role of the hypertext organisation in a further study.

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[270] Keskin et.al. 2005

[271] Von Krogh, Ichijo & Nonaka 2000

5. Bibliography

BAKER, KA. 2002. Organisational Culture. Office of Science, U.S. Department of Energy. www.wren-network.net/resources/benchmark/11-OrganisationalCulture.pdf on 22 August 2007.

BELBALY, N; BENBY, A H and MEISSONIER, R. 2007. An empirical investigation of the customer knowledge creation impact on NPD Performance. *Proceedings of the 40ᵗʰ Hawaii International Conference on System Sciences*.

BERRIO, AA. 2003. An Organisational Culture Assessment Using the Competing Values Framework: A Profile of Ohio State University Extension: *Journal of Extension,* 3(2).

BOISOT, MH. 1998. *Knowledge Assets: Securing Competitive Advantage in the Information Economy*. Oxford University Press.

CAMERON, KS and QUINN, RE. 2006. *Diagnosing and Changing Organisational Culture*. Jossey- Bass.

CASTELLS, M. 2000. *The Rise of the Network Society*. Blackwell Publishing.

CHOO, CW. 2002. *Sensemaking, Knowledge Creation, and Decision Making: Organisational Knowing as Emergent Strategy*. Oxford University Press.

CHOU, SW and TSAI, YH. 2004. Knowledge Creation: Individual and Organisational Perspectives. *Journal of Information Science*, 30(3), 205-218.

COOK, SDN and BROWN, JS. 1999. Bridging Epistemologies: The generative Dance between Organisational Knowledge and Organisational Knowing. *Organisation Science* 10 (4), 381-400. Mimeo, Palo Alto, CA: Xerox Parc.

CROSS, R; PARKER, A; PRUSAK, L and BORGATTI, SP. 2001. Knowing What We Know: Supporting Knowledge Creation and Sharing in Social Networks. *Organisational Dynamics*, 30(2), pp.100-120.

CROSSAN, MM; LANE, HW and WHITE, RE. 1999. An Organisational Learning Framework: From Intuition to Institution. *The Academy of Management Review* 24(3), 522-537.

DAVENPORT, TH and PRUSAK, L. 1998. *Working Knowledge: How organisations manage what they know*. Harvard Business Press.

GANESH, DB. 2000. Information dynamics, learning and knowledge creation in organisations. *The learning organisation* 7(2), 89-99

GRAY, JH and DENSTEN, IL. 2004. Towards an Integrative Model of Organisational Culture and Knowledge Management. *International Journal of Organisational Behaviour*. Volume 9(2), 594-603.

GUILHON, B. 2001. Technology and markets for knowledge: knowledge creation, diffusion, and exchange within a growing economy: *Economics of Science, technology, and innovation* (22).

GURTEEN, D. 1999. Creating a Knowledge Sharing Culture. *Journal of Knowledge Management* 2(5).

HEMMECKEA, J and STARY, C. 2004. *A Framework for the Externalization of Tacit Knowledge Embedding Repertory Grids*. www.hemmecke.de/jeannette/material/Paper_OKLC2004_HemmeckeStary.pdf on 28 April 2008.

JANZ, BP and PRASARNPHANICH, P. 2003.Understanding the Antecedents of Effective Knowledge Management: The Importance of a Knowledge-Centered Culture. *Decision Sciences* 34 (2), 351–384

KARPPINEN, M. 2006. *Cultural Patterns of Knowledge Creation*. Helsinki School of Economics. http://hsepubl.lib.hse.fi/pdf/diss/a271.pdf on 17 Apr 2007

KESKIN, H; AKGUN, AE and IMAMOGLU, SZ. 2005. The Relationship between Adhocracy and Clan Cultures and Tacit Oriented KM Strategy. *Journal of Transnational Management* 10 (3), 39-53.

Knowledge Creation and Transfer in a Cross-Cultural Context - The Case of Tyco Flow Control Japan Global knowledge management. www.ctw-congress.de/ifsam/download/track_3/pap00554_001.pdf on 14 Aug 2007.

KURTZ, F and SNOWDEN, DJ. 2007. Bramble Bushes in a Thicket - Narrative and the intangibles of learning networks. Published in a book by Gibbert, Michel, Durand & Thomas 2007 *Strategic Networks: Learning to Compete* Blackwell Publishing.

LADD, DA and HEMINGER, AR. 2002. An Investigation of Organisational Culture Factors That May Influence Knowledge Transfer. *Proceedings of the 36th Hawaii International Conference on System Sciences.*

LANDRY JR. 2000. Playing at Learning: Why Knowledge Creation Needs Fun. *Proceedings of the 33rd Hawaii International Conference on System Sciences*, 3(3), 1-7.

LAWRENCE, TB; MAUWS, MK and KLEYSEN, DBR. 2005. The Politics of Organisational Learning: Integrating Power into the 4I Framework. *Academy of Management Review* 30(1), 180-191

LINCOLN, JR and GUILLOT, D. 2006. *Social Theory at Work*. Oxford, UK: Oxford University Press.

LOPEZ, S; MUINA, G and de CASTRO, M. 2002. The Knowledge Creation Process: The critical examination of SECI model. *The third European Conference of Organisational Knowledge, Learning and Capabilities* www.alba.edu.gr/OKLC2002/Proceedings/pdf-files/D151.pdf on 2 September 2007

MEYER, B and MEDENI, T. 2005. Knowledge creation and systems research: implications from memory science. *The second symposium on knowledge management and strategic creation,* 114 - 116

MITCHELL, R and NICHOLAS, S 2006. Knowledge Creation in Groups: The Value of Cognitive Diversity, Transactive Memory and Open- mindedness Norm. *The Electronic Journal of Knowledge Management* 4(1), 67-74.

MORGAN, G. 2006. *Images of Organisation*. Sage Publishers.

NISBETT, R. 2003. *The Geography of Thought.* Free Press.

NONAKA, I and TOYAMA, R. 2007. Why do firms differ: The theory of knowledge creating firm. *Knowledge Management in Organisations.* Oxford University Press.

NONAKA, I and TAKEUCHI, H. 1995. *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press US.

NONAKA, I and TEECE, DJ. 2001. *Managing Industrial Knowledge: Creation, Transfer and Utilization*. Sage Publishing.

NONAKA, I. 1994. A Dynamic Theory of Organisational Knowledge Creation: *Organisational Science* 5(1).

NONAKA, I. Powerpoint presentation available at: http://project.jica.go.jp/indonasia/0061565EO/05/pdf/01_02.pdf on 12 March 2008.

NONAKA,I and NISHIGUCHI, T. 2001. *Knowledge Emergence: Social, Technical, and Evolutionary Dimensions of Knowledge Creation*. Oxford University Press.

OINAS-KUKKONEN, H. 2000. *Seven Cs of Knowledge Creation and Management*. http://www.cream.oulu.fi/english/documents/Harri_Oinas-Kukkonen_artikkeli.pdf on 12 March 2008.

RAFAELI, A and WORLINE, M. 1999. *Symbols of organisational culture*. iew3.technion.ac.il/Home/Users/anatr/symbol.html on 10 September 2007.

SANCHEZ, R. 2001. *"Tacit Knowledge" versus "Explicit Knowledge:" Approaches to Knowledge Management Practice*. Department of Industrial Economics and Strategy Copenhagen Business School. www.knowledgeboard.com/download/3512/Tacit-vs-Explicit.pdf on 11 September 2007

SANCHEZ, R 2001. *Managing knowledge into competence: The five learning cycles of competent organisation.* Oxford University Press

SCHARMER, CO. 2001, *Dialogue on Leadership: Building ba to enhance knowledge creation*. www.dialogonleadership.org/Nonaka_et_al.html on 26 April 2008.

SCHEIN, E.1992. *Three levels of culture: Organisational culture and leadership.* Jossey – Bass.

SENGE, P; ROBERTS, C; ROSS,R; SMITH, B and KLEINER, A. 1994. *The Fifth Discipline Fieldbook. Strategies and Tools for Building a Learning Organisation.* Nicholas Brealey.

SLATER, SF and NARVER, JC. 1995. Market orientation and learning organisation. *Journal of marketing*, 59, 63-74.

SMITH, HA and McKEEN, JD 2003. *Instilling a knowledge sharing culture. Queens University School of Business Ontario.* http://business.queensu.ac/centres/monieson/working/working_03-11.pdf on 10 Sep 2007.

STACEY, RD. 2001. *Complex response processes in organisations*. Routledge.

STEVENS, OJ. 1989. *Organisational Culture: Concepts, Definitions, and a Typology: The organisational culture perspective.* Chicago Dorsey Press.

TAO, JS. 2004. *Leadership in Action*, 24(5), Jossey-Bass.

TSOUKAS, H. 2005. *How knowledge is created in organisations? A dialogical approach.* Judge Business School Cambridge: www.sussex.ac.uk/spru/documents/how is new knowledge created in organisations.ppt on 17 October 2007.

TSOUKAS, H. 2006. *Complex Knowledge: Studies in Organisational Epistemology*. Oxford University Press.

TUOMI, I. *Organizing for strategic knowledge creation.* www.funredes.org/.../participantes/docuparti/Tuomi_Organizing_for_strategic_knowledge_creation.pdf on 14 March 2007

van HEESWIJK, J. 2004. Aligning your Knowledge Management Strategy with your Organisational Culture: Building a Knowledge Enterprise. *Knowledge Management Asia* November 2004.

VELISKAKI BC. 2003. Knowledge Creation in Virtual Teams. *The Learning Conference 2003.* University of London, 15-18 July 2003.

VERKKUNEN, J and AHONEN, H. 2004. Transforming learning and knowledge creation on the shop floor: *International Journal of Human Resources and Management* 4(1)

VON KROGH, G; ICHIJO, K and NONAKA, I. 2000. *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation.* Oxford University Press.

WANG, BJ and WANG, DS. 2004. Organisational knowledge creation capability in Taiwan's manufacturing industry: *Int. J. Manufacturing Technology and Management*, 6 (1&2).

WEICK, KE. 1995. Sensemaking in Organisations. SAGE Publications.

WIIG, K. 1993. *Knowledge Management Foundations: Thinking about Thinking – How Organisations Create, Represent and Use Knowledge*. Schema Press.

ZAKE, MH. 1999. Developing a knowledge strategy. *California Management Review* 41(3), 125-145.

6. Annexure

Research questionnaire

_____

Name: _____   **eMail address:** _____

Work experience (years): _____   **Telephone:** _____

Years in current position: _____   **Company Name:** _____

_____

PART ONE OF THE QUESTIONNNAIRE

Please use the ranking below to indicate disagreement / agreement with the following statements by making a cross (X) on an appropriate number:

1= disagree strongly, **2** = disagree, **3** = agree, **4** = agree strongly

1. Rank the following statements concerning knowledge in your organisation

A. The company vision is aligned with desired level of competitiveness	1	2	3	4
B. The company has a working innovation management system	1	2	3	4
C. The company has a successful knowledge management system	1	2	3	4
D. Innovation processes are aligned with knowledge management efforts	1	2	3	4

2. Rank the following statements concerning work teams in your organisation

A. Work teams are autonomous	1	2	3	4
B. Work teams are motivated to perform their duties	1	2	3	4
C. Work teams performance meets company objectives	1	2	3	4
D. Work teams have high morale	1	2	3	4

3. Rank the following statements concerning work environment in your organisation

A. Management understands market environment	1	2	3	4
B. Management copes with fluctuation in business environment	1	2	3	4
C. The company experiences a higher rate of internal changes	1	2	3	4
D. The company is a competitive participants in the market	1	2	3	4

4. Rank the following statements concerning organisational information, business activities, and management responsibilities.

	1	2	3	4
A. There is generally an overlap in company information	1	2	3	4
B. There is generally an overlap in business activities	1	2	3	4
C. The is generally an overlap of management responsibilities	1	2	3	4
D. The company promotes job rotation	1	2	3	4
E. The company business information is accessible to all employees	1	2	3	4
F. The exchange of company information is non-hierarchal	1	2	3	4

5. Rank the following statements regarding organisations capability to cope with business environment

	1	2	3	4
A. There is speedy of access to company information	1	2	3	4
B. There is a system to capture knowledge	1	2	3	4
C. Knowledge transfer is effective	1	2	3	4
D. Knowledge sharing is effective	1	2	3	4

6. Rank the following statements regarding the availability of avenues to debate company business issues, share knowledge and assist each other to grow knowledge

	1	2	3	4
A. There are avenues to debate company business issues	1	2	3	4
B. There are avenues to share experience and transfer skills	1	2	3	4
C. There are avenues to critically debate other employees' contribution to company performance.	1	2	3	4
D. There are avenues to contextualize business activities	1	2	3	4

PART TWO OF THE QUESTIONNAIRE

This part of the questionnaire consists of six items. Each item has four alternatives. Divide 100 points among these four alternatives, depending on the extent to which each alternative is similar to your own organisation. Give a higher number of points to the alternative that is most similar to your organisation. For example, on item 1, if you think alternative A is very similar to your own organisation, alternatives B and C are somewhat similar, and alternative D is hardly similar at all, you might give 55 points to A, 20 points each to B and C, and 5 points to D. Just be sure that your total equals 100 points for each item.

1. *Dominant characteristics of the organisation*

Score

A. The organisation is a very personal place. It is like and extended family. People seem to share a lot of themselves.	
B. The organisation is very dynamic and entrepreneurial place. People are will to stick their neck out and take risks.	
C. The organisation is very results oriented. A major concern is with getting the job done. People are very competitive and achievement oriented	
D. The organisation is very controlled and structured place. Formal procedures generally govern what people do.	
Total	**100**

2. *Organisational leadership*

Score

A. The leadership in the organisation is generally considered to exemplify mentoring, facilitating, or nurturing.	
B. The leadership in the organisation is generally considered to exemplify entrepreneurship, innovation, or risk taking.	
C. The leadership in the organisation is generally considered to exemplify no nonsense, aggressive, results – oriented focus.	
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth – running efficiency.	
Total	**100**

3. *Management of employees*

Score

A. The management style in the organisation is characterised by teamwork, consensus, and participation.	
B. The management style in the organisation is characterised by individual risk taking, innovation, freedom, and uniqueness.	
C. The management style in the organisation is characterised by hard- driving competitiveness, high demands, and achievement.	
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	
Total	**100**

4. *Organisational Glue*

Score

A. The glue that holds the organisation together is loyalty and mutual trust. Commitment to this organisation runs high.	
B. The glue that holds the organisation together is commitment to innovation and development. There is an emphasis on being on the cutting edge.	
C. The glue that holds the organisation together is the emphasis on achievement and goal accomplishment.	
D. The glue that holds the organisation together is formal rules and policies. Maintaining a smooth running organisation is important.	
Total	**100**

5. *Strategic emphasis*

A. The organisation emphasizes human development. High trust, openness, and participation persist.	
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for new opportunities are valued.	
C. The organisation emphasizes competitive actions and achievement. Hitting stretched targets and winning in the marketplace are dominant	
D. The organisation emphasizes permanence and stability. Efficiency, control, and smooth operations are important.	
Total	**100**

6. *Criteria of Success*

A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	
B. The organisation defines success on the basis of having the most unique or newest products. It is a product leader and innovator.	
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is the key.	
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production are critical.	
Total	**100**