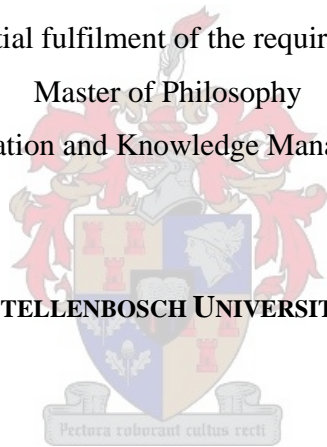# Organisational Learning and Innovation

The study of Enablers and Relations

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Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly or otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: 18 November 2008

Opsomming

In die vinnig veranderde omgewing van vandag is organisasies geneig om hul strategie te belyn, om sodoende vinniger te kan aanpas by veranderde omstandighede. Dit is belangrik vir organisasies om sodoende kompeterend te kan bly in die mark. Die bestuur van organisasies toon gevolglik meer belangstelling in konsepte soos organisasieleer en innovasie. Die konsepte word gesien as bydraend tot die organisasie se sukses. Geskiedenis het egter bewys dat dit nie noodwendig waar is nie. Dit het daartoe gelei dat die doel en toepassing van organisasieleer- en innovasiekonsepte soms onduidelik is. In die studie is gepoog om die konsepsionele onduidelikhede te ondersoek met die oog daarop om te bepaal of dit moontlik is om 'n groter mate van duidelikheid te kon kry. Die probleemstelling word hoofsaaklik in hoofstuk een bespreek. Die tweede en derde hoofstuk poog om die konsepte van organisasieleer en innovasie te bestudeer.

Om die konsep van organisasieleer beter te verstaan is verwante konsepte soos organisasies, individuele leer, kennis, kennisbestuur en veranderingbestuur bestudeer. Die fokus bly egter nog steeds op organisasieleer. Om uit te brei op die konsep van organisasieleer, is die organisasieleersiklus van spesifieke belang sowel as die karaktertrekke van organisasieleer. Aspekte wat as beperkings gesien word vir organisasieleer is bestudeer en gevolglik kon goeie teoretiese standpunte weergegee word rakende organisasieleer. Aspekte wat na vore kom, is die feit dat sekere attribute se teenwoordigheid bydraend kan wees vir organisasieleer, waarvan organisasiestruktuur en organisasiekultuur uitstaan. Sekere struikelblokke bestaan wat kan verhoed dat organisasieleer plaasvind. Die konsep van individuele leer as 'n moontlike vereiste vir organisasieleer het ook na vore gekom.

In hoofstuk drie is 'n soortgelyke benadering gevolg met die konsep van innovasie. Die karaktertrekke van die individu is belangrik, nie net om innoverend te wees nie, maar ook om aanpasbaar te wees. Dit is dan ook by innovasie waar die konsep van veranderingsbestuur 'n belangrike rol speel, asook die organisasiestruktuur wat benodig word.

Die konsepte is afsonderlik ondersoek en in die vierde hoofstuk is gepoog om die twee konsepte met mekaar te vergelyk om moontlike ooreenkomste en verskille by wyse van analise te kan identifiseer. Sodoende is raakpunte geïdentifiseer asook moontlike verhoudings vanaf 'n stelseldenke benadering. In hierdie hoofstuk is die attribute wat die konsepte ondersteun, asook die aspekte wat gesien word as struikelblokke, teenoor mekaar gelys.

Hoofstuk vyf som die belangrikste aspekte op wat geïdentifiseer is vir organisasieleer en innovasie. Die aspekte wat sekerlik die meeste na vore kom is die struktuur van 'n organisasie wat 'n definitiewe invloed het op die sukses van beide organisasieleer en innovasie. Struktuur van die organisasie word egter gebaseer op die strategie van die organisasie en die laaste wat gemeld moet word is die bydraende aspek, naamlik die kultuur van die organisasie. Die studie het duidelike ooreenkomste aangedui asook verwantskappe, maar met enige leerproses is daar altyd vrae en laat die studie die geleentheid vir verdere navorsing op die impak van die tekort van tyd op die organisasieleer en/of innovasie prosesse met betrekking tot kennisbestuur.

Abstract

In the fast-changing environment of today, organisations have a tendency to change their strategy to be able to adapt to changing circumstances. It has become increasingly important for organisations to remain competitive in the marketplace. The management of organisations is therefore showing more interest in concepts such as organisational learning and innovation. These concepts are seen as contributing factors to the success of the organisation. History has proven, however, that this is not always true. The infrequent success of applying these concepts has resulted in the approach towards organisational learning and innovation concepts being vague. This study aimed to examine the conceptual ambiguity in order to arrive at a better understanding. The problem statement is examined in some detail in Chapter One of this study. The second and third chapters aim to investigate the concepts of organisational learning and innovation separately.

To understand the concept of organisational learning better, other related concepts such as organisation, individual learning, knowledge, knowledge management and change management were studied. The focus, however, remained on organisational learning. To elaborate on the concept of organisational learning, the organisational learning cycle was of specific importance together with the characteristics of organisational learning. Aspects that are seen as restrictions to organisational learning were studied and consequently strong theoretical arguments could be provided regarding organisational learning. Aspects that were prominent were the notion that the presence of certain attributes can influence organisational learning, of which organisational structure and organisational culture stand out. There were also certain stumbling blocks that might prevent organisational learning, and individual learning was identified as essential for organisational learning.

In Chapter Three a similar approach was followed regarding the concept of innovation. The characteristics of the individual are as important for the sake of innovation as the individual's tolerance of change. The concepts of change management and structure of the organisation are important to allow for innovation to take place.

These concepts were studied separately and in Chapter Four the aim was to compare the two concepts to determine any possible similarities and differences. By doing this, points of correlation as well as possible relations in terms of a systems approach were identified. In this chapter the attributes that support the concepts were listed along with aspects that are seen as stumbling blocks.

In Chapter Five the most important aspects relating to organisational learning and innovation are summarised. The one prominent aspect is the impact that the structure of an organisation has on the success of both organisational learning and innovation. The structure of an organisation, however, is based on the strategy of the organisation. The last contributing aspect that needs to be mentioned is the culture of the organisation. The study has indicated clear similarities as well as relations between the concepts, but as with any learning process there are always questions and therefore the study points towards further research. The research can be extended to determine the impact of the shortage of time on organisational learning and/or innovation processes in terms of knowledge management.

Acknowledgements

The research was made possible through the contribution of the following individuals:

- My parents and specifically my father, Albert Prinsloo senior, who is my inspiration;

- My wife, Christina Prinsloo, who provided encouragement and support;

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Table of Contents

Figures and Tables

List of Figures

List of Tables

Chapter 1

Research Problem

1.   Introduction: Research problem

Organisational learning and *innovation* are terms used together when discussing theories of the emerging organisation. Such organisations tend to move away from the traditional type, which was based on strong rules and authorities with defined roles and job descriptions, towards a more open and less rule-based organisation. This trend allows for theories such as organisational learning and innovation to become more popular. Authors such as Senge and Dixon have explored and promoted concepts such as action learning, systems thinking and communicative action in developing the learning organisation. Along with authors such as Batten, Bertuglia, Martellato and Occelli, King and Anderson claimed that learning is a central element in enabling innovation. The managements of organisations showed an immediate interest in these concepts and started implementing them as part of their strategies. However, these are still different concepts and the implementation of one or some of these concepts in an organisation's strategies does not necessarily result in an innovative or learning organisation. The organisational leaders are faced with these challenges when applying business strategies that align innovation and organisational learning. As organisations embark on learning and innovation strategies, their resulting conceptual frameworks may be hazy. This study aims to provide some clarity. This will be done by following a theoretical approach to identify the interconnected influences. These influences can be relations that enable or inhibit either organisational learning or innovation, or both.

1.1.   Background: The concept of innovation

Innovation is one of the most significant strategic approaches an organisation can embark on to gain a competitive advantage. To be able to be innovative, organisations

need to be adaptable to accommodate the constant changes in the environment. Innovation itself can be defined in different ways. Some organisations see innovation as part of their continuous improvement of business processes and entrepreneurial culture, while other organisations use innovation to be leaders in a specific field. No matter what approach is followed by an organisation, to be able to change and align strategy quickly to the changing macro-environments, the organisation needs to be more adaptive to survive or to remain ahead of competitors. The rate of change in the world is continually increasing, which is making it more difficult for organisations to adapt to changing environments rapidly. One organisation might decide to follow an innovation strategy in order to develop a competitive advantage; another organisation's strategy might be to adopt an innovation strategy to complement their current strategy. This is an indication that, although an innovation strategy might be followed, the reasons for it and the approaches of the organisations will differ.

1.2.   Background: The concept of organisational learning

The organisational learning concept has become part of the strategic approach of many organisations in recent years. Some organisations might follow the approach to improve their capability to be more innovative. Other organisations might follow the approach to improve, hoping that this will lead to greater profitability. The reason, therefore, seems to be the notion that, for an organisation to be more innovative or more profitable, organisational knowledge must be expanded. This leads to an organisation becoming either a learning organisation or an innovative organisation, or a combination of the two, without clearly understanding the difference. The resulting conceptual frameworks are unclear and the envisaged benefit is not realised.

Throughout this research study, the term *organisational learning* will be used; occasionally it will be necessary also to refer to the *learning organisation*. The learning organisation in this context refers to an organisation that has applied the principles of organisational learning. Organisational learning itself as a concept cannot stand on its own: it can only be applied with an understanding of certain theoretical concepts, of which innovation has already been mentioned. Examples of

such concepts are: organisational culture, knowledge management, change management, etc. Organisational learning cannot be interpreted or applied without understanding the cognitive processes of knowledge. Knowledge[1] as the result of learning allows for the possibility of analysing the concept in reverse and tracing the origin of knowledge. In the field of knowledge, two types can be identified: tacit and explicit.[2]

The work to follow will elaborate on these concepts by explaining and elaborating on them to reach a better understanding. Through the study of these concepts certain arguments might be strengthened or a contrary understanding might be reached. Specific attention will be given to organisational learning and innovation as the primary focus areas.

1.3.   Research methodology

The purpose of this thesis is to investigate the conceptual uncertainty accompanying these theories to determine whether it is possible to provide more clarity. This will be done through a deductive research methodology in which qualitative methods will be applied. The research problem itself relates to theories in which the concepts are characterised by uncertainty. The theoretical research will allow for documenting the theories of different authors in order to examine and analyse them at a conceptual level. In this way, specific points of correlation between the theories might be identified and/or points of clear differentiation discovered, as well as any relations that might exist between organisational learning and innovation. The research will be limited to intra-organisational learning to allow for a more focused approach. The

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[1] NM Dixon, 2nd edition, 1999. *Knowledge is the result of learning and is ephemeral, constantly needing to be revised and updated* p. 1.

[2] Jonathan Hey, 2004. *Tacit knowledge as defined by Polanyi (1962, 1967) is knowledge that is hard to encode and communicate. (Jonathan Hey, 2004: 10). Towards the other end of the scale, explicit knowledge is exactly that kind of knowledge that can be encoded and is transmittable in language* p. 10.

study will also exclude research on innovative business models. The primary sources for researching the concepts of learning and related concepts will be the works of NM Dixon and PM Senge. Specific emphasis will also be placed on the work of J Sundbo, and N King and N Anderson relating to innovation.

1.4.   Contribution of study

If, in a perfect world, all the concepts of organisational learning are applied, will innovation then follow? This is a question organisational leaders are faced with when applying business strategies that align innovation and organisational learning.   The overall objective of this study is to determine whether there are any specific relationships between organisational learning and innovation. The significance of this research lies in its possible contribution towards bringing clarity at a conceptual level and in offering guidelines regarding the consequences of these findings for active knowledge management.   Therefore the contribution of this study is to build on knowledge from a qualitative research perspective; the diffusion of uncertainty will allow business leaders better insight to enable them to apply the theories and concepts optimally.

1.5.   Outline of thesis

This chapter (Chapter 1) introduces the preliminary material of the research study and set out its envisaged purpose. This chapter also delimits the research study and provides an overview of the important theoretical concepts that will be studied.

Chapter 2 will explore the concepts that need to be understood as part of a holistic approach to organisational learning. To be able to achieve this, theoretical arguments and theories of authors seen as influential in the field of organisational learning will be studied. These include authors such as NM Dixon (who also refers to the work of Schein) and PM Senge, who have written various books on the subject of learning and related concepts. To support the concepts reference will be made to the work of other authors. As required during the study, concepts that might or might not have a relationship with organisational learning will be elaborated on to clarify any

misconceptions. The conceptions referred to include, rightly or wrongly, the assumption that organisational learning is a requirement for innovation to take place.

Chapter 3 elaborates on the concept of innovation, exploring contextual meaning and purpose, relations, attributes, enablers and restrictions, thereby allowing the reader to have a better understanding of innovation through the views of different authors specialising in the field. Various authors regarded as experts in the field will be referred to, but specific emphasis will be placed on the work of J Sundbo, and N King and N Anderson. The work of other authors such as Franklin and Starkey, Tempest and McKinlay will be investigated to complement the work of King and Anderson.

The objective of Chapter 4 will be to explore the possibility of the existence of a relationship between the concept of organisational learning and the concept of innovation. This exploration will be conducted on a conceptual level, analysing and evaluating the kind of relations that exist between the two concepts, or the lack thereof. The basis of the analytical study will be the theoretical work of authors in the fields of organisational learning and innovation. The analytical study will focus on comparing the viewpoints of these authors, identifying points of agreement on aspects related to the concepts and areas where distinct differences exist. By following this approach, the study will aim to highlight information that might give some clarification on assumptions about the concepts of organisational learning and innovation.

Chapter 5 will conclude the research study by highlighting aspects of note and areas for future research in the field. The enormous scope of the literature on the concepts does not allow for documenting all the assumptions and results. Therefore the emphasis is on the most essential as perceived by the different authors with the hope of providing clarity.

Chapter 2

Organisational Learning

2.   Introduction: Organisational learning

As indicated in the Introduction, in Chapter 1 the primary focus was on an exploration of the concept of organisational learning. The prologue to the chapter discussed the conceptual definitions, leading to more elaborate explorations of the theories of different authors on organisational learning.

2.1.   Epistemology: Theory of knowledge

Epistemology[3] refers to the theory of knowledge as a subset of philosophy. Using this as the basis, knowledge can be explained for the purposes of this study without giving a detailed analysis of the theoretical concept of knowledge. Authors Boisot and Polanyi have made significant contributions to the theoretical study of knowledge, so much so that various theoretical frameworks have been based on their work. The study by these and various other academic researchers has lead to the conclusion that knowledge can be divided into two specific categories or types.

The type of knowledge acquired from observing and experiencing as an individual is referred to as tacit knowledge.[4] Tacit knowledge can then be explained as knowledge

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[3] Encarta Dictionary: English UK. *Epistemology (noun): theory of knowledge, the branch of philosophy that studies the nature of knowledge, in particular its foundations, scope, and validity.*

[4] HE Aldrich and M Ruef, 2nd edition, 2006. *Tacit knowledge refers to learned understanding that is difficult or impossible to verbalize* p. 76.

The authors give credit to Polanyi, Nonaka and Takeuchi as the definition was derived from their work.

imbedded cognitively as conceptual frameworks in the mind of the learner. Tacit knowledge involves intangible aspects such as beliefs, opinions and values.[5]

Explicit knowledge refers to knowledge that has been transformed from a tacit to an explicit format. Explicit knowledge takes on a form that can be taught, read and/or explained. The tacit knowledge has been transferred into the explicit format when, for instance, documenting instructions. A notion to emphasise is that knowledge has some form of relationship with innovation.[6] Knowledge is not restricted to individuals. Organisational knowledge refers to the routines and competencies specific to an organisation.[7] The successful learning organisation can be seen as a knowledge-creating organisation if all other factors are ignored and it is assumed that organisational learning will take place as anticipated,[8] resulting in organisational knowledge.

By implication, Dixon notes that, in order to find a linkage between knowledge, learning and change, knowledge needs to be examined as a whole and not only as a part of the learning cycle.[9] This approach is in line with the conceptual framework of systems thinking.[10]

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[5] Nonaka and Takeuchi, 1995. *It is personal knowledge imbedded in individual experience and involves intangible factors such as personal belief, perspective, and the value system* p. viii

[6] Rene Jorna, 2006. *Innovation as a radical change in, for example, ways of working and coordination and control is bounded by the types of knowledge that are present in an organisational structure* p. 12. Note, however, that the author refers to types of knowledge additional to tacit and explicit knowledge.

[7] HE Aldrich and M Ruef, 2nd edition, 2006. *We define organisational knowledge as the routines and competencies that are specific to an organisational activity system and embedded in its internal selection process* p. 76.

[8] PM Senge, 1990. *Organisations learn only through individuals who learn. Individual learning does not guarantee organisational learning. But without it no organisational learning occurs* p. 139.

[9] NM Dixon, 2nd edition, 1990. *Knowledge that we create through learning allows us to change our environment, whether by reframing it, physically altering it or both. The two factors, learning and*

2.2.   Learning

The mind has a natural ability to learn and therefore humans start learning from a very early age. The human body/mind is able to pick up stimulation from the environment on a continuous basis, allowing for the process of learning. Evidently the human mind acts like a sponge, absorbing information from the environment without out any noticeable effort. The environment acts as the first source from which data are gathered to form the basis for learning. To explore this notion, the example of an infant can be used. Infants do not have the ability to communicate, read, express, examine or analyse objects in a way similar to adults, yet they always surprise us with their first steps. This ability and natural eagerness[11] of the human mind makes it possible for humans to learn, allowing for the infant's first steps. This process of learning can result in pockets of knowledge restricted to the individual.

As organisations consist of individuals, organisations cannot ignore the importance of individual learning and the results thereof (knowledge) as a contribution to the human capital of the organisation. The aim of the study is not to delve into the theories of human capital or into epistemology, but certain points of overlap will be noted. This is to be interpreted in terms of the systems thinking[12] concept, whereby the individual

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change, reinforce each other. The faster the rate of change the more new knowledge we must create to deal with the change; the more knowledge we create the faster we change our world p. 3.

[10] PM Senge, 1990. *Systems thinking is a discipline for seeing the structures that underlie complex situations, and for discerning high- from low-leverage change* p. 69.

[11] PM Senge, 1990. *No one has to teach an infant to learn. In fact, no one has to teach infants anything. They are intrinsically inquisitive, masterful learners who learn to walk, speak and pretty much run their households on their own* p. 4.

[12] PM Senge, 1990. *Systems thinking is a discipline for seeing wholes. It is a framework for seeing interrelationships rather than things, for seeing patterns of change rather than static snapshots* p. 68.

forms part of a system with interrelations to sub-systems. This is important to understand the concept of organisations as systems.[13]

The concept of learning will be elaborated on in the sections that follow to include the related concepts of 'organisations', 'change', 'organisational learning', 'individual learning' and 'knowledge'.

2.3.   Organisation

To allow for the study of organisational learning, the entity of an organisation[14] needs to be explored as a separate concept. An organisation is a number of individuals who have a similar goal in common, a collective meaning[15] that forms the organisation. An organisation can be viewed as socially constructed systems of human activity.[16] Organisations can be separated between profit-orientated organisations and other organisations such as welfare organisations. The fact that some authors refer to organisations as 'social units' or 'social arrangements' supports the notion that organisations can adopt different structures or forms. Therefore, if different organisations exist, it can be argued that the type of organisation might have an

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[13] NM Dixon, 2nd edition, 1999. *If we want organisations to become systems that are able to learn and transform themselves, then these organisations will have to be comprised of subsystems, individuals, who have been enabled to develop more inclusive, integrated and differentiated perspectives* p. xviii.

[14] Stephen P. Robbins, 2003. *An organisation or organisation is a social arrangement which pursues collective goals, which controls its own performance, and which has a boundary separating it from its environment* p. 4.

[15] NM Dixon, 2nd edition, 1999. *Collective meaning is that which the organisation's members hold as common. These are the norms, strategies and assumptions that specify how work gets done and what work is important to do* p. 48.

[16] HE Aldrich and M Ruef, 2nd edition, 2006. *What are organisations? A simple definition is that organisations are goal-directed, boundary-maintaining and socially constructed systems of human activity* p. 4-5.

influence on organisational learning. Another notion is that organisational cultures[17] might differ between types of organisations. The definition of an organisation derived from the definitions of the various authors incorporates only the most prominent elements: an organisation consists of individuals with a common goal or meaning, responsible for different tasks and functions within the organisation.

The leaders responsible for these organisations are the management team. The management team of an organisation is responsible for planning, organising, leading and controlling the functions of the organisation. The management team of the organisation will be depicted in the organisational structure[18] of the organisations. The responsibilities of managers can include the implementing strategies for organisational learning and innovation.

The focus of this research study is more aimed at business-related organisations. This, however, does not mean that the consequent assumptions might not be applicable to all forms of organisations. It is important to understand the organisation as an entity, because the aim of the study is to give some insight into questions that exist in such organisations in respect of the study subject.

2.4.   Change

Change is defined as *making things different*.[19] As change and learning reinforce each other, change cannot be excluded from the research study. Organisational change[20] in

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[17] Stephen P. Robbins, 2003. *A system of shared meaning held by members that distinguishes the organisation from other organisations* p. 525.

[18] Stephen P. Robbins, 2003. *An organisational structure defines how job tasks are formally divided, grouped and coordinated* p. 425.

[19] Stephen P. Robbins, 2003. p. 558.

[20] PJ Smit. GJ de J Cronje, 2nd edition, 1997. *Organisational change can be defined as a process in which an organisation takes on new ideas to become different. The necessity for change may be brought about by factors in the external environment of the business, or within the business itself* p. 260.

particular will be of interest to this study. The process of change can be planned[21] or accidental. In section 2.2 Dixon was quoted as saying that learning and change reinforce each other. Dixon expands on the process of reinforcement between change and learning, indicating that a continuous pattern evolves.[22] The academic question to point out is whether change and innovation can reinforce each other. Planned changes can be deployed to stimulate innovation.[23] Change in an organisation can be perceived in various ways, although research has indicated that most people perceive change negatively[24] and are therefore more likely to have a bad recollection of change. Organisations have therefore deployed change agents[25] to facilitate the process of change within the organisation. Resistance to change could have an effect on the relationships that exist between learning and change. The extent and the actual impact should become progressively clearer towards the end of the study. Resistance will more likely have a non-constructive impact on change in organisations. Can the opposite leverage be interpreted as also having an impact on change? The opposite leverage, metaphorically expressed, will take on the format of knowledge. The knowledge that is created in the organisation through the process of learning allows

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[21] Stephen P. Robbins, 2003. *Planned change is change activities that are intentional and goal orientated* p. 558.

[22] NM Dixon, 2nd edition, 1990. *Organisational learning can lead to change which can lead to more organisational learning* p. 3.

[23] Stephen P. Robbins, 2003. *Efforts to stimulate innovation, empower employees and introduce work teams are examples of planned-change activities directed at responding to change in the environment* p. 558.

[24] Stephen P. Robbins, 2003. *One of the most well-documented findings from studies of individual and organisational behavior is that organisations and their members resist change* p. 558.

[25] Stephen P. Robbins, 2003. *Persons who act as catalysts and assume the responsibility for managing change activities* p. 558.

for the organisation to change.[26] The purpose of this research study is not to explore the notion of change in detail, but through the study it should be possible to recognise the relationship of change to both organisational learning and innovation, and the role it plays, if any, in both.

2.5.   Individual learning

Learning[27] is the basis for obtaining knowledge.[28] Defined briefly, learning is: *The acquisition of knowledge or skill* (Encarta Dictionary: English UK). The conceptual term 'learning" has to some extent been discussed in paragraph 2.2 in the research study under the heading 'Learning' and will now be elaborated on in terms of individual learning. The individual, seen in this context, will be an individual in an organisation. Albeit the fact that an organisation is an entity on its own, an organisation still consists of individuals. To obtain a better understanding of how organisations learn, it will be useful to have a better understanding of learning at the individual level.   Individuals can use different techniques[29] to obtain information from their environment. It is then possible to argue that the methods applied by individuals to learn will have an influence on how knowledge will be transferred and

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[26] NM Dixon, 2nd edition, 1990. *Knowledge that we create through learning allows us to change our environment, whether by reframing it, physically altering it or both* p. 3.

[27] Stephen P. Robbins, 2003. *Any relatively permanent change in behavior that occurs as a result of experience* p. 43.

[28] NM Dixon, 2nd edition, 1999. *Knowledge is the result of learning and is ephemeral, constantly needing to be revised and updated. Learning is 'sensemaking': it is the process that leads to knowledge* p. 1.

[29] NM Dixon, 2nd edition, 1999. *…three ways that we as individuals come to know something: Direct experience (the receipt of sensory data such as color, sound and pain), verbal transmission of information (ideas voiced by others, reports, books, formulas etc) and the recognizing of what we already know into a new configuration* p. 15.

acted on. For one person it may be easier to learn if the knowledge is in an explicit format rather than through tacit knowledge transfer. There are, however, advantages to both: knowledge obtained in the tacit format tends to be of a more permanent nature compared to knowledge obtained in an explicit format. Explicit knowledge, owing to its codification, tends to be transferred more easily between individuals.

An additional notion to the above is that, during the learning process, more questions might be raised. These questions stimulate the individual's inquisitiveness so that the individual strives to obtain answers to the questions. Theorists refer to different frames that are stored in the human mind; every time a frame is added the human mind compares it to the existing frames and conflicts or questions might arise.[30] This can be seen as the process of sensemaking.[31] A more detailed explanation by Weick is taken from the works of Meryl Louis.[32] This phenomenon can be explained in the following way: the human mind will cognitively use the frames as required until a

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[30] NM Dixon, 2nd edition, 1999. *...Learning is more than survival: it is also about human development, growth of the individual. The theorist characterizes development as a progression of frames or lenses through which we interpret our experience. We learn within the context of the frame, altering meaning structures as new information conflicts with current meaning structures. But learning also pushes against the frame, because some of what we experience cannot be understood within the existing frame and remains a nagging dissonance that is difficult to dismiss and impossible to incorporate* p. 37-38.

[31] KE Weick, 1995. *Sensemaking is what it says it is, namely, making something sensible* p. 16.

[32] KE Weick, 1995. *Sensemaking can be viewed as a recurring cycle comprised of a sequence of events occurring over time. The cycle begins as individuals form unconscious anticipations and assumptions, which serve as prediction about future events. Subsequently, individuals experience events that may be discrepant from predictions. Discrepant events, or surprises, trigger a need for explanation, or post-diction, and, correspondingly, for a process through which interpretations of discrepancies are developed. Interpretation, or meaning, is attributed to surprise... It is crucial to note that meaning is assigned to surprise as an output of the sense-making process, rather than arising concurrently with the perception or detection of differences* p. 5.

rational meaning is formed or a known one is recognized[33] and that is experienced as sensemaking. Given the above, the nature and abilities of individuals, and the process of sensemaking, it should be possible to influence the process of individual learning. Dixon substantiates this notion by exploring certain techniques that can be applied to effect this improvement. One such method is for the individuals to understand their own cognitive thinking process.[34] If an individual is familiar with the best method of learning for his/her specific cognitive thinking process, then applying that method will have a positive affect on his/her individual learning process. This explanation assists the reader to understand the theoretical concept of individual learning.

2.6.   Organisational learning

In the previous section (2.5) individual learning was explained and, under section (2.3), organisations were examined.   The insights thus gained facilitate the understanding of the concept of organisational learning that will be explored in this section. As an introduction, it is possible to position the concept of 'learning organisation' against 'organisational learning'. Simplistically defined, a learning organisation is an organisation that has successfully adopted and implemented organisational learning. Learning organisations are organisations that strive to learn continuously.[35] This notion could be interpreted as the mission statement of a learning organisation. The mission of a learning organisation is to expand through learning and

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[33] KE Weick, 1995. *A crucial property of sensemaking is that human situations are progressively clarified, but this clarification often works in reverse. It is less often the case that an outcome fulfils some prior definition of the situation, and more often the case that an outcome develops that prior definition* p. 11.

[34] NM Dixon, 2nd edition, 1999. *A type of meaning that is of particular importance to the improvement of learning is meta-cognition: our knowledge of our own cognitive processes. Meta-cognition refers to the active monitoring of learning processes, such as self-questioning; persistence; relating data sets; purposefully seeking new information and questioning inferences* p. 48.

[35] PM Senge, 1990. *An organisation that is continually expanding its capacity to create its future* p. 14.

thereby contribute to the future of the organisation. A more comprehensive definition, capturing the essence of a learning organisation, comes from Senge.[36]

How is an organisation defined? An organisation is a group of individuals, not necessarily grouped geographically but on the basis of a mutual purpose, interest or objective. The collective goal or the collective meaning[37] can be seen as the primary factor around which an organisation is formed. Dixon explains and explores more than one viewpoint through the definitions highlighted in her work, contributing to a comprehensive study and emphasising the importance of organisational learning. One notable theoretical argument is that organisational learning indicates a process employed by organisations to learn and understand, but importantly, that organisational learning is not the sum of the knowledge of the organisation.[38] The process referred to entails learning as the construction and reconstruction of meaning and is therefore a dynamic process. These processes can be viewed as a cycle and will be discussed in more detail in the next section. It is more likely the collective use of the process of organisational learning.[39] Dixon refers to the organisational members

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[36] PM Senge, 1990. *Organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together* p. 3.

[37] NM Dixon, 2nd edition, 1999. *Collective meaning is that which organisations' members hold as common. These are the norms, strategies and assumptions, which specify how work gets done and what work is important to do. Collective meaning may be codified in polices and procedures, but to be collective it must also reside in the minds of organisational members. Organisational members create the collective meaning, yet it can become so familiar that they forget they created it and begin to think it is simply the way things are* p. 48.

[38] NM Dixon, 2nd edition, 1999. *Organisational learning is the process the organisation employs to gain new understanding or to correct the current understanding; it is not the accumulative knowledge of the organisation* p. 7.

[39] NM Dixon, 2nd edition, 1999. *Organisational learning is the intentional use of learning processes at the individual, group and system level to continuously transfer the organisation in a direction that is increasingly satisfying to its stakeholders* p. 6.

as having structures.[40]   "Collective" refers to the knowledge gathered through working together. Every member contributes to the collective knowledge.

Why is it possible to have learning organisations? Simplistically, it is possible because most organisations consist of individuals who in most cases are willing to learn. Therefore the assumption can be made that organisational learning incorporates individual learning.[41] It should then be possible to argue that the success of individual learning can influence the success of organisational learning. For instance, the more successful individual learning is for individuals in a group - a group in this context can be defined as an organisation - the more likely the chances are that organisational learning will succeed. Considering Dixon's categories, the improvement of the accessible and collective meaning structures can influence organisational learning, since this is shared with the members of the organisation.

Some arguments have been raised so far that individual learning can have an influence on organisational learning, but it might also be possible that organisational learning can have an influence on other elements of the organisation. One element prone to be influenced is the culture or the environment of the organisation. Organisational learning can lead to changes in the culture of the organisation or its

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[40] NM Dixon, 2nd edition, 1999. *To understand how organisational learning differs from individual learning it is helpful to think of organisational members as having meaning structures that could be categorized as private, accessible and collective* p. 43.

NM Dixon, 2nd edition, 1999. *Private meaning is that meaning which the individual constructs but does not make accessible to others in the organisation. ....Accessible meaning is meaning that is made available to others in the organisation – it is analogous to the hallways of the organisation where important exchanges take place. Hallways are places where ideas are tested against the thinking of others* p. 45-46.

[41] PM Senge, 1990. *Learning organisations are possible because, deep down, we are all learners...Learning organisations are possible because not only is it our nature to learn but we love to learn* p. 4.

environment.[42] These changes, whether anticipated or not, can result in resistance. Resistance is a natural defence mechanism used by individuals to protect themselves against the unknown and can have a negative influence on the success of learning, or specifically organisational learning. This and other related concepts have been discussed in the previous sections as background and in the sections to follow organisational learning will be analysed in more detail, starting with the organisational learning cycle.

2.6.1.   Organisational learning cycle

The complexity of organisational learning cannot be denied but, as with individual learning, there is some logical arrangement to the process. This arrangement is referred to as the organisational learning cycle. Dixon subdivides the organisational learning cycle into four steps. These steps follow in chronological order to form a recurring pattern or cycle. This is depicted in the diagram below.[43]

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[42] NM Dixon, 2nd edition, 1999. *Organisational learning then can lead to the continuous transformation of an organisation and its environment* p. 3-4.

[43] NM Dixon, 2nd edition, 1999. *The organisational learning cycle involves four steps:*

Step 1:   Widespread generation of information

Step 2:   Integration of new/local information into organisational context.

Step 3:   Collective interpretation of information.

Step 4:   Having authority to take responsible action based on the interpreted meaning p. 63.

Fig 2.1- Organisational Learning Cycle (Source: Adapted from NM Dixon, 2nd edition, 1999: 63)
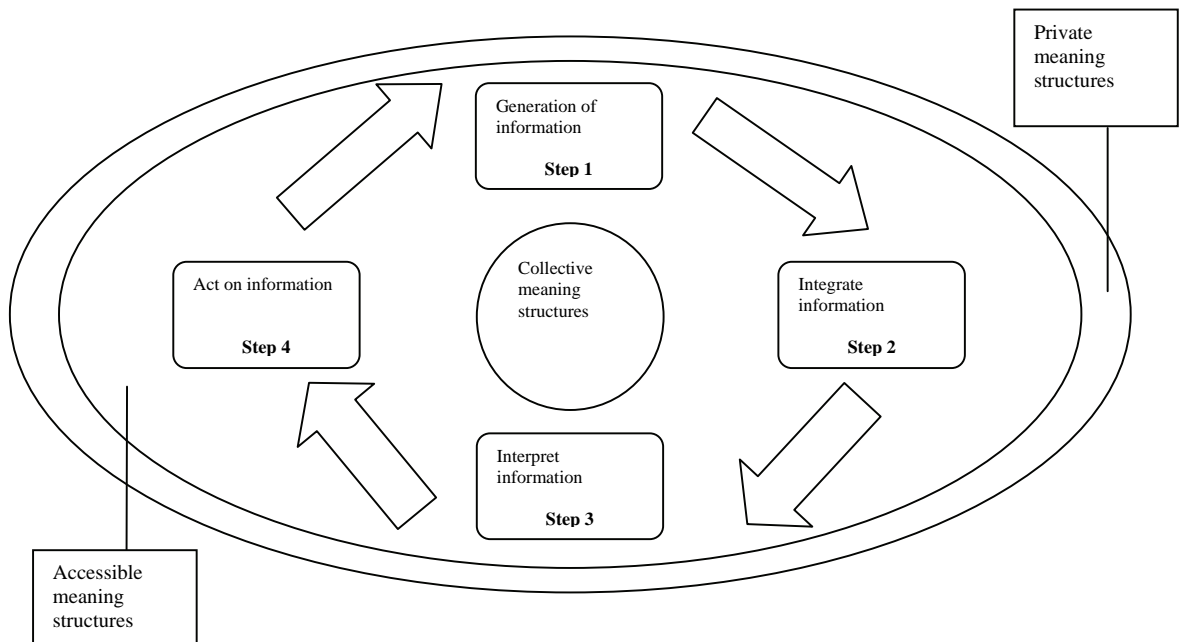
The first step indicates the existence of information sources around us and that they are widespread. The data can be internal or external to the organisation. The source of the data can be spread through all the departments or segments of the organisation. But the data, irrespective of their source, need to be collected in order to be interpreted.[44] Organisations need to be attentive to the fact that the data are spread throughout the organisation, so as not to exclude parts of the organisation. In addition, data still need to be interpreted to unlock their value.

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[44] NM Dixon, 2nd edition, 1999. *Widespread generation of information encompasses both the collection of external data and the internal development of new ideas, includes both process and product* p. 93.

The second step of the organisational learning cycle is the transformation of data to information in an organisational context, unlocking the value of the data by interpretation. So interpretation on an individual learning level has little value to the organisation, unless it is shared. The information must be made available to the organisation so that it can become collective knowledge.[45] Organisations that have acknowledged the importance of the sharing of information within the organisation have deployed various methods to support information sharing. These methods include the techniques such as the use of project teams with members from different departments, inspiring the natural sharing of information.

The process of interpreting the information is a fundamental step within the organisational learning cycle. The individuals within the organisation will interpret the information and, incidentally, they are the only ones who can do so. The interpretation of information by the individuals alone will not ensure that it will become collective knowledge and therefore it needs to be shared. The collective interpretation (the 3rd step of the organisational learning cycle) of the information is as important to organisational learning as any of the earlier steps. By sharing the information, more questions might arise that could consequently lead to the interaction of members, allowing for collective interpretation to take place. This part of the organisational learning cycle as described above might give the impression that the process itself is straightforward and linear, but that would be a misinterpretation. With reference to the theory of systems thinking,[46] the concept can be described as

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[45] NM Dixon, 2nd edition, 1999. *Information that is collected externally and/or internally can only be understood within the context of the total organisation. In order to accomplish the organisation's tasks we must act in concert with each other, and to do that we must share some understanding about what we are trying to accomplish and how we are going about it* p. 98.

[46] PM Senge, 1990. *Systems thinking is a discipline for seeing wholes. It is a framework for seeing interrelationships rather then things, for seeing patterns of change rather than static snapshots* p. 68.

systems interacting with each other in a way that can aggregate the level of system complexity.[47]

Organisations need to apply various methods to facilitate the interpretation of information. This subject of interpretation techniques will be explored later as a possible enabler of organisational learning.

The last step of the learning cycle addresses the use of the knowledge acquired through learning. The effective use of the information is not only important for the organisation, but also for the individual members of the organisation. It is these individual members who must utilise the newly acquired knowledge. If the individuals are not able to do so, they won't be able to complete the learning cycle and knowledge will be lost. It is necessary to remember that tacit knowledge, knowledge obtained from direct experience, is the most effective in terms of long-term memory. By direct experience of the newly acquired knowledge, the possibility exists that the knowledge will be embedded in the long-term memory of the individual learner. An organisation's stance on this should more likely be to create an

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[47] HE Aldrich and M Ruef, 2nd edition, 2006. *The concept of distributed learning and learning embedded in systems of interaction is a new development with great promise (Weick and Roberts, 1993)* p. 50.

HE Aldrich and M Ruef, 2nd edition, 2006. Glyn et al. note: *With its emphasis on the construction of information through organisational interactions, a system interaction approach to organisational learning offers a shift in perspective, from an emphasis on the content of learning to the emergent process of learning* p. 50.

NM Dixon, 2nd edition, 1999. *Only when the individual has formed new relationships through the process and again stored those new relationships in long-term memory can we say the individual has learned. For organisational learning to occur, the process is yet more complex. Not only must each individual engage in the sequence just described, each must do so while interacting with other organisational members (who are of course engaged in the same sequence themselves) and out of their interactions the organisational members must form an interpretation of the information* p. 103.

organisational environment in which the individual members act on the knowledge as soon as possible.[48]

The above is a description of the organisational learning cycle. An understanding of this cycle is important to the understanding of organisational learning.

2.6.2. Structure of organisational learning

Structure in this context refers not so much to that of organisational learning, but rather to that of the organisation. In the previous section the exploration of the organisational learning cycle indicated a type of structure (logical arrangement), although it is rather a collection of chronological steps. Is it possible to have a specific organisational structure for organisational learning? The structure referred to is the organisational infrastructure that enables, or better, facilitates organisational learning. Traditionally organisations had rigid structures, rules, policies and hierarchical frameworks. This kind of organisational infrastructure, however, is not conducive to organisational learning. It is important to note that, by saying this, we acknowledge that the infrastructure might also be a stumbling block for organisational learning – just as it might be an enabler, if the infrastructure is favourable and allows for organisational learning to take place.

A new kind of infrastructure is needed to support organisational learning. Infrastructure components to support organisational learning are graphically depicted in Figure 2.2.[49]

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[48] NM Dixon, 2nd edition, 1999. *When an organisation involves its members in the generation of information and positions that information in the organisational context, and when members collectively interpret that information, but the organisation stops short of authorizing organisational members to act on the knowledge they have derived, learning is lost. To understand what needs doing, but to be prevented from acting on that knowledge, leads to anger or despair, or in some situations, subversion* p. 120.

[49] NM Dixon, 2nd edition, 1999. *The infrastructure in the first quadrant describes how to configure systems to move information across organisational boundaries. The second quadrant describes an infrastructure to support system-level dialogue. The third quadrant describes an infrastructure that*

Fig 2.2- Infrastructure components to support organisational learning (Source: Adapted from NM Dixon, 2nd edition, 1999: 126)
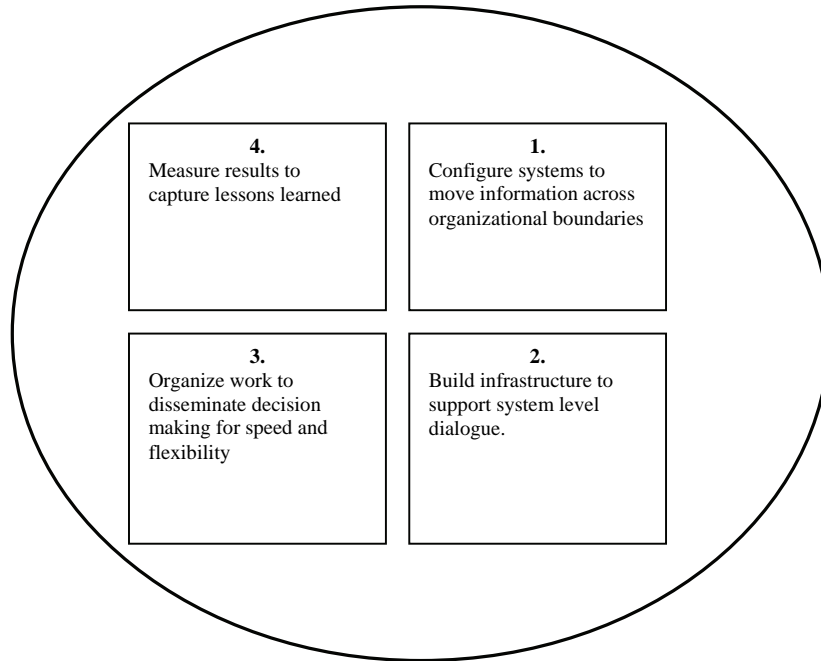
The first quadrant of the infrastructure model states that systems need to be configured to move information across all boundaries in the organisation. These systems will not be limited to information technology systems. Systems by definition can adopt various forms.[50] In the organisations of today the dependence on information technology-type of systems might be higher than a few years ago, but in the context of the infrastructure required by organisations as described here, all types of systems are included. Social systems similar to those of 'networking' between various members of different organisations are an example of movement of information across organisational boundaries. The social interactions that take place help to encourage the sharing of information and allow for learning to take place.

organises work to disseminate decision making for speed and flexibility and the fourth quadrant is a local process to measure results to capture lessons learned p. 126.

[50] PJ Smit and GJ de J Cronje, 2nd edition, 1997. *A system can be defined as a set of interrelated elements functioning as a whole* p. 260.

Therefore, any occasion allowing staff to interact with other divisions through a function or a meeting can encourage information sharing. Organisations can apply various techniques that will be conducive to the sharing of information.[51]

To unlock the value of information it is necessary that the information gathered through these systems be effectively shared. The second quadrant aims to address the structural requirements needed to allow for the sharing of information.[52] The infrastructure must support the use and the sharing of the information. This sharing of information will in turn allow for collective sensemaking. The interaction between the members of the organisation and the sharing of information will initiate the process of organisational learning. It has already been pointed out that learning might result in new questions being raised rather than just being a matter of finding answers. This contributes to the continuous cycle of learning. Organisations can apply different techniques to encourage the collective sharing of information. Some reference to these techniques has already been made and includes the use of resource sharing for projects, learning maps, etc. It will be recalled that the organisational learning cycle is comprised of four steps. Considering these steps and the infrastructure of organisations, it can be noted that the structural requirements discussed up to now have not allowed for organisational learning to be concluded.

The third quadrant deals with the collective knowledge that needs to be applied in the organisation. It can be accepted that the organisation should benefit from this collective knowledge. The individual members of the organisation who will be tasked with translating the knowledge into actions will by implication also benefit from the

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[51] NM Dixon, 2nd edition, 1999. *The infrastructure might include multi-functional project teams, intranet inquiries, knowledge databases, joint meetings of departments, and network meetings, both electronic and face-to-face* p. 128.

[52] NM Dixon, 2nd edition, 1999. *Quadrant 2 describes the kind of infrastructure needed to bring the knowledge embedded within the parts of the system together so that collective sense can be made of what is known. A type of such a structure to support system level dialogue is to make use of the team as the unit of learning. Learning maps such as those designed by 'Root Learning' are graphic illustrations of an issue with which an organisation is dealing* p. 136.

newly acquired knowledge. This implies an organisational infrastructure that allows for actions to be taken by the knowledge bearers. Dixon states that various infrastructures can allow for knowledge to be translated into action, but identifies three critical elements[53] that need to be present to translate this collective knowledge into action.

The last quadrant, quadrant four, implies that, in order to learn from mistakes in a collective manner, the knowledge gained must be shared.[54] In cognitive terms, learning through experience activates the long-term memory. To enable the transfer of tacit knowledge obtained from actions, it must be codified into an explicit format. Codifying the knowledge can entail documenting or capturing it in a format that allows it to be shared. Success in applying the knowledge must be measured and, therefore, documenting the experience has multiple purposes: one is to measure the results, and another is to codify the lessons learned. Dixon also refers to accountability. Dixon implies that relationships might exist between organisational responsibility, as part of organisational infrastructure, and organisational learning concepts.[55]

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[53] NM Dixon, 2nd edition, 1999. *Quadrant 3 deals with the need to translate collective interpretation into local action. Many types of infrastructure can accomplish this translation. Regardless of the type, three critical elements seem to be necessary:*

- o *Some level of local autonomy.*
- o *Local units having a financial stake in the organisation's success.*
- o *Keeping the size of the local unit small* p. 141.

[54] NM Dixon, 2nd edition, 1999. *Organisational learning requires that local units make mistakes together and clean up the mess together without recriminations from above* p. 146.

[55] NM Dixon, 2nd edition, 1999. *The movement towards organisational learning explicated above is for most part intentional, while the movement towards more democratic organisations may be accruing as a by-product of that more purposeful effort. Because learning and governance are coupled, perhaps in ways most organisational members do not even recognize, learning inexorably leads to shared governance, and shared governance requires learning* p. 221.

In the domain of organisational learning, there are different models of infrastructure that can be applied that will contribute to organisational learning. The structure propagated by Dixon, as explained above, is one way. Another structure to facilitate organisational learning is called *parallel learning*.[56] Hence the various authors on organisational learning as a theoretical subject will use and refer to different infrastructures. However, an important observation to make here is that there are specific infrastructures that are conducive to organisational learning.

2.6.3. The development of organisational members

A persona is unique to all individuals, but since organisations consist of individuals, the persona might have an influence on organisational learning. The persona or personality of individuals can have an influence on the way they learn. Cognitive thinking methods differ as a result of the different personalities of individual members of the organisation. Organisations, as a first step, should acknowledge these differences and be aware that different approaches might be required to increase organisational learning. Historically, managers were solely responsible for most of the actions of the organisation. This viewpoint contradicts the principle of allowing members to act individually on knowledge acquired. Dixon refers to a willingness to accept responsibility.[57] This accountability allows for members to learn through their actions.[58] The organisational structure, roles and responsibilities should promote and

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[56] Gervase R Bushe, AB (Rami) Shani. 1991. *We offer the term 'parallel learning structure' as a generic label to cover interventions where: a 'structure' (that is a specific division and coordination of labor) is created that (b) operates 'parallel' (that is, in tandem or side-by-side) with the formal hierarchy and structure and (c) has the purpose of increasing an organisation's 'learning' (that is, the creation and/or implementation of new thoughts and behaviors by employees)* p. 9.

[57] NM Dixon, 2nd edition, 1999. *The term responsibility suggests a willingness to be held accountable; to be answerable for actions. In terms of organisational learning, I am suggesting members also have responsibilities to the collective or the whole* p. 184.

[58] NM Dixon, 2nd edition, 1999. *...active learning from everyday experience to develop as a responsible, participating member of the organisation* p. 193.

support experimentation, so that members will feel free to investigate new ways of doing things. The members should be encouraged to take action and be allowed to reflect on what they have done. There should be a proper channel for the results to feed back into the organisation as collective knowledge. The organisation will need to adopt the notion that the workplace has also become a classroom. Organisations might therefore need to redesign traditional organisational development programmes to allow for learning through actions and collective learning. Development programmes focused on the members learning through actions will encourage the members of the organisation to experiment. Note that changes will then be required in management development programmes.[59] In essence, this section implies that organisations should acknowledge that the approach to development programmes needs to be reviewed to address the uniqueness of individuals, so that the programmes may be beneficial in advancing organisational learning. The previous sections addressing individual learning indicated that most individuals are resistant to change and would rather favour the known than try new things. Ironically, trying new things is exactly what is required from individuals to learn.

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[59] NM Dixon, 2nd edition, 1999. *To be congruent with the fundamental assumptions of organisational learning, management development programmes will have to change substantially.*

- o *As learning and work becomes synonymous, learning would need to come out of the classroom and into spaces where work is being conducted.*

- o *Learning which has traditionally meant the comprehension of existing knowledge would need also to include creating new knowledge.*

- o *Learning which has for so long been regarded as individual activity, would need to be viewed as a community or collective activity* p. 168.

2.6.4. Culture of organisational learning

The introduction for this section will be to examine the formal definitions of (organisational) culture.[60] Organisational culture can be interpreted as the behaviour and unwritten rules by which the members of the organisation conduct their actions. Schein refers to the culture of a group, which includes organisations.[61] In order to analyse culture effectively, it must be done at different levels. The foremost levels to consider are: artifacts, espoused beliefs and values, and underlying assumptions. Culture is not limited to the organisation, as noted from the definitions; the individual members will have a home culture, for example, the culture to which the members were exposed during their upbringing. In additional to this, members will be exposed to the culture of their nation and the country where they live. These cultures might very well differ from the culture that the members encounter in their work place. To add another dimension to the organisational culture, it must be noted that every organisation is related to a specific industry, such as building, farming, retail or information technology. Each of these industries will have a unique culture.[62] Organisational culture can in turn be separated into three main levels[63]. However, the

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[60] NM Dixon, 2nd edition, 1999. *Organisational culture is the set of collective meaning structures that organisational members use to interpret the nature of their world and themselves in relation to it. They are assumptions that are so fundamental that they are for the most part tacit* p. 199.

[61] Edgar H Schein, 3rd edition, 2004. *The culture of a group can now be defined as a pattern of shared basic assumptions that was learned by a group 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 to perceive, think and feel in relation to those problems* p. 17.

[62] NM Dixon, 2nd edition, 1999. *That all members hold collective meaning structures in common implies that they are learned. There are at least two sources from which these assumptions are learned. One is the larger culture in which the organisation is embedded, that is, the industry, nation or hemisphere* p. 199.

[63] NM Dixon, 2nd edition, 1999. *In addition to widely shared societal basic assumptions, there are cultural assumptions which are learned and held within specific organisations. For example an organisation might be action-orientated, allocating little time for either planning or reflecting.*

emphasis in this study will remain on organisational culture to investigate the role that it plays in organisational learning.

This section can be concluded with the statement that organisational culture consists of more then one element. As indicated by Dixon, Schein argues that, to understand organisational culture, one needs to look at all these elements.[64]

2.6.5.   Stumbling blocks to organisational learning

The term stumbling blocks is useful in defining constraints that prevent organisational learning from taking place. The purpose of this section is to cover the major stumbling blocks that have a negative effect on organisational learning.

Resistance to change, as mentioned previously, is one of the stumbling blocks. Individuals in general prefer a stable, non-changing environment. These individuals act in a different way to individuals in favour of change, as their internal defence

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....Schein(1992) identifies three levels of organisational culture. He places assumptions at the base, regarding them as having the greatest impact on the organisation and at the same time being the most difficult to decipher. Espoused values are the middle level. Values may be explicated in mission statements or policy documents, or simply are evident in the conversation of organisational members. The most visible and explicit parts of a culture are the artifacts (the top layer), which are such things as architecture, the way space is allocated in the parking lot, the way organisational members dress and how they address each other p. 200.

[64] NM Dixon, 2nd edition, 1999. *There are six general areas of assumptions that Schein suggests examining to understand an organisation's culture:*

- o *The nature of reality and truth*
- o *The nature of time*
- o *The nature of space*
- o *The nature of human nature*
- o *The nature of human activity*
- o *The nature of human relationships* p. 202.

systems are activated for protection.[65] The process of change management focuses on managing these changes to minimise their effect on the individual and ultimately the effect on the organisation. Hypothetically the effective application of change management can be an enabler of organisational learning.

Organisational infrastructure can also be a stumbling block for organisational learning. The contrary is also true but, in this instance, the focus is on an infrastructure that does not promote or does not lend itself to organisational learning. Structures that are very restrictive, with a strong line of command, will not necessarily promote organisational learning.[66]

Senge refers to the learning disabilities of an organisation and indicates that such a 'disability' mostly goes undetected in an organisation. Organisations need to acknowledge these disabilities in order to address the problem of poor organisational learning. These disabilities might necessitate different actions and therefore identifying them within the organisation is an important step towards mitigating their effect. These disabilities can take on various forms with unique attributes.[67]

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[65] Edgar H Schein, 3rd edition, 2004. *All human systems attempt to maintain equilibrium and to maximize their autonomy vis-à-vis their environment* p. 320.

[66] PM Senge, 1990. *It is no accident that most organisations learn poorly. The way they are designed and managed, the way people's jobs are defined, and most importantly, the way we have all been taught to think and interact (not only in organisations but more broadly) create fundamental learning disabilities* p. 18.

[67] PM Senge, 1990. *Learning disabilities are tragic in children, especially if they go undetected. They are no less tragic in organisations, where they also go largely undetected. The first step in curing them is to begin identifying them:*

1. *'I am my position'*
2. *'The enemy is out there'*
3. *'The illusion of taking charge'*
4. *'The fixation of events'*
5. *'The parable of the boiled frog'*
6. *'The delusion of learning from experience'*
7. *'The myth of the Management team'* p. 18.

Internal politics seem not to be unique to specific organisations; most institutions will have to deal with some form of internal politics throughout their existence.

The above description of possible stumbling blocks to organisational learning does not necessarily offer a comprehensive list, but those mentioned are seen significant enough to be pointed out by authors like Senge.

2.6.6.   Determinants of organisational learning

Stimulants or determinants are aspects that will encourage or enrich organisational learning. By definition, determinants will include the requirements for organisational learning. In this study the aim is to separate requirements and determinants for the sake of clarification. Requirements are seen as essential for organisational learning and without them it is less likely that organisational learning will take place. Managing tacit knowledge imbedded in the minds of the individual, or mental models as Senge refers to them, is the first determinant to be explored.[68] A derived explanation of the concept of a mental model can be expressed as the tacit knowledge that individuals store as frames (mental models) in their minds. These mental models, if shared with the other members of the organisation, will contribute to the collective knowledge of the organisation and will add to organisational learning.

In order to share these mental models, knowledge needs to be converted from tacit knowledge to explicit knowledge, so it can be used and shared by all the members of the organisation. Knowledge is of limited use to the organisation if it is embedded

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[68] PM Senge, 1990. *Brilliant strategies fail to get translated into action. Systematic insights never find their way into operating policies. More specifically new insights fail to get put into practice because they conflict with deeply held internal images of how the world works, images that limit us to familiar ways of thinking and acting. That is why the discipline of managing mental models - surfacing, testing and improving our internal pictures of how the world works - promises to be a major breakthrough for building learning organisations* p. 174-175.

only in the mental model of a member of the organisation as tacit knowledge.[69] Posit a scenario whereby the management of an organisation has a strategy for organisational learning, but the members of the organisation are not informed of the strategy. The success of the strategy will be jeopardised owing to the members of the organisation not being involved in reaching the goals of the strategy. The strategy must be made clear to all members of the organisation so that they come to understand and live the strategy (vision) of a learning organisation.[70] It is important to bear in mind that one of the foreseen qualities of an organisation is the commonality that can exist between members.[71]

Team learning as a concept has not yet been explored in the research.[72] The principles of team learning represent nothing more than a team functioning as a cohesive unit in which all the team members learn what is required of them to meet the objectives of the team.[73] By getting the team members to learn collectively through principles such

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[69] PM Senge, 1990. *The problems with mental models are when they are tacit – when they exist below the level of awareness* p. 176.

[70] PM Senge, 1990. *Shared vision is vital for the learning organisation because it provides the focus and energy for learning* p. 206.

[71] PM Senge, 1990. *A shared vision is not an idea. It is not even an important idea such as freedom. It is, rather, a force in people's hearts, a force of impressive power...At its simplest level it is an answer to a question, 'What do we want to create?' Just as personal visions are pictures of images or pictures people carry in their heads and hearts, so to be shared visions, pictures that people throughout an organisation carry. They create a sense of commonalty that permeates the organisation and gives coherence to diverse activities* p. 206.

[72] PM Senge, 1990. *Team learning is the process of aligning and developing the capacity of a team to create the results its members truly desire. It builds on the discipline of developing shared vision. It also builds on personal mastery, for talented teams are made up of talented individuals* p. 236.

[73] Nonaka and Takeuchi, 1995. *This example illustrates the central role teams play in the knowledge-creation process- they provide a shared context in which individuals can interact with each other.* p.13.

as advancing a shared vision, the members will be aligned to reach the same objective as the team. [74]

Prototypes are modelling techniques that might, to an extent determined by their nature, have some sort of relation to innovation. This section, however, will focus on prototypes within the context or domain of organisational learning.[75] Prototyping is a technique for simulating a test (prototype) version of the proposed final product. The following example will provide a more practical understanding of the concept of prototyping. In the information technology environment, applications are developed, for instance, to automate certain processes. During the development of such an application, it might be necessary to visualise the proposed solution for the users through a prototype.[76] This prototype is used to gain feedback from the users and the users learn what functionality works as intended or does not. The learning comes through acting and the experience of applying the prototype, allowing for the user to experience it hands on. This process of learning through experience allows for the emergence of a possible relation to organisational learning. Prototypes are recommended as a method to encourage learning through actions.

Time can be seen as an integral part of life, since it is evident in all aspects of life. In today's world the shortage of time has made it more important.[77] Sometimes,

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[74] PM Senge, 1990. *Individual learning, at some level, is irrelevant for organisational learning. Individuals learn all the time and yet there is no organisational learning. But if teams learn, they become a microcosm for learning through an organisation* p. 236.

[75] PM Senge, 1990. *The prototyping era for any significant new innovation is a time of searching for synergy, pulling together diverse elements into a new whole. Whether or not the five disciplines listed above prove sufficient will depend on whether, in concert, they can resolve the practical problems and issues faced by prototype learning organisations* p. 271.

[76] JL Whitten, LD Bentley, 1998. *Prototyping is a technique for quickly building a functioning model of the information system using rapid application development tools* p. 57.

[77] Edgar H Schein, 3rd edition, 2004. *Time is viewed as a valuable commodity that can be spent, wasted, killed, or made good use of; but once a unit of time is over, it is gone forever* p. 154.

however, it is forgotten that spending time on certain activities, such as reading, can have a benefit. Through learning, individuals can absorb knowledge that might be beneficial not only to the individual but also to the organisation. However, learning takes time.[78] The same applies to organisations or the members of organisations.[79] To be able to share information collectively and in a cohesive manner, time must be made available. The role of management, and correspondingly their management style, will have to adapt to allow time to learn.[80] This will allow the members of the organisation to take more responsibility for their own time management, thereby also allowing time to learn. This does not only imply making time available for thinking, from an organisational learning perspective, but also supporting the personal mastery of the individual.[81]

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[78] PM Senge, 1990. *How can we expect people to learn when they have little time to think and reflect, individually and collaboratively? Learning takes time* p. 302.

[79]Edgar H Schein, 3rd edition, 2004. *The perception and experience of time are among the most central aspects of how any group functions* p. 151.

[80] PM Senge, 1990. *When an individual is managing mental models for example, it takes considerable time to surface assumptions, examine their consistency and accuracy, and see how different models can be knit together into more systematic perspectives on important problems. The management of time and attention is an area where top management has a significant influence, not by edict, but by example* p. 302.

[81] PM Senge, 1990. *Personally mastery is the phrase my colleagues and I use for the discipline of personal growth and learning. People with high levels of personal mastery are continually expanding their ability to create the results in life they truly seek. From their quests for continual learning comes the spirit of the learning organisation* p. 140.

Working for organisations was traditionally seen as a part of life separate from the personal life of the individual.[82] This was evident in management's approach to employees that, when the employees are at the office, they belong to the organisation and that their life outside the organisation does not play a role. Ultimately, this approach of management can lead only to conflict between the employee and his/her family members. In trying to untangle the reasons for conflict, it can be assumed that a contributing factor is the notion that the organisation does not necessarily value its employees and makes unfair demands on its employees. Most of the time this is not expressed explicitly, but through implied actions. The expectations of the organisation can even be reflected through the organisational culture by unwritten rules, for instance, that employees will work more than the required working hours. This involves new dilemmas regarding personal mastery. The work/career of an individual is an integral part of the individual's life and if there is no means whereby the organisational visions can inter-link with the personal visions of the individual, there might be resistance to embracing the shared vision of the organisation.[83] This is evident when applying a systems thinking methodology; there might be various systems, related or non-related, that interlink the organisation and the employee in a complex way.[84]

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[82] PM Senge, 1990. *Traditional organisations undeniably foster conflict between work and family. Sometimes this is done consciously - through the simple threat that, 'if you want to get ahead here, you must be willing to make sacrifices'. More often it is done inadvertently, by simply creating a set of demands and pressures on the individual that inevitably conflict with family and personal time* p. 307.

[83] PM Senge, 1990. *The learning organisation cannot support personal mastery without supporting personal mastery in all aspects of life. It cannot foster shared vision without calling forth personal visions, and personal visions are always multifaceted- they always include deeply felt desires for our personal, professional, organisational and family lives* p. 307.

[84] PM Senge, 1990. *Lastly, the artificial boundary between work and family is anathema to systems thinking. There is a natural connection between a person's work life and all other aspects of life. We live only one life, but for a long time our organisations have operated as if this simple fact could be ignored, as if we had two separate lives* p. 307.

Learning through our actions or experience has been touched on earlier in the study as part of the section addressing prototypes. A more in-depth look into learning through our actions should then reveal that in our daily jobs we, as individuals, are learning through experience. But this might not be an entirely straightforward process. Feedback is required on the experience and the shorter the time between the experience and the feedback, the better the chance of accurate knowledge creation.[85] 'Microworld' is a concept applied by organisations to the situation where learning takes place through experience.[86] Microworlds are areas that are not part of the real production environment, but where individuals can learn skills and obtain knowledge that can be applied in the real production environment of the organisation. Microworlds work on the principle of a children's playroom equipped with building blocks, etc. (referred to as transitional objects). By playing with these blocks, the children obtain skills and knowledge that are used later in life. Applying the same technique through microworlds in the organisational environment proves to be as effective. The microworld does not need to be a structure that represents a production environment. For instance, the team-building exercise of white-water rafting teaches the members to work together in a specific manner, under stress or when physically exhausted. These individuals obtain, through this type of exercise, the knowledge to at least understand how to act in the production environment under similar psychological circumstances. That the concept of microworlds can be applied across

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[85] PM Senge, 1990. *Human beings learn best through firsthand experience. We learn to walk, ride a bicycle, drive a car and play the piano by trial and error. But learning by doing only works for as long as the feedback from our actions is rapid and unambiguous* p. 313.

[86] PM Senge, 1990. *Microworlds enable managers and management teams to begin 'learning through doing' about their most important systematic issues. In particular, microworlds 'compress time and space' so that it becomes possible to experiment and to learn when the consequence of our decisions are in the future and in distant parts of the organisation* p. 313.

the organisation on all levels and all sectors proves it to be a technique that can contribute to organisational learning.[87]

Leadership[88] concepts play an important role in organisations, spanning various areas, including organisational learning. In the following few paragraphs the focus will be on the leadership characteristics of managers. Leadership is seen as an important attribute of the organisation's managers and can result in certain managers standing out above the norm. The role of leadership in a learning organisation only emphasises the importance to lead the organisation, to enable a collective move towards the shared vision of the organisation.[89] The role of managers in the new type of organisation, the learning organisation, has to change from where the emphasis might formerly have been primarily on the managing of the day-to-day operations to a more focused leadership role. This involves giving clear direction regarding the vision, leading by example, ensuring openness, coaching and sharing mental models. The role of the manager should adapt to also allow for the responsibility of learning in the organisation. Schein defines the leader of the future based on the implications for

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[87] PM Senge, 1990. *Microworlds, I believe, prove to be a critical technology for implementing the disciplines of the learning organisation. Today microworlds for managers are exploring diverse issues from managing growth to product development and improving quality in both service and manufacturing businesses* p. 313.

[88] Stephen P. Robbins, 2003. *Leadership, in contrast, is about coping with change. Leaders establish direction by developing a vision of the future; then they align people by communicating this vision and inspiring them to overcome hurdles* p. 313.

[89] PM Senge, 1990. *Learning organisations demand a new view of leadership... At the heart, the traditional view of leadership is based on assumptions of people's powerlessness, their lack of personal vision and inability to master the forces of change, defects which can be remedied by only be a few great leaders. The new view of leaders in the learning organisation centers on subtler and more important tasks. In a learning organisation, leaders are designers, stewards and teachers. They are responsible for building organisations where people continually expand their capabilities to understand complexity, clarify vision and improve shared mental models – that is, they are responsible for learning* p. 339-340.

leadership to create a learning culture that will allow for the organisation to adapt and conform to the changing world.[90]   What is clear from this is that learning and change will form an integral part of the future for organisations. The determinants (mental models, shared vision, team learning, prototypes, time, personal mastery, learning through action/experience and leadership.) discussed under this section do not imply that this study is a comprehensive investigation into all possible determinants of organisational learning. The above can merely be seen as the more prominent determinants.

2.6.7.   Requirements for organisational learning

The notion of requirements for organisational learning is used in this study with the aim of trying to distinguish between principles that are required (requirements) and principles that can promote (determinants) organisational learning. Senge uses the term "core principles" to include these types of conditions.   For the purposes of clarification, the core principles were divided into determinants and requirements. Some of the determinants have already been explored in the previous section (2.6.6). Senge's prominent core principle is individual learning. The point to consider is that, without individual learning, organisational learning cannot take place. Note, however, that the presence of individual learning does not necessarily lead to organisational

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[90] Edgar H Schein, 3rd edition, 2004. *It seems clear that the leader of the future must be a perceptual learner, which will require (1) new levels of perception and insight into the realities of the world and into him or herself; (2) extraordinary levels of motivation to go through the inevitable pain of learning and change, especially in a world with looser boundaries in which one's own loyalties become more and more difficult to define; (3) the emotional strength to manage one's own and others' anxiety as learning and change become more and more a way of life; (4) new skills in analyzing and changing cultural assumptions; and (5) the willingness and ability to involve others and elicit their participation* p. 418.

learning.[91]   From the core principles outlined by Senge, only individual learning is highlighted here as a possible requirement for organisational learning.

2.6.8.   Designing a learning organisation

A definition of organisational learning is that it is a process whereby learning takes place in organisations in a cohesive manner. To build such an organisation (learning organisation), the determinants and requirements for organisational learning will have to be considered. Assuming that this is done, the focus then is on additional aspects that might be essential to a learning organisation. These aspects can be models, tools or processes that could be implemented to aid or facilitate the determinants for organisational learning.

One such method is to design the organisation to allow for a parallel learning structure.[92] This takes on the shape of a steering committee that can evaluate and approve projects that are initiated by any individual in the organisation. This integration allows for knowledge sharing over functional areas.

The concept of 'microworlds' was explained briefly above. Microworlds describe a technique whereby an environment separate from the real world provides learning through actions. The members of the organisation, including the managers, use this environment to learn through their actions, without risking any exposure to the organisation.

As seen from the above sections, there is no specific formula for creating a learning organisation. The infrastructure, culture and leadership, for example, can all have an

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[91] PM Senge, 1990. *Organisations learn only through individuals who learn. Individual learning does not guarantee organisational learning, but without it no organisational learning occurs* p. 140.

[92] Gervase R Bushe and AB (Rami) Shani, 1991. *Rigid boundaries within efficient organisations create barriers to innovation because new and useful ideas often require integrating the knowledge of different functions relevant to the project, this parallel learning structure can help overcome the problems of isolation that plague innovation in organisations* p. 31.

influence on organisational learning and therefore need to be considered when evolving to a learning organisation.

2.7.   Summary

Organisational learning is dependent on certain attributes being present. These attributes are important for the success of organisational learning. The most important to take note of are those identified by Dixon as part of the organisational learning cycle. Note that this is a continuous cycle that starts with the widespread generation of information. It is this information that forms the basis of learning within the organisation. There are, however, certain aspects that influence information generation and, ultimately, organisational learning. The two aspects that come to the foreground are the structure and the culture of the organisation. These are both influential for the success of organisational learning. It is, however, not academically sound to point out only these two aspects and the reader must understand that this opinion is derived from the findings of the study up to this point. Last but not least is the notion that individual learning is a requirement of organisational learning. This chapter has highlighted the salient elements of organisational learning and related concepts. In order to determine if any relationships exist, innovation needs to be studied. The following chapter will elaborate on the concept of innovation.

Chapter 3

Innovation

3.   Introduction: Innovation

In this chapter the aim will be to explore the concept of innovation in detail following the same approach as in Chapter Two on organisational learning. A clear understanding of the concept of innovation is required to analyse the concepts and relations to be explored later in the study.

3.1.   Innovation

Different viewpoints on innovation have emerged as various theorists explore the notion. Senge refers to new ideas as inventions from an engineering perspective.[93] Brown and Ulijn indicate that there are two important requirements for innovation.[94] A point to be emphasised is that the idea must be used successfully or marketed successfully, because what is regarded as innovation for one might not be so for another. There are numerous examples of ideas that are just not useful and cannot be classified as innovations for they do not conform to the two requirements listed by the authors. A possible misinterpretation is that an innovation must be technology related

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[93] PM Senge, 1990. *Engineers say that a new idea has been invented when it is proven to work in a laboratory. The idea becomes an innovation only when it can be replicated reliably on a meaningful scale at the practical costs* p. 5.

[94] Terrance E Brown and Jan Ulijn, 2004. *Innovation is creating something new and implementing it successfully at a market. Innovation deals with processes, products and services and technology* p. 3-5.

or that it must be a tangible object. Innovation can take the form of a process that has been improved to make it more effective.[95]

There are organisations that encourage their members and reward them for innovative ideas that can improve processes. Many organisations consider that the improvement of a process through a new idea is also an innovation even if it stays within the boundaries of the organisation. Manufacturing and production companies in particular have various innovation drives to improve productivity, discovering new ways whereby the organisation can do old things better.

Some organisations in certain industries, or because of their position in the market, cannot afford not to be innovative. These organisations sometimes have a specific unit responsible for innovation or have a programme to encourage innovation. Sometimes this innovation is embedded in the organisation's quality and research initiatives. These structures encourage creativity that can lead to innovation.[96]

In the context of systems thinking, innovation can be seen as a system that interacts with various other systems within and outside the boundaries of the organisation. This interaction contributes to the complexity of innovation. This complexity requires that some of the subsystems that interact with innovation must be understood in order to unravel some of the complex matters.[97] Some of the related concepts will be

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[95] Carl Franklin, 2005. *It is an elegant definition that recognizes the fact that the innovation is in the eye of the beholder. It also recognizes that innovation doesn't necessarily have to be the product of technological development. In fact many studies of innovation in the US have focused on new teaching methods in schools* p. 35-36.

[96] King and Anderson, 2002. *It is conventional to view the innovation process as starting with the spark of individual creativity; a clever and original idea adopted by the organisational decision makers and implemented as a significant change to products, practices or procedures* p. 12.

[97] DF Batten, CS Bertuglia, D Martellato, S Occelli, 2001. *To begin to understand the complex nature of innovative activity, it is useful to summarize some of its main features. Firstly, scientific inputs have become increasingly important in the innovative process. At the same time research and development*

examined in the sections to follow and include concepts such as 'invention' and 'entrepreneurship'. The examination of these concepts will be limited to providing a clearer understanding of them.

3.2.   Invention

Engineers say that a new idea has been invented when it is proven to work in a laboratory.[98] What is the difference, then, between innovation and invention? All innovation theoretically starts with an invention. Invention in a simple form is the creation of a new idea.[99]   When this new idea is applied, we end up with innovation.

3.3.   Entrepreneurship

There are various debates around the meaning of "entrepreneurship".[100] Entrepreneurship is, therefore, any process whereby opportunities can be exploited to the benefit of the organisation. This is the view of entrepreneurship adopted in this study. It can be on an individual, team or organisational level.[101] The presence of

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(R&D) activities have become more complex. Thus it is necessary to adopt a long-run perspective in planning such activities within firms p. 13.

[98] PM Senge, 1990 p. 5.

[99]Starkey, Tempest, McKinlay, 2004. *Invention is the creation of a new idea. Innovation is the process of applying a new idea to create a new process or product* p. 203.

[100]HE Aldrich and M Ruef, 2nd edition, 2006. *…others argue that entrepreneurship should focus on innovative activity and the process by which innovations lead to new products and new markets* p. 63.

H Odagiri and A Goto. 1996. *Entrepreneurship in essence, is the willingness to undertake something new and unfamiliar* p. 8.

[101]Terrance E Brown and Jan Ulijn. 2004. *As with innovation, defining entrepreneurship is also problematic, which is well reflected by a recent European research conference on the matter (Fayolle,*

entrepreneurship characteristics (in an individual) will increase the probability of inventions and/or innovations. Reference will be made to entrepreneurship in the study, but mainly in the context of innovation.

3.4. Innovation theories

To be able to examine the theories of innovation, it will be beneficial to understand the history of innovation. Innovation as a process has evolved over time, as Jon Sundbo has explained.[102] The focus of this study, however, is not on innovation itself and therefore only selective observations will be made. The importance of the theories is that they contribute to a better understanding of the changes of innovation through time and the effect of the macro-environment on innovation. Sundbo uses four concepts to examine innovation.[103] Although not dealt with in detail here, these concepts might give a better perspective on the evolvement of innovation.

The industrial era saw the rise of innovation theories, coupled to the technology-driven manufacturing of the time. Innovation was not limited to the manufacturing

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2002). From a large overview of definitions presented at that conference (by Davidson) we distil a common core: Entrepreneurship is a process of exploiting opportunities that exist in the environment or that are created through innovation in the attempt to create value. It often includes the creation and management of new business ventures by an individual or a team p. 3-5.

[102] Jon Sundbo, 1990. *The history of innovation theories shows a process whereby old theories wither away, new ones arise and the old ones are revived in a new form p. 3.*

[103] Jon Sundbo, 1990. *The concepts are:*

   o   *Innovation concept,*

   o   *Entrepreneur concept*

   o   *Technology concept*

   o   *Strategy concept p. 5-25.*

industry however, but also affected the service industry.[104] Innovation concepts might have originated in the industrial environment, but over time they have spread to various other types of organisations. The pattern of analysis used will be the topology designed by Sundbo, that is, the analysis of innovation theories in macro-economic studies through what Sundbo refers to as the long development waves. These waves, expressed in a simple manner, are the phases or patterns of innovation in change. According to Sundbo, the totality of innovation and entrepreneur theory can be understood through three different paradigms:

- The entrepreneur paradigm;

- The technology-economics paradigm; and

- The strategic paradigm.

Each of these paradigms occurred in its own historical long wave or phase. Different analyses have proposed different causal factors. One causal factor to be discussed is innovation. Innovation appears in waves or batches that provide a dynamic dimension to the economy.[105] In the context of innovation theory there are three innovation phases.

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[104] Jon Sundbo, 1990. *Innovation theories were developed on the basis of analyses of the industrial sector. The service sector is, however, of increasing importance to economic growth, and service firms make up a large portion of the business sector as a whole. Some two-thirds of the national product and two-thirds of employment are due today to the service sector (including the public sector)* p. 5-6.

[105] Jon Sundbo, 1990. *Innovation as causes is probably the best known theory and is the point of departure for this analysis. The first emergence of the theory can be attributed to Schumpeter's theory of economic development of 1911. Innovation comes in batches at particular, regular intervals. These innovations provide the economy with a dynamic and give it a boost. However, the dynamic abates and the growth declines* p. 35.

The first innovation phase (recovery phase) of 1880-92 was dominated by innovation theories. For the period 1843 to 1904, Gabriel Tarde is seen as the first theorist to explore innovation and entrepreneurship theory.[106]

Following on Tarde's work came Schumpeter's (1883-1950) theory.[107] Although Tarde was the first to draw attention to the concept, it is Schumpeter who is seen as the founder of innovation theory. Schumpeter, who was more of an economist, was content to explain economic development on the basis of the innovation concept. Schumpeter's approach focused on economic factors. In the economic sector Schumpeter moved away from the traditional school of thinking towards the notion that a labourer is a creative power, an entrepreneur.

The second innovation phase (1960s) saw the rapid technological development of large-scale industries. This period can be labelled Fordism. The trend moved to a more systematic planning approach, replacing the old trend of manager's intuition. The organisations grew larger and with that it became more difficult to act on the market. This contributed to the initiation of innovation in the fields of technology and science.[108] This shift in approach lead to adoption of the term "Fordism", referring to

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[106]Jon Sundbo, 1990. *Tardes' contribution, however, was more the creation of conceptual apparatus behind innovation theory than of a major, cohesive theoretical system. Tarde was a theoretician. He was interested in understanding and explaining the processes of change in this society, both the physical changes (e.g. technological changes) and the social changes (organisational innovations as well as changes in attitudes and norms). For this purpose he created the concepts of invention and imitation* p. 49-50.

[107] Jon Sundbo, 1990. *However, the development of innovation is not determined by economic factors alone. It is also determined by social factors. Schumpeter thus set up a socioeconomic universe to explain innovation. His starting point was the traditional points for production: land, labour and capital. He treated the first two factors in the normal way in economics – that is, they are paid for by the results of the production. The third factor, capital, is something Schumpeter makes much of* p. 54.

[108] Jon Sundbo, 1990. *With this wave the acceleration of the development of technology began...Technology thus became the central factor in this school. But the technology factor was associated with the special engineering-orientated type of organisational development and with science* p. 60-65.

the Ford company using technology to improve and speed up the production of motorcars. Innovation on the engineering front became important for manufacturing organisations. In these industries the individual labourers were replaced by new technology. Schumpeter, however, discarded this view and said that entrepreneurship must be seen in an individual and personal role. [109]

The third innovation phase (1980s to 1990s) is the phase that was noted for uncertainty, linked to factors such as the economic volatility resulting from a depression phase of the world economy prior to the 1990s.[110] The world's organisations, trying to recover after this period of depression and the search for new initiatives, created a positive turn towards an awareness of innovation. This phase incorporates the new tendencies in industrial and organisational development. At this time various initiatives in re-evaluation started to take place in organisations across the whole spectrum of industries and fields of science. There was an inspired focus and emphasis, especially in the 1980s, on non-technical initiatives.[111] The technological development initiatives were enforced by the trend to formalise the

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[109] Jon Sundbo, 1990. *Schumpeter thus retains the entrepreneur, understood as an individual personal role, as the driving force. But the entrepreneur is himself eliminated by large-scale industry. Schumpeter, however, decidedly rejects technology as a factor that can replace entrepreneurship as the dynamic force* p. 60-65.

[110] Jon Sundbo, 1990. *Industries felt the depression in the 1970s and 1980s and were faced with the challenge of revitalization. This resulted in a number of new tendencies and initiatives in the companies, and the period is mostly marked by uncertainty and the quest for the most lucrative initiatives* p. 85-86.

[111] Jon Sundbo, 1990. *The 1980s were marked internationally by two different tendencies in the development of industry:*

- o *An intensification of the technological development process.*
- o *A number of new non-technology-based development elements came into focus, especially at the company level* p. 85-86.

research and development (R&D) units or departments. Organisations started to interact more over industry boundaries, with a stronger emphasis on networking.[112] These initiatives, however, had mixed results, although the drives had positive feedback on other areas. Organisations did benefit from these programmes as there was a defined growth in the technological development that contributed directly or indirectly to economic growth. This mixed results also led to organisations venturing into new fields not associated with technology. An array of books and studies was published at that time related to ideological and cultural innovations, indicating that the problems were mainly in the business management or sales and marketing domains. The new non-technology-based development elements that came into focus in the 1980s were more business related.[113] These elements have strengthened the thought that there are more determinants of innovation than technology alone, which has affected the stance of theorists. The determinant of innovation could no longer be restricted to the field of technology. According to Sundbo, the elements seen as determinants of innovation in the era of the 1980s are:

- o Strategy

- o Dynamic management

- o Marketing

- o Corporate culture

- o Japanese management

- o Technology assessment

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[112] Jon Sundbo, 1990. *The beginning of the 1980s led to the launching of a great many large-scale technology programmes, with the object of promoting technological innovations in companies in various nations. …These realizations also help to turn the focus away from technology towards other factors that are crucial to the issue: increasing the companies' and society's innovative capability* p. 86-89.

[113] Jon Sundbo, 1990. *A number of new elements thus entered the industrial development process: elements that were social, organisational or even psychological, that is, non-technical in nature.* p. 90-92.

- o Post-Fordism

- o Innovation management.

What is evident in this phase is a move from the traditional thinking of innovation as a technology to acknowledging determinants of innovations in other spheres. These spheres include organisational elements and, therefore, this last phase will be of specific value to the rest of the study.

3.5. Categories of innovation

It is apparent from the previous section that innovation theories are complex. To minimise the complexity, innovation can be divided into categories. The authors King and Anderson have taken the theory of innovation and subdivided it into categories to facilitate understanding.[114] The aim here is not to study the different categories in detail, but rather to acknowledge the existence of the categories and understand the enabling factors for the different categories of innovation. The proposed table below depicts the categories adapted from King and Anderson:

Table 3.1- Categories of innovation (Source: Adapted from King & Anderson, 2002)

Socio-technical System	Product and Process	Innovation Characteristics	Innovation Source
Damanpout (1990)	Damanpout and Gopalakrishnan (2001)	Zaltman, Duncan and Hobek (1973)	Anderson (1992)

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[114] King and Anderson, 2002. *There are numerous ways in which innovations can be categorized; four useful methods are by the socio-technical system within which they occur, by classification as product or process innovation, by characteristics of the innovation itself, and by the source of the innovation* p. 141.

Socio-technical System	Product and Process	Innovation Characteristics	Innovation Source
Damanpout (1990)	Damanpout and Gopalakrishnan (2001)	Zaltman, Duncan and Hobek (1973)	Anderson (1992)
Technical New products, services or process directly related to the primary work activity	*Product* A new product or service introduced to meet the needs of an external user or the market	*Programmed and Non-programmed* Whether or not innovation is scheduled in advance. (Non-programmed innovations can be further divided into distress or slack types)	*Emergent* Innovation based on ideas emerging from within the organisation itself
Administrative Change to social relationships and communication, and rules, roles, procedures and structures related to them	*Process* New element(s) introduced to the production or service operations of an organisation	*Instrumental-Ultimate* Whether innovation is introduced to facilitate a further innovation or as an end in itself	*Adopted* Innovation copied from other similar organisation, often with subsequent modifications

Socio-technical System	Product and Process	Innovation Characteristics	Innovation Source
Damanpout (1990)	Damanpout and Gopalakrishnan (2001)	Zaltman, Duncan and Hobek (1973)	Anderson (1992)
Ancillary Innovations crossing boundaries between organisation and environment		*Radicalness* The extent to which the change is both novel and risky	*Imposed* Innovations which an organisation has been forced to make by some external regulatory or legislative power

These categories provide an insight into the dynamics of innovation. As with other fields of study, there are various topologies that can be considered. Another theoretical stance is that of the authors Freeman and Perez, who have developed a different model to categorise innovation. The Freeman and Perez taxonomy of innovations is depicted in the adapted table below as indicated by DF Batten, CS Bertuglia, D Martellato, S Occelli:

Table 3.2 - Taxonomy of innovation (Source: Adapted from DF Batten, CS Bertuglia, D Martellato, S Occelli, 2000)

	Type of Event	Sectors Involved	Enabling Factors	Main Effects	Time of Realization
Incremental Innovation	Continuously distributed over time and sectors	All	Demand pressures, socio-culture factors, technological opportunities.	Efficiency improvements, productivity gains, quality	Medium-run

	Type of Event	Sectors Involved	Enabling Factors	Main Effects	Time of Realization
				improvements	
Radical Innovation	Discontinuously distributed over time and sectors	R & D activities in firms, universities, government laboratories		Structural changes, limited and localized economic impact	Long-run
Changes of 'technology system'	Combination of radical and incremental innovations	Several branches of the economy, formation of new sectors	Organisational and managerial innovations	Formation of clusters of innovations	Long-run
Change in 'techno-economic paradigm'	Combination of radical and incremental innovations	Pervasively affecting many branches of the economy	Deep social and institutional changes	Formation of new technological regimes	Long-run

Even though different naming conventions are evident between the two models of categorizing innovation, there are similarities in understanding. In both these taxonomies it is evident certain characteristics do exist and that a source or enabler drives innovation.[115] The enabling factors, as indicated by the authors, are important

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[115] DF Batten, CS Bertuglia, D Martellato, S Occelli, 2001. *Innovation can happen anywhere, but the probability of its survival is not the same everywhere. Although they provide valuable insights into many facets of innovation, the above taxonomies prove far from satisfactory when confronted with*

from the perspective that these enablers will at least support innovation. Depending on the type of innovation, different enablers/determinants might be required. Organisations adopting the innovation paradigm will have to understand the different types of innovations,[116] their characteristics and their enablers. Different types of innovation might be suitable for a specific environment, time-scale and the required effect. This seems logical, if one considers the different types of organisations and the different types of innovations with reference to the categories of innovation. Enabling factors or determinants will be discussed in more detail in the sections to follow.

3.6.   Characteristics of innovation

Some characteristics of innovation have been identified through the topologies of theorists, some of which have already been mentioned. Characteristics are unique identifiers that can be coupled with the different types of innovation.[117] The

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current dynamics of change in spatial systems (whether concerning metropolitan or peripheral areas). What to take from this is the 'Enabling factors' that will be discussed later in detail p. 242.

[116] Carl Franklin, 2005. *But innovations are more than just creating and launching new products. Innovation can be:*

- o   *Service, like search engines or price comparison systems on the Internet*

- o   *Ideas, e.g. 'the earth orbits the sun' or 'man evolved from apes'*

- o   *Ideologies, such as democracy, capitalism, communism*

- o   *Social innovations, including public health, welfare, new types of sport*

- o   *Processes, such as total quality management or new methods of teaching*

- o   *Business strategies, for example, launching a company or merging with another.*

For most readers, the experience of innovation will be an invention, a product launch or a new business p. 37.

[117] Carl Franklin, 2005. *For most readers, the experience of innovation will be an invention, a product launch or a new business. The success or failure of each will be influenced by the same factors: the inherent characteristics of the innovation; the environment in which it is created; the infrastructure*

characteristics of innovation have a direct relation to the innovation and therefore have an influential impact on the success of the innovation. These characteristics also define the type of innovation. To expand on the characteristics pointed out in previous sections, a more comprehensive list of characteristics from Franklin can be noted.[118]

Franklin points out an important feature, indicating that theoretically the perception of the adopter of the proposition outweighs other factors. The perception of the adopter or user of the proposition (innovation will occur only after the proposition has been taken up) can be influenced by the characteristics of the innovation. This is possible owing to the uniqueness of the characteristics that might appeal to the adopters. The combination of characteristics can therefore influence the adopter either in a positive or a negative context. Adding to the already comprehensive list of characteristics are those of Michael West and other authors.[119] These references provide a detailed description of the characteristics. In order to analyse the characteristics further and maybe also to allow for a new conceptual view of the characteristics, they have been summarised in the Table 3.3 below. The proposed table layout shows the two groupings alongside each other, indicating the characteristics from King and Anderson, and the characteristics from Franklin. The primary objective is to extract the characteristics that are similar or include attributes that are the same.

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that allows it to flourish; the characteristics of potential adopters and their perception of the innovation itself p. 37-38.

[118] Carl Franklin, 2005. The details can be found on the pages indicated. p. 38-39.

[119] King and Anderson, 2002. The details can be found on the pages indicated. *...Probably the most widely cited formulation of this distinction is that developed by Michael West and colleagues (West and Farr, 1990; King and West, 1987). They characterized organisational innovation as follows...* p. 2-3.

Table 3.3 - Summarised Characteristics of Innovation (Source: Adapted from King and Anderson, and Franklin)

King and Anderson	Franklin
Innovation is a tangible product, process or procedure within an organisation.	Inducements and subsidies. Is the innovation subsidized to increase take-up? Build and reliability. Is it easy to build and maintain?
Innovation must be new	Allows for discretion. Allows for choices. Similarity/differentiation. If it is similar to something of which the user has had a good/bad experience, less/more resistance can be expected.
Innovation must be intentional.	Capability. Is it able to do the job for which it is intended?
Innovation must not be a routine change.	Standards. Does the innovation create or challenge a standard?
Innovation must be aimed at producing benefit to the organisation.	Risk analysis, risk to use it or reduce a risk if used. Adopting or switching costs. What investment is required to use or switch to the innovation? Disposability. Must be easy to dispose of.
Innovation must be public in its effects.	Image. Does it improve or harm the image of the user? Interoperability. The degree to which the innovation can interact with other systems, products or

King and Anderson	Franklin
	services.
Divisibility, for example: instead of buying the expensive suite, there is the option of buying just one license first.	Co-dependence. Does it require something else to work or to be effective?

The above table gives some indication of the correlation that exists between the characteristics defined by the different authors even though it represents a subjective opinion. Even if no direct conclusions can be drawn from the table, it still allows for a holistic view of the characteristics.

3.7. Determinants of innovation

This section will be devoted to the determinants as an important aspect of innovation. Although different terms are used, their content might be similar and, in the context of this study, this must be interpreted as the strengthening of the arguments and not as mere duplication. This should add value in the sense that it might clear any uncertainty about a theoretical stance or statement. What does this mean? The theories that are argued are held by different authors; as research on the theoretical subjects is debated, theorists build their own notations using the theories of their predecessors and so forth.

The authors George White and Margaret Graham prefer the term "success factors". These authors have identified four success factors for innovation. Franklin also refers

to these success factors.[120] The Freeman and Perez taxonomy, in turn, refers to "enablers". The enablers, together with the type of innovation, are listed below:

- o Demand pressures – Incremental innovation;
- o Socio-cultural factors – Incremental innovation;
- o Technological opportunities – Incremental innovation;
- o Organisational and managerial innovations - Changes of 'technology system';
- o Deep social and institutional changes - Change in 'techno economic paradigm'.

The above examples indicate the different stances that are adopted by the authors. Therefore it can be argued that different determinants can exist and can be paired with specific types of innovation and for specific objectives. For example: inventive merit implies that the innovation will improve current processes, and so do organisational and managerial innovation, even though different terms are used. In the section on innovation theories the determinants as seen from the perspective of Sundbo were listed. These determinants will be elaborated on below.

The first determinant of elaboration is strategy.[121] The following section will expand a bit on strategy and the innovation determinant. There are two theoretical ways of thinking with regard to strategy and the innovation determinant, namely, those of Mintzberg and Porter. Mintzberg belonged to the organisational school, namely the contingency tradition. The emphasis in this school of thought relates to the notion that an organisation is open and changeable, therefore the structure adapts to its

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[120] Carl Franklin, 2005 p. 211. The details can be found on the page indicated.

[121] Jon Sundbo, 1990. *The point of departure is that the company is in a competitive situation. Strategy is working out what the competition will do, and then taking action to ensure one succeeds against the actions of 'the enemy'. If the company can increase its innovation capability, it can develop innovations and thus move quickly towards the goal, which may, for example, be to become the biggest company in the product market or the company that is the market leader with the newest products* p. 91.

surroundings.[122] Porter's stance on strategy is that it must be a clear, predetermined strategy with a strict management component and with more independence for departments and members of the organisation.[123]

Dynamic management is the second element. This focus came about with the realisation that technological innovation had some failures and did not necessarily contribute to increased revenue or market dominance. This led to assumptions that the causes for the envisaged results not in fact being realized could exist in other areas of business.[124] This era was also marked as the time when innovation was more visible

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[122] Jon Sundbo, 1990. *In 1989 he published Mintzberg on Management, where the innovation factor became central and explicit. For he operates on the one hand with an organisation model that has chosen innovation development (technical or other innovation in an organisational context), and on the other with a model for the entrepreneur organisation, which is typified by individual entrepreneur-driven development* p. 145.

[123] Jon Sundbo, 1990. *Porter (1990) analyses the competitive advantage of nations on the basis of a number of extensive empirical studies, He also generalizes the results to apply to companies which operate in international markets. But the factors Porter pinpoints as crucial to a nation's – and thus also an international company's – competitiveness are:*

  o *Strong market orientation, with a clear strategy.*

  o *Internal innovation and external information networks.*

  o *Greater independence given to individual departments and employees, but still a stringent management.*

  o *Standardized services and flexible, standard product modules, but still with the possibility of individual variation in products and services* p. 145-146.

[124] GM Grossman and E Helpman, 1993. *What then has been the contribution of industrial innovation to aggregate output growth? Few if any studies provide a reliable answer to this question for any country. Using a similar 30 percent rate of return in its calculations, the U.S. Department of Labor (1998) found annual contributions of R & D to factor productivity growth in the non-farm business sector ranging from 0.16 percent to 0.19 percent in the years 1960 and 1987* p. 13.

and distributed through the organisation, instead of being restricted to a specific function or department.[125]

Marketing as an element came to the fore as a result of the company's relationship with the press and specifically with television, where some companies appointed information officers.[126]

Corporate culture is notable one of the important determinant.[127] Corporate culture is important for the mere fact that, if it does not support change, it will be more difficult to implement innovative ideas. Innovation or innovative ideas cannot be adopted without some sort of change in the organisation.[128] The importance of corporate culture has been demonstrated historically by Japanese companies that experienced

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[125] Jon Sundbo, 1990. *During the 1980s new management philosophies arose, stressing other elements in the company. They dealt with the company's development capability and the strategic decision-making preparedness of management, and they saw the staff as something other than a mechanical workforce - that is, as a development resource to be cultivated. Idea development in the company as a whole and the creation of a general climate of innovation – not only in isolated R&D departments – are elements of these philosophies* p. 92.

[126] Jon Sundbo, 1990. *The market and the way that the company relates to it is a central aspect of the strategies, often such that strategies take their point of departure in the market and the expected market demand development rather than the company's product and production traditions. Sales problems have come more into focus than production problems. ..... The increasingly important role of the marketing function in the company's overall strategy as well as its innovation work is due to several factors. ..... As a whole these tendencies show that all the industrial companies are increasingly seeking inspiration and innovation incentives in the market and in the social surroundings in general* p. 94-95.

[127] Jon Sundbo, 1990. *The idea has been that the informal social system is very important to the way the company functions, so it is not enough to look at the technology and formal organisations if one wants to adapt production or administrative processes* p. 95.

[128] Stephen P. Robbins, 2003. *When an environment is undergoing rapid change, an organisation's entrenched culture may no longer be appropriate* p. 529.

high growth rates. This shift to corporate culture was driven mainly by the fact that they were the only industrial country to maintain a high growth rate as well as to retain and improve their industries' development capabilities. This was attributed to the corporate cultures within the Japanese organisations.[129]

Technology assessment was a phenomenon that originated in the 1970s in the USA when the Office of Technology Assessment was established. Technology assessment was intended to clarify the social effects of technology or, on the basis of potential social effects, to help with choices between alternative technologies.[130]

Post-Fordism is the era during which companies preferred to move away from the Fordism model, adopting different strategies. Interest in innovation management increased after technological innovation proved less successful than expected. This interest was more inclined to focus on the social and psychological factors of innovation management.[131] What this entails is that the focus has shifted to the leadership of the organisations to ensure that the strategies reflect the structure of organisations for innovation. This requires that the organisation must equip itself to be able to innovate. Therefore the organisation will need to ensure that the required competencies are met to be able to be good at innovation.[132]

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[129] Jon Sundbo, 1990. *Interest then turned more to Japanese management and the organisational system in Japanese industry, especially the corporate culture* p. 96.

[130] Jon Sundbo, 1990. *Technology assessment has thus also led to a stronger emphasis on the needs of society* p. 96-97.

[131] Jon Sundbo, 1990. *Production is no longer standardized conveyor-belt production as in Ford's automobile factories, where the technology determined the organisational structure…It is hard to judge exactly how important this element has been for the company's innovation activity. But it does help to shift the focus somewhat from technology development towards social and organisational matters as something important to the company's development capability and society's growth potential* p. 97-98.

[132] Jon Sundbo, 1990. *Say that the core competences as the basis of future innovation processes must meet three criteria to be good:*

In this section the most prominent determinants were discussed as noted by some of the authors in the field of innovation. The next section will aim to indicate the important aspects relating to the structure of an innovation organisation.

3.8. Designing an innovating organisation

An innovating organisation will require a specific structure to facilitate innovation. This section will deal with the possible structures required for an organisation to be innovative. Historically organisations were structured to be run as effective operations to ensure that business goals are met. Organisations were originally designed to allow for repetitive operations, but as cost effectively as possible. In addition to being cost effective, there is now a need to ensure that the organisations identify new opportunities through innovation.[133] This requires a unique structure to cope with the two opposites. Therefore the structure also needs to be innovative, must be adaptable, readily implement changes and be positioned to take risks. [134]

The characteristics of an organisation that can influence the innovation process are important and will in the end determine the type of organisation and how it will

o *They must produce customer value (the customer is quite central)*

o *They must lead to competitive differentiation (a classic strategic goal)*

o *They must lead to 'extendibility' (one must be able to see a series of new services or products growing out of the competence)* p. 149.

[133] Starkey, Tempest, McKinlay, 2004. *Innovation requires an organisation specifically designed for that purpose - that is, such an organisation's structures, processes, rewards and people must be combined in a special way to create an innovative organisation, one that is designed to do something for the first time* p. 202.

[134] Starkey, Tempest, McKinlay, 2004. *The task of the innovating organisation is fundamentally different from that of the operating organisation. The innovating task is more uncertain and risky, takes place over longer time periods, assumes that failure in the early stages may be desirable, and so on* p. 205.

function. King and Anderson state the characteristics of an organisation that can have an influence on its creativity, either positively or negatively.[135] These characteristics include personnel-related aspects and the human resource practices. Note that these human resource practices can also have a negative influence on creativity or innovation. The contributing factors to the negative influences, however, seem to be more the way the practices are structured and applied, rather than the human resource practices per se. [136]

The culture of the organisation is complex. Every organisation has a unique culture that can be seen as the unwritten rules of the organisation.[137] The first step in bringing change to the culture of an organisation is to acknowledge the fact that it is an intricate task to change culture. Management applies various techniques to influence the culture of the organisation in a specific manner. This creates challenges of its own, however, for it is easier to influence the micro-environment than the macro-environment (outside the organisation).[138] The macro-environment can include the culture of the nation or area, the inherent culture of the employees in general and the culture of the profession or industry.

On the organisational level, there are various factors that can have an influence on innovation in the organisation. These factors need to be considered in the design of an innovative organisation. In the above paragraphs, for example, human resource

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[135] King and Anderson, 2002 p. 50. The details can be found on the page indicated.

[136] Gaylen N. Chandler, 2000. *Interestingly, the development of formalized human resources practices tends to have a negative influence on perceptions of an innovative – supportive culture. ……Our findings seem to indicate that companies operating in non-munificent environments are more innovative* p. 10.

[137] For instance, in an organisation it might be normal practice to work an extra hour per day without compensation. It is not a rule, but the culture of the organisation that expects this from the employees.

[138] Gaylen N. Chandler, 2000. *The finding that culture can be influenced by characteristics of the external environment suggests that culture-building activities may, depending upon environmental characteristics prevailing in a given industry, be less effective than hoped* p. 11.

practices were identified as one aspect that can influence innovation and creativity. In the following few sub-sections, important groups of factors as identified by King and Anderson will be discussed.[139]

3.8.1.   People of innovating organisations

Organisations all consist of people, its members. As people all differ, some people are more creative than others. Creative people normally display certain personal characteristics. Organisational members with these characteristics will be more creative and can contribute to innovation in the organisation.[140] The members with these types of characteristics can be seen as enablers of innovation within the organisation, if employed in the correct manner. One way to create an innovative environment that is built on persons with such characteristics is to ensure that adequate mechanisms are in place to recruit and retain such persons.[141] There should, however, always be a balance to all things, including the combination of people employed. The organisation will require people with other skills and characteristics for purposes other than innovation.

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[139] King and Anderson, 2002. *We will therefore concentrate on four important groups of influencing factors:*

- o   *People*
- o   *Structure*
- o   *Climate and culture*
- o   *Environment* p. 124-125.

[140]King and Anderson, 2002. *Nevertheless few writers will disagree that creativity plays an important part in organisational innovation, even if its role is less straightforward than is often envisaged* p. 12.

[141] Starkey, Tempest, McKinlay, 2004. *The assumption is that some people that are better at innovating are not necessarily good at operating. Therefore, the ability of the innovating organisation to generate new ideas can be increased by systematically developing and selecting those people who are better at innovating than others. But first the desirable attributes must be identified* p. 219.

So far, the emphasis in this section has been mainly on recruiting people with the required skills. It can be, however, that employees in the organisation have the required skills but are not deployed in a manner to maximise their potential. This requires that the management of the organisation needs to assist the employees of the organisation in their new roles of being creative. Management has to ensure that they are able to identify and support employees who are creative.[142] People with creative characteristic are required at all levels of the organisation.

To allow employees to take on their new roles, the organisation or its leadership per se, should allow for support structures to assist the employees. Change will be one of the prominent aspects in the whole process of adapting to the new role. Therefore change management will be a priority of the organisation striving to be innovative. The changes accompanying the creation of an innovative organisation and the changes that occur in the organisation as result of the implementation of an innovation will require change agents[143] to manage the changes. Change management principles include assigning specific individuals the role of assisting employees during the different stages of change. Change occurs over different stages (denial, rejection, etc.) and needs to be managed accordingly. In the event of a specific change taking place, an individual will be assigned the additional role of change agent to oversee, manage and assist with the transition. In most cases, the change agent will be a different person to the person initiating the innovation.

Do organisations benefit from appointing persons in specific roles to generate ideas? Different theorists hold different viewpoints on this question. It will probably be safe

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[142] King and Anderson, 2002. *The personal characteristics of non-managerial, non-professional members of organisations are rarely considered, except in the context of resistance to change. … Many critics argue for a contingency approach, whereby the type of leadership required depends on factors such as the nature of external demands on the organisation and the attitudes of organisational members towards change* p. 125-127.

[143] King and Anderson, 2002. *A change agent might be defined as a person who has been given explicit responsibility for overseeing the introduction of a specific change (or set of changes) within an organisation* p. 127.

to assume that there is some benefit in assigning individuals to generate ideas. These individuals are sometimes grouped together in a unit to form the 'Research and Development' department or can function within the different departments of the organisation. These individuals can initiate ideas by applying processes and techniques available within the organisation. [144]

However, this might require an organisational structure for allowing the ideas to be initiated and implemented. Structures required for organisations to facilitate innovation and creativity will be discussed next.

So far, under the sub-section devoted to the people required for innovation, it has been noted that people with creative characteristics need to be recruited, management must support idea generators, ideas champions must be identified, and employees must be identified to act as change agents. These individuals will represent only a small percentage of the organisation. The roles of the remaining members concerning innovation must also be considered. To allow a better interpretation of the roles of these individuals, the personal characteristics of the individuals must be assessed. The individual members will be the adopters (users) of the new idea (innovation). Therefore, the perceptions of these members are of particular importance, as they will determine the success of any innovative idea. This is another reason why change management is so important for organisations. Therefore we need to understand the roles and characteristics of the users or adopters. How difficult will it be for an organisation to ensure the correct complement of innovative employees to allow innovation to prosper? Franklin refers to Rogers, who gives some indication of the percentages and type of adopters.[145] Considering that only that 2.5% of people are

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[144] King and Anderson, 2002. *The individuals who take prime responsibility for the introduction of innovations often are not formally appointed change agents, but rather 'ideas champions' who feel a strong personal commitment to a particular new idea and are able to 'sell' it to others in the organisation* p. 128.

[145] Carl Franklin, 2005. *Not all people are born equal when it comes to trying out new ideas. Some of us are enthusiastic and adventurous, others are conservative and cautious. Rogers identified five*

innovators, according to the studies by Roger, organisations will have to specifically focus on innovation through applying the right strategy and supporting processes. Even so, these alone will not ensure that innovation will be successful; other factors need also to be considered.

3.8.2. The innovating structure

In the preceding sections various references were made to the structure of the organisation. To expand on these, consider the notion that the structure for operational organisations differs from that of innovative organisations. In organisations there are various factors that can influence the effectiveness of innovation. The organisational structure by itself is comprised of various elements that can influence innovation. The people element is one; people are not only required for the organisation (social unit) to exist, but also because the organisational structure is filled by persons acting out certain roles. The 'structure' of an organisation is part of a group of factors that can influence innovation, a view based mainly on theory and research that indicate it will be very unlikely to have an organisation that can focus only on innovation.

The next logical assumption, then, is that organisations need to separate innovation from the rest of the organisation. This could be based on a model whereby the structure of an organisation must consist of certain elements.[146] By ensuring that these elements are present in the organisational structure, the innovation factor will be

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categories of adopter, based on their willingness to try out new idea p. 43-44. The details can be found on the pages indicated.

[146] Starkey, Tempest, McKinlay, 2004. *Collectively the roles of orchestrators, sponsors and idea generators working with and on reservations, constitute the structure of the innovating organisation.* p. 211.

higher, but other organisational focuses will still be evident. This structure of the innovating organisation encompasses these elements:

- o Three vital roles that must be filled – idea generators, sponsors and orchestrators;

- o Differentiation, a process that differentiates or separates the innovating organisation; and

- o Reservations, the means by which the separation occurs - and this may be accomplished physically, financially or organisationally.

Like any organised phenomenon, innovation is brought about through the efforts of people who interact in a combination of roles. A role must be identified for the creation of ideas, typically a person with a natural alignment to creativity. The members taking up these roles will be the idea generators of the organisation and could be on different levels within the structure of the organisation.[147] A person with the characteristics and required skills to effectively generate ideas will ideally fill this role.

The success of failure of each idea or invention that is developed will necessitate a dedicated, full-time individual who will typically act as the sponsor.[148] An important component of the whole innovation structure is the processes and mechanisms that allow for the evaluation of the ideas, determine their feasibility, and promote and facilitate them until implementation. The success of innovations is determined by their uptake or the successful utilisation. The 'sponsor' can take on various forms and is partly determined by the type and size of the organisation. The sponsor can be the appointed steering committee or a person assigned the role of sponsor. Applying

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[147] Starkey, Tempest, McKinlay, 2004. *The idea generator is usually a low-level person who experiences a problem and develops a new response to it* p. 207.

[148] Starkey, Tempest, McKinlay, 2004. *Every idea needs at least one sponsor to promote it. To carry an idea through to implementation, someone has to discover it and fund the increasingly disruptive and expensive development and testing efforts that shape it. The sponsor must also recognize the business significance of an idea* p. 207.

these principles gives a more formal structure to idea generation and innovation within the organisation.[149]

It was noted earlier that a member of the organisation could be assigned the role of a change agent. The role of the orchestrator is almost similar to that of a change agent, but with more focus on promoting the new ideas and protecting the idea generator.[150] However, the two roles should not be confused by thinking that, because of their similarity, only one is required. A change agent will focus on the change concepts and specifically facilitate the persons or processes that will be affected by the new idea. The orchestrator will be responsible more for protecting and promoting the idea. The orchestrator needs to be an influential person within the organisation with the proper authority and communication channels to protect the idea generator and assist with the implementation of ideas.[151]

Organisations have, by assigning the specific roles of idea generator, sponsor and orchestrator, already acknowledged the importance of differentiation. Differentiation is necessary because the organisation still needs to function separately as an

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[149] Starkey, Tempest, McKinlay, 2004. *The point here is that, by formally designating the role or recognizing it, funding it with monies earmarked for innovation, creating innovating incentives, and developing and selecting sponsorship skills, the organisation can improve its odds of coming up with successful innovations* p. 208.

[150] Starkey, Tempest, McKinlay, 2004. *The third role is that of the orchestrator. The orchestrator is necessary because new ideas are never neutral. The orchestrator must protect idea people, promote the opportunity to try out new ideas, and back those whose ideas prove effective. To play their roles successfully, orchestrators use the processes and rewards* p. 207-208.

[151] Starkey, Tempest, McKinlay, 2004. *By recognizing the need for these roles, developing people to fill them, giving them opportunity to use their skills in key processes, and rewarding innovating accomplishments, the organisation can do considerably better than just allowing a spontaneous process to work. Several key processes are part and parcel of this innovating organisational structure* p. 211.

operational unit while also being innovative.[152] Some organisations then create specific units for idea generation. These units are mostly referred to as research and development departments/units within the organisation. This can be a formal or an informal arrangement within the organisation. The maturity level of the organisation in terms of innovation, together with other factors, can influence the structure of these research and development units to be more formal or informal.[153]

The last element: reservations basically imply the structure whereby separation takes place.[154] The separations can be formal, informal, temporary, permanent, internal or external. Reservations are similar to the 'playroom' techniques used to encourage organisational learning. Environments are created separate from the operational side of the organisation. This allows for idea generators to freely try out their ideas and simulate them in an environment that has no effect on the operations of the organisation. This is an area where learning takes place through actions; every test creates the opportunity to learn. It is this learning that, in the end, results in an idea that works.

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[152]Starkey, Tempest, McKinlay, 2004. *…that if one wants to stimulate new ideas, the odds are better if early efforts to perfect and test new crazy ideas are differentiated – that is, separated – from the functions of the operating organisation. Such differentiation occurs when an effort is separated physically, financially and/or organisationally from the day-to-day activities that are likely to disrupt it* p. 208-210.

[153] Starkey, Tempest, McKinlay, 2004. *In summary, invention occurs best when initial efforts are separated from the operating organisation and its controls – because innovating and operating are fundamentally opposing logics... The less the dominant culture of the organisation supports innovation, the greater is the need for separation* p. 208-210.

[154] Starkey, Tempest, McKinlay, 2004. *Reservations are organisational units, such as R & D groups, that are totally devoted to creating new ideas for future business. The intention is to reproduce a garage-like atmosphere where people can rapidly and frequently test their ideas. Reservations are havens for safe learning. When innovating, one wants to maximize early failure to promote learning* p. 211.

These separations can, however, also create a negative perception among employees towards the reservations if not managed appropriately. This is specifically relevant where, historically, employees were abandoned without proper support from management. Reservations, as any other function, process or department, need the proper support, funding and authority within the organisation to truly give them structure. This will be relevant to the whole structure for innovation creation within the organisation.[155]

The key processes seen as essential for the innovation structure need to be understood by management to ensure the success of innovation within the organisation. It is a truism that money that makes the world go round; the same applies to innovation. Organisations tend to avoid idea-generation (innovation) strategies owing to the costs involved and sometimes also the low return. Like any other business unit within the organisation, the 'reservations' must be able to show a return on investment, even if they are not directly responsible for generating income. This requires a holistic view by management on innovation to be able to see the returns on innovation investments. Innovations tend to have a medium- to long-term return on investment.

Why is the holistic view important? There are cost savings that can be generated in the design of the innovation organisation or reservation – from an early stage if

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[155] King and Anderson, 2002. *Structural recommendations must be considered in the light of the history and current circumstances of a particular organisation. For instance, managers may intend the introduction of autonomous work groups as a means of stimulating innovation through enhanced discretion and participation, but it may be experienced as a lack of support and direction if the staff involved has historically felt abandoned and unsupported by management* p. 132-133.

King and Anderson, 2002. …*To a large extent, the psychological rationale for the effectiveness of such structures is in terms of job discretion and idea ownership through participation. High discretion is constantly found to predict innovation and creativity at work, (West, 1987; Hill and Amabile, 1993) both through the motivating effects of a sense of control over one's own work and by removing hierarchical barriers to trying new ideas* p. 132-133.

planned properly. This includes the sharing of resources, equipment, office space, project resources and other assets. Organisations can, through the use of projects, assign people to the reservations from different divisions within the organisation. This means a temporary use of the employee, but a high cross-sharing of information between individuals from different business units.

There are various techniques that can be applied by management, for it is ultimately management who will direct the organisation to take on an innovative structure or not. This emphasises the importance of the leadership of an innovating organisation. The leadership of the organisation will have to lead by example to ensure a shared vision that allows for an innovating organisation; they must ensure that organisational design not only encourages idea generation, but also that it is managed in an appropriate way. This includes supporting and managing the individual, the idea generator, through career management structures. Providing a communal place for relaxing during lunch breaks allows staff from different business units to interact in an informal setting. This allows for networking and sharing information in a relaxed atmosphere.

A more formal way of achieving the sharing of information is through inter-divisional (or between business units) sharing of human resources to assist where they are more required. All these initiatives allow for knowledge sharing that can be used to generate new ideas or to improve on ideas – which is just as important as generating new ideas – or to prove beforehand that an idea can be successfully applied. All of this requires support and motivation from management, not only to live the vision, but also to ensure adequate funding.[156] As mentioned earlier, an idea of one individual needs to be shared, made practical and accepted by the organisation. This idea or product has to be implemented and used. The uptake of the innovation defines the success of the innovation. This must be done in a similar way to any other change to a process or product, i.e. through a managed process. The idea needs to be implemented

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[156] Starkey, Tempest, McKinlay, 2004. *A key process that increases our ability to innovate is a funding process that is explicitly earmarked for the innovating organisation* p. 212-216.

and this should be done in a structured way.[157] One way to ensure a structured process is followed is through treating the idea as a project or programme and then managing it in such away.

Organisations need to motivate the generation of ideas using different techniques. However, most of these techniques are focused on assisting idea generation through structure, direction and funding. On an individual level the idea generators need to be valued and motivated. Organisations implement reward systems as an effective way to keep these individuals motivated, as well as spurring on other members of the organisation. Organisations might already have certain reward systems, such as profit sharing and bonus schemes; these are, however, all related to the operating of the organisation. The reward system of the innovating organisation needs to motivate idea generation and reward not only the generation of an idea, but also the successful implementation of the idea. This means the reward system must include the different role players in the innovation process.[158] This implies that the innovative organisation will need more then one type of reward system.

3.8.3.   Innovation climate and culture

"Climate" is the term used in the milieu of innovation when interpreting how the members of an organisation experience the culture of that organisation. Again, there

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[157] Starkey, Tempest, McKinlay, 2004. *Perhaps the most crucial process in getting an innovative product to the market is the transitioning of an idea from a reservation to an operating organisation for implementation. Program management is necessary to implement new products and processes within divisions* p. 212-216.

[158] Starkey, Tempest, McKinlay, 2004. *The innovating organisation, like the operating organisation, needs an incentive system to motivate innovating behavior. Because the task of innovating is different from that of operating, the innovative organisation needs a different reward system. These rewards are primarily for the idea generators. However, a reward measurement system for sponsors is equally important* p. 216.

are different theories about defining climate.[159] Some theorists see climate as merely an extension of culture. Climate on its own, the environment, implies that climate must be of such a nature as to facilitate innovation. In general, such an environment must be open to new ideas, adoptive of change, risk orientated, have open communication channels and a networking environment, to name a few. Eventually these principles will become part of the culture of the organisation. In the wider or macro-environment, this is more difficult for the industry and/or even a country that needs to be influenced. In terms of a country, for instance, one factor that can play a role is the economic climate; the country can be in an economic depression and so forth. Note that it is important to acquire an understanding of the theories that relate to climate and culture.

As indicated above, the macro-environment (outside the organisation) also plays a role in innovation creation. Culture can be described on three different levels.[160] Two of these will deal with culture on the macro-level and one will deal with culture on the micro-level (within the organisation). On the macro-level, national culture and professional culture are the aspects over which the organisation has limited, if any, influence. On the micro-level, corporate culture or organisational culture can be influenced. These cultures on the micro-level are important for innovation within the organisation.

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[159] King and Anderson, 2002. *Ekwall (1996) draws a useful two-way distinction in conceptualizations of climate. First, some writers treat it as effectively synonymous with culture by including values, beliefs and norms within the concept, whilst others strive to maintain separation between the concepts through a narrower definition of climate. Second, for some theorists, climate exists in the perceptions of the organisational members, arising from the nature of their interactions (e.g. Schneider, 1975). Common recommendations for climates supporting innovation emerging from such work include openness to change, risk taking, tolerance of debate and disagreement, and playfulness (e.g. Wet, 1990; Nystrom, 1990; Ekvall, 1996)* p. 134.

[160] Terrance E Brown and Jan Ulijn, 2004. *Not all innovative people are entrepreneurial; it seems a special mindset (and environment) may be required for this...the various authors handle culture at three different levels: national culture, corporate culture and professional culture* p. 9.

To understand culture, it can be approached in two different ways.[161] The first is the structural approach and the second the interpretative approach. Under the structured approaches, organisational culture can be classified according to different types (role cultures, power cultures, task cultures and person cultures). These types are important, for the organisation needs to address the required type of organisational culture to obtain the results for an innovating organisation.

Role cultures can be associated with organisations in which the emphasis is mainly focused on a strong hierarchical structure with roles and job descriptions that are clearly defined.[162] In addition to this, the authority of the structure is enforced and the line of command has to be followed at all times. This is a pyramid type of hierarchy where the control is from top to bottom. This leads to an autocratic or bureaucratic management style that does not allow much freedom for debate, ideas or challenging of any decisions. It has already been identified in previous sections that, for idea generation and innovation to take place, certain characteristics are required. This type of culture (role culture), however, does not fall into that category.

Power cultures represent the type of organisational culture that is dictated by a strong individual in the organisation.[163] This will normally be an individual in top

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[161] King and Anderson, 2002. p. 135 – 137. The details can be found on the pages indicated.

[162] King and Anderson, 2002. *Charles Handy has identified four types of culture. …. Role cultures are typical of the classic bureaucratic model of organisations, where the structure is one of multiple layers of hierarchy, each reporting to the one above. Key values are adherence to and expertise within clearly defined roles - ambiguity of any kind is highly threatening, and as a result formal rules, regulations and procedures abound. Given these characteristics it is not surprising that role cultures are generally held not to be effective innovators* p. 135.

[163] King and Anderson, 2002. *Power cultures are often found in organisations which have grown up around one strong, authoritative individual. Status, obedience and control are highly valued, as in role cultures, but unlike classic bureaucracies, in power cultures the central authority tends to function through ad hoc decisions made to deal with particular circumstances rather than through the imposition of fixed rules and regulations. This enables such cultures to respond to and initiate change more rapidly then role cultures* p. 135-136.

management that dictates the culture that is typically lived out by the management team of the organisation. The hierarchical structure of this kind of organisation is almost similar to that of the organisation with a role culture. However, in power culture the procedures, rules and regulations are not as evident as in the role culture. In a power culture it is mainly individuals who make decisions on an ad hoc basis, whereas the role culture is rule driven. Similar problems exist with this kind of culture as with the role culture in terms of structural difficulties. One problem that stands out is that these cultures are not open enough to encourage innovation. However, power culture has the advantage that decisions and changes can take place faster owing to less red tape than is normally associated with an organisation bound to rules and regulations. The related problem is that it is mainly a strong individual who makes decisions; it is irrelevant whether they are wrong or right, as they will go unchallenged. Idea acceptance does not have much chance of success, except if endorsed by the strong individual and, if the idea is disliked, the likelihood of the idea evolving into an innovation is very slim.

The association of structures with the different types of cultures cannot be ignored. To explain this notion the types of structures need to be examined. Apart from the typical hierarchical structure of organisations, there is an organisational structure referred to as a matrix structure. In a matrix structure the defined authority or traditional line of command from top to bottom is broken down and replaced with a flat structure. The flat structure is based on fewer levels within the organisation. This is similar to an organisation with a top management structure, but without a middle management structure. Organisations with a flat structure are more open and flexible. An important characteristic of an organisation with such a structure is that information sharing and communication also take place in a horizontal manner within the organisation, whereas in an organisation with a strong hierarchical structure, communication takes place mainly vertically, that is, from top to bottom. Information sharing contributes to innovation, which makes this organisational structure more acceptable to the innovation organisation.

The use of projects is also applied in the matrix structure organisation to get tasks completed. Through the use of projects resources are combined with the required

skills and knowledge to complete the tasks effectively. In this way staff from different sections of the organisation have the opportunity to work together in a project team, where sharing of knowledge can take place. This type of environment facilitates idea generation because of the team's working together, for instance, when solving a certain problem. The matrix structure is more frequent in smaller types of organisations than in bigger organisations. Unfortunately, in most instances, this structure does not occur voluntarily but due to circumstances. In smaller organisations fewer employees can be appointed from a cost perspective and therefore employees are required to be able to perform a wider variety of tasks. In the bigger organisations aspects such as corporate governance require that organisations have adequate controls within the various processes of the organisation. The employees are assigned specific responsibilities and, through the segregation of duties, employees are forced to do only specific functions. The one possible solution is to multi-skill staff so that they can apply their skills in more than one area of expertise. To make this possible, tasks are managed as part of projects. This method of applying projects is a way to bridge the problems associated with the fact that not all people are innovators. This allows for innovation to be present within an operational organisation.

The culture associated with the matrix structure is that of a task culture.[164] The task culture places a high premium on the achievement of teams or groups. Therefore the reward systems in an organisation with a task culture are mainly based on team achievements.

Any type of organisation consists of individuals (members) and innovation starts with idea generation from individuals. Therefore, organisations need to understand and acknowledge the importance of the roles of the individuals in the organisation. In an

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[164] King and Anderson, 2002. *Task cultures are associated with matrix structures. They stress flexibility, adaptability and egalitarianism within project teams, lateral rather then vertical communication, and place a high value on individual and group achievement. They are commonly considered the most favorable towards innovation, and are routinely prescribed as the ideal type by both popular and academic management writers* p. 136-137.

organisation with a person culture that is exactly where the focus is.[165] Organisations with a person culture place a lot of importance on the individual and the relationships between individuals. Reliance is placed on the individual for the completion of tasks and eventually the results. The individuals are empowered to take responsibility for their own deliverables. This creates an environment for individuals to find solutions, create ideas and implement them. The fact that this is applicable to all or most of the individuals of the organisation ensures an ideal environment for idea generation. There are, however, a few pitfalls. The idea can only become an organisational innovation if adopted by the organisation. In this type of culture the ideas are not normally shared and are implemented in isolation; therefore, an idea does not always evolve into an innovation. To be able to get it implemented on an organisational level requires a lot of persuasion as a result of the lack of information sharing as part of the idea generation. Typically, the structure of such an organisation does not prohibit information sharing; on the contrary, it is informal and open, which is ideal for networking. Yet because of the nature of the culture, sharing does not take place in a natural/voluntary manner. This type of culture is synonymous with professional organisations such as practices for lawyers, architects, etc. The above four cultures were discussed under the category of structural approaches to culture.

Another way of understanding culture is to adopt the interpretive approach.[166] In the previous approach structure was seen as characteristic, or even the enabler in some

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[165] King and Anderson, 2002. *Person cultures emphasize individual autonomy and interpersonal relationships above all else. They are therefore associated with highly decentralized and informal structures, where control is exercised through mutual accountability. Organisations such as workers co-operatives, communes and professional partnerships (e.g. lawyers, general practitioners) are examples of person cultures. Because of the maximizing of individual direction, person cultures can help facilitate high levels of individual creativity. However, this may not always translate into organisational level innovation, because of the need to achieve consensus by persuasion* p. 136-137.

[166] King and Anderson, 2002. *Interpretive approaches view culture in terms of the symbols, rituals and myths pervading the organisation. Managing change therefore involves the manipulation of these symbolic elements of culture, and the communication of them to staff and customers* p. 137.

cases, of the culture. With the interpretive approach, the focus is more on the behaviour of the members of the organisation. Any new member of an organisation will identify with something that is unique to the organisation, which is not a written rule but is practised by the members of the organisation. A simple example of this is when an employee of a company that sells a specific product goes shopping and a similar product from a competitor is available, the employee will not buy the product of the competitor. This is not something that can be enforced. It is an unwritten rule. In a lot of these instances the individual is not even informed about the rule; the individual just becomes aware of it and accepts it as the norm. To change unwritten rules or behaviour is more complex and therefore it is more difficult to change an existing culture in an organisation. The culture is not a defined set of rules that can be re-written, communicated and implemented. Identifying behavioural patterns that form part of the organisational culture can be difficult, mainly because culture evolves with the organisation.

Culture is entrenched by the leadership of the organisation, regardless of the type of organisation or where the organisation is geographically situated. The culture evolves over time and later becomes behaviour throughout the organisation. This is probably another reason why it is so difficult to change culture.[167] It is a habit that needs to be broken, and not of just one person, but of all the members of the organisation. The leaders in the organisation initiated the cultural behaviours and are the main drivers that can influence change to the culture of that organisation.

How does the theorist recommend that an organisation overcome these challenges? Different techniques and concepts are applied to change the culture (climate) of the organisation. The parallel learning structure proposed by Bushe and Shani is one concept that can have an impact on the climate of the organisation. The structure of

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[167] King and Anderson, 2002. *However, there is a need for caution, as there are dangers in overemphasizing the extent to which climate and especially culture can be managed. An organisation's climate and culture (or climates and cultures) have deep roots in its history and in the personal experiences of its members. These cannot be magicked away by a change of logo and the distribution of a mission statement, as managers sometimes seem to hope will happen – perhaps under the influence of overoptimistic culture change experts* p. 138-139.

organisations, as indicated earlier, can have a negative affect on establishing a culture that will encourage idea generation. This is where parallel learning can be a contributing factor to change, since it can be applied to any kind of structure that exists within the organisation. Parallel learning concepts are based on the principle that the individual is empowered to take up challenges, thus allowing the individual to develop and learn. As soon as these principles are imbedded, they create an environment where there is a natural need for competition and learning. Information gets shared more voluntarily, but all this happens in co-existence with the operations of the organisation. This is achieved by creating a separate section or unit that can operate in parallel with the normal operational structure of the organisation.[168] There are no changes to the structure of the organisation, but still an environment is created for idea generation. So in effect the organisation will be multi-cultured. The organisation is composed of the usual operations, but with the additional sub-unit with a more open, risk-taking culture where ideas can be generated.

The above paragraphs have dealt mainly with the organisational culture, with only some references to the macro-climate or macro-culture. The culture of a nation, as a macro-culture, can play a tremendous role in the acceptance or rejection of an innovation. Culture on a national level refers to traditions, religion, beliefs, language, legends and habits. An example of this would be a country in the Middle East with a strict adherence to the Muslim religion, where the use of alcohol is totally prohibited. The launch of a new type of wine opener will have limited, if any, success. In other countries, and specifically in the smaller communities where tradition plays a major role, acceptable behaviour is carried over from generation to generation.[169]

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[168] Gervase R Bushe and AB (Rami) Shani, 1991. *This kind of parallel learning structure not only overcomes some of the structural barriers to innovation, but also can create the kind of organisational climate within the bureaucracies that will encourage individuals to take initiatives.* p. 31-32.

[169] Carl Franklin, 2005. *The success of innovation is not only a function of perception and time, it is also a function of geography and culture. What works in one country might not work in another – one of the best examples being the use of condoms in Catholic countries* p. 120.

The use of a specific tool or the dislike of a certain product will be carried over from one generation to the other and it is therefore very difficult to influence. Organisations need to consider the culture of the countries and/or nations where an innovation will be launched. The positioning of the innovation is an important factor for its success because the culture of a nation cannot be changed by the organisation. The importance of climate and culture is evident not only in the field of innovation, but even when extended to other fields such as leadership. With hindsight it makes sense to extend these to leadership in organisations; it is, at the end of the day, mainly the leaders of an organisation who dictate the culture of the organisation.[170]

3.9.   A strategic view of innovation

Strategy as a determinant of innovation was discussed earlier in this study. By applying those notions, it can be argued that strategy can and should play an important role in innovation in a company. How do organisations go about developing a strategic view of innovation? Companies tend to focus on a strategy mainly to be the leader in a specific field or to have the biggest market share for a range of products. Traditionally, the strategies to support that viewpoint were mainly marketing or production driven. This needs to change, however, for the environment changes at such a fast rate that it will become almost impossible for an organisation to survive just by producing or selling specific products.

The organisations will need to change their strategies to be able to bring new products onto the market on an ongoing basis at a more rapid rate.[171] This requires specific

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[170] King and Anderson, 2002. *It is not only in relation to innovation that climate and culture have become major preoccupations within occupational psychology - a substantial literature has built up looking at how they relate to such things as organisational commitment and leadership* p. 133.

[171] Jon Sundbo, 1990. *A view of innovation as a broader process of change based on the company's strategic choices has developed. The source for this development of the basic strategy theory of innovation is to be found in the literature of business economics. An understanding of innovation in terms of the resource-based view of the company has continued in Hamel and Prahalad's work,*

organisational structures, processes and approaches together with a strategy based on innovation. There will be certain enablers that will assist the organisation to reach the strategy and goals. This might mean that the organisation will have to build up its competencies in order to generate new ideas for innovation on a continuous basis. This allows the organisation to take advantage of the innovation concepts and get new products or services onto the market. The competencies required are not only limited to skills and knowledge, but also depend on possible changes within the organisation. Earlier sections highlighted the idea that the operational organisation differs from the innovative organisation. So, for the organisation to adopt an innovation strategy, the organisation will need to change the business processes, together with the structure of the organisation, to align the structure to the new business processes.

What is meant by stating that the business processes need to change? Consider that the organisation needs to be innovative, to generate new ideas and to get a product onto the market as soon as possible to maximise the benefit of being the first, but at the same time is already working on new ideas.[172] This means a quick turnaround time is required. These business processes will have to be simple yet effective to handle all the requirements of an innovation organisation.

Organisations should, for one thing, be customer focused; the customer needs to be the centre around which all of the business is built and, for an organisation with an innovation strategy, even more so. The customers will determine whether it is an innovation by their acceptance of the new idea/product. Organisations will struggle to be innovative in the first place if they cannot survive. Competitive advantage is one of

'Competing for the future' (1994). They launch the theory that companies do not compete on new products but on an even deeper-lying factor: their capacity to develop new products p. 148.

[172] Jon Sundbo, 1990. *The look into the future only provides a basis for identifying a relatively broad path of development. The company must therefore concentrate on building up the capability or competence to develop innovations along this path. In its internal organisation the company must restructure itself so that it has these competences. This may mean comprehensive organisational changes. Processes and products may have to be broken down and put together in new ways - that is, the business process has to be re-engineered* p. 148.

the strategies all organisations aspire to and this is no different for innovative organisations. Most organisations focus on the customers as part of their strategies and, specifically, in getting the product to the customer through marketing strategies. Marketing is normally a big portion of the budget of any organisation and will remain so in the future, and changing to an innovation strategy will only mean that more new products will be launched. So it makes sense that the marketing and innovation strategies should be aligned. Neither can be seen in isolation.[173] Consider that the organisation that adopted an innovation strategy plans to generate 30 new ideas in the next year and foresees that at least 20 of those can be launched as innovation products. However, the marketing strategies still aim to launch the traditional three new products and re-establish six old products, which was the traditional approach. Organisations, and specifically the leaders of organisations, need to adapt their strategies for an innovation organisation. This possibly indicates that the leadership concepts and characteristics, such as strategic thinking, are as important for innovation as the innovation principles themselves.

3.10. Environmental influences on innovation

In the environment outside of the organisations, or the macro-environment, there are variables that have an influence on innovation. The literature has indicated that it is no longer possible to divide work and home, and see them as two different entities with the one not influencing the other. If that is the case, then organisations cannot treat the two in isolation when it comes to innovation. The home will influence the

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[173] Jon Sundbo, 1990. *This whole conglomerate of marketing theory, service management theory and strategic theory provides an alternative proposal for an innovation factor which is collective and organisational, and which is not restricted to technology. It is a different proposal from the socialist state of Schumpeter II (Schumpeter 1943). Strategic planning is therefore an answer to both the old question of a model for a collective type of innovation process, and the call for a central factor, which can make the strategic and marketing theories into a potential third innovation paradigm. Strategic planning and strategic behavior are therefore the main factors in this new potential paradigm* p. 153.

world of work and vice versa.[174] Skills and knowledge that are obtained from home or from the urban area can be applied in the organisation. This newly acquired knowledge will be used to create ideas that can result in an innovation. This innovation can be used (if a product) by the customers in the urban area of which the individual in the organisation is also a member. So what better way to generate ideas than by understanding the relations between the individual members of an organisation and the relation to other organisations? It is necessary to bear in mind that an organisation refers to a group of individuals with a common interest or goal. This network of interactions sets the platform for collective learning and knowledge sharing.

Sharing and learning across organisational boundaries take place in an informal way, which holds benefits for all. However, what about the aspects that exist within the environment outside the organisation that have an influence on the success of an innovation? Organisations will have to know and understand environmental influences that can promote or prevent the success of an innovation.[175] Organisational strategies for innovation could constitute the lead in a specific field and yet the organisation might have to cope with other aspects just to ensure survival.

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[174] DF Batten, CS Bertuglia, D Martellato, S Occelli, 2001. *Learning and innovation have a dual role in urban evolution. On the one hand, they possess a cosmopolitan dimension in the sense that any creative exchange permeates cultural borders and rapidly takes on global significance. The highly interactive part of the learning process is a collective one, as mentioned above. It is often regarded as a public good because it is available to all who can engage in it. On the other hand, creativity has a private dimension, sometimes even a confidential dimension, associated with the skills of an individual who produces outstanding kinds of work – such as music, poetry, scientific ideas or technical innovations* p. 3.

[175] King and Anderson, 2002. *In seeking to identify factors which help or hinder innovation, it is not enough just to look at features of the organisation itself: its people, structure, climate and culture. It is also necessary to look at the environment within which the organisation exists, and the way it interacts with the environment* p. 139-140.

Acknowledging this already indicates that the organisation will have to track changes in the environment to be able to align itself correctly in the market. This way the organisation will be able to position itself in the market.

How can an organisation enable the sharing of information in a more structured way than the informal, often voluntary, sharing of information across organisations, for instance, between professionals such as engineers, etc.? One method used is to ensure that the organisation belongs to relevant user groups and by sponsoring members of the organisation to attend user-group meetings. This allows for networking opportunities where vital information can be gathered.[176] Some organisations actually appoint a person responsible for determining the major trends, for instance, in the technology environment. This is not limited to technological organisations, but organisations in all different segments. Many organisations use technology as the backbone of their organisation, whether for manufacturing or administration. New technology allows for other innovations that use the specific technology; one innovation can lead to another related innovation. There are several examples of this: through the Internet, further innovations came into being, such as online booking systems, e-business opportunities (for instance, *Yahoo* and *eBay*), to name only a few. With every new technological innovation multiple new opportunities arise for other innovations, to support, compete or improve on the original innovation. As noted above, it is important to have a good understanding of the environment around the organisation in order to seize opportunities.[177] However, with the rapidly changing

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[176] King and Anderson, 2002. *Individuals in roles, which cross organisational boundaries, and professionals who have access to formal and informal networks of fellow professionals, have the opportunity to come across new ideas which could be applied within their own organisations. The extent to which an organisation engages in an active search of the environment for new ideas to adopt (commonly referred to as environmental scanning) depends on its own perception of its own relationship with its environment* p. 139-140.

[177] King and Anderson, 2002. *Morgan (1986) argues that some organisations fail to innovate because they have a rigid view of themselves as entities separate from their environment. He gives the example of typewriter manufacturers who failed to take account of changes in computer technology, which led*

environment, change sometimes becomes a necessity rather then an opportunity. With the introduction of the Internet came e-business with, of course, various dotcoms not making it, but there are other companies that have made a success of e-business.[178] More and more companies that are not traditional e-business companies are expanding their business to the Internet. Why? The environment is changing; more customers are making use of the Internet. The best example is certainly the banking industry; these days family banking cannot do without Internet banking.

The environment external to the organisation is one aspect. The internal environment of the organisation is as important. All innovations are not necessarily products or services that are sold to the public; they can also be an internal improvement of a business process. This kind of innovation has an influence on the working procedures of the members of the organisation and needs to be managed. The change can also link and spread over different units within the organisation, for which there is no specific benefit. All these points need to be considered. Are the business unit's procedures affected in totality, or is it only a small subset of the procedures that is affected? Is the business unit more open to changes, for instance, the marketing department compared to the finance department; which is more rule orientated and in general less accepting of changes? The less explicit the benefit is to the members of the organisation, the less eager they are to change.

However, there is still a high percentage of innovations implemented in organisations that fail, but that are brilliant and should never have failed. It is important to note that, for these instances, the processes accompanying idea generation and innovation were

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to the development of word processors, because they did not see micro processing technology as being part of their environment. To have done so would have required a change in the way they perceived themselves p. 139-140.

[178] Rosabeth Moss Kanter, 2001. *Dotcoms go from birth to old age (and, in many cases, death) before a traditional firm is out of the starting gate on a new strategy* p. 44.

functioning as intended. It is the environment that is not accepting of the change, meaning the members of the organisation are not accepting of the change. [179]

3.11.   Marketing innovation

As previously mentioned, it is one thing to be innovative and it is something different to say that the innovation was successful. The success of an innovation depends on perception and, if not accepted, then the innovation will ultimately fail. The previous sections point out that there are certain processes that need to be managed, among which change is prominent. Furthermore, perceptions need to be understood, for the organisation can influence the environment where the perceptions arise. How is perception influenced? The indicator of how successful the innovation might be, as with any other product or service, is through marketing feedback. The marketing actions will aim to create a hype around the innovation. An example of this is the hype that gets generated by the organisers of a music concert or a big sporting event. Weeks, even months prior to the event, the media will be flooded with marketing initiatives creating hype. This leads to people talking about the event, which is one of the most successful marketing strategies, i.e. 'word of mouth'. The benefits of creating hype for an innovation are not limited only to the success of the innovation, but also to the organisation that gets exposure. [180] The benefits must be used as motivating factors for establishing innovation strategies. If innovation and hype for the innovation hold certain secondary benefits for the organisation, then it makes sense that management should optimise these secondary benefits. They are referred to as "secondary benefits", since they are not directly linked to the hype around the innovation.   The hype also holds benefit for parties other then the organisation;

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[179] Carl Franklin, 2005. *Many innovative IT projects failed because key users resisted – possibly because they didn't perceive any benefit to the new way of doing things, or because they resented change being imposed on them* p. 148.

[180] Carl Franklin, 2005. *The benefits of hyping innovation are numerous - and not just for innovators* p. 62-63.

investors for one can get a sense that there is a bigger possibility of a return on their investment and would therefore also be more at ease in re-investing in the innovation.

The negative aspect of hyping an innovation is that an expectation is created and, if that expectation cannot be met, it signals the beginning of the failure of the innovation. It is important to keep in mind that it is perceptions that determine whether an innovation will be successful. Therefore, the hype for an innovation must be seen as part of a marketing strategy promoting the innovation and not as empty promises. This can be managed by the organisation, but becomes more difficult if the hype is created from the external environment of the organisation. For instance, the Internet created various kinds of hype and most organisations felt that if they didn't make use of the Internet, they would lose market share or a competitive advantage.

The dotcom failure, however, resulted in various organisations showing no return on their investments. The Internet itself was and is still an amazing innovation, but the hype created led organisations to believe that in a very short time business, as they knew it, would change. This did not happen, for many customers did not feel comfortable with doing transactions on the Internet as the necessary legislation was not yet in place. In addition, many consumers still did not have access to the Internet. The bursting of the dotcom bubble is one of the best examples of the downs of creating hype.[181] There are also some other negatives linked with hyping an innovation that are not as extreme, but just as bad. Franklin has identified a list of dangers.[182] To sum up: *Excessive optimism and believing the hype are two forms of bad thinking that curse innovations long before they reach the market.*[183] The hype

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[181] Carl Franklin, 2005. *Then there's the natural and sometimes excessive optimism that flows from innovation's promise of a brighter world. The bursting of the dotcom bubble shows that hype and excessive optimism are both a blessing and a curse for innovators – they can create a climate of thinking in which innovative ideas are both given a chance and doomed to fail* p. 62.

[182] Carl Franklin, 2005. *However hyping innovation also has its danger* p. 62-63. Details of the dangers can be found on the pages indicated.

[183] Carl Franklin, 2005 p. 85.

can create a false sense of (premature) success that can lead to investors making irrational decisions to invest more money than they would have done under normal circumstances. If the innovation then fails to deliver, trust in the organisation as a whole is lost. Investors will be reluctant to fund further innovations and the customers will more likely consider other products. These are a few of the dangers that are synonymous with the hyping of an innovation.

3.12.   Pitfalls of innovation

Marketing an innovation through methods such as hyping the innovation, was described in the section above. The dangers of hyping were also briefly explained. In this section the pitfalls of innovation itself will be described – pitfalls spanning all types of organisations and innovations. In general, the question should be asked: when does an innovation hold no benefit for the environment? Referring to the definition of innovation – that an innovation must be something new – Franklin states that there are certain pitfalls that go together with any innovation.[184] These pitfalls will provide an important reminder that innovation must make business sense, if an organisation wants to be successful. Above all, common sense must prevail.

One of the main pitfalls of innovation is the fact that innovators are totally outnumbered by non-innovators.[185] This means that innovators not only have to think out of the box, take risks and work hard to make the idea into a possible innovation, they also have to convince all the non-innovators of the usefulness and potential of

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[184] Carl Franklin, 2005. *If the male contraceptive plug sounds absurd, is it anymore stupid then than spending $100 to sell goods worth $50 or giving free computers to people and asking them to look at advertising in return? A company called FreePC tried that in the dotcom boom and quickly went bust* p. 85-86.

[185] Carl Franklin, 2005. *To be an innovator is to be endowed with characteristics the rest of the population either doesn't have or doesn't use. Truly successful innovators have to think ahead, spot opportunities, take big risks and persist, often in the face of doubts and conventional wisdom* p. 87-89.

the innovation. This brings another problem to the foreground: the fact that the innovator believes so strongly in him/herself that the idea seems logical. However, if tested outside the conceptual frame of mind of the innovator, it might become clear that the innovation will not be successful. Therefore, the innovation needs to be tested against the ideas of non-innovators during the different phases of the innovation process.

Organisations on the forefront of innovation assign specific individuals to determine the use of related innovations or technology that is linked to the proposed innovation. By doing this they determine if the innovation will be able to address a gap or need in the market to improve the likelihood of success of the innovation. Smaller organisations use different techniques such as steering committee meetings to enable them to get input from the different stakeholders. Traditionally, the members of the steering committee consist of investors and staff from different units of the organisation. This wide spectrum of representation ensures a good audience to test the innovation. An additional benefit is that the investors get first-hand experience of the progress of their investments. The perception of the innovator or idea generator is only one person's perception and one perception does not qualify for determining whether an idea is really an innovation.

In most organisations it will be a team that is responsible for idea generation. This team forms a cohesive drive to develop and implement an innovation. Importantly, the team consists mainly of individuals with the personalities required to be idea generators; they also all have the same goal, namely to innovate. As with all teams that work together to reach a specific goal, there is great determination and drive in reaching the goal. Sometimes the determination is too great. This leads to the team ignoring all other factors and focusing on only reaching the goal, ignoring anything indicating that the goal might not be reached. This attitude is referred to as groupthink.[186] Groupthink itself is not negative, only when it doesn't allow for clear

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[186] Carl Franklin, 2005. *Related to overconfidence and ego involvement is a phenomenon called 'groupthink' …The kind of group that is most susceptible to groupthink is a cohesive bunch of people, with similar ideals and working under pressure towards a common goal – just like typical start-up, in*

alternative thinking. The group can become so obsessed with trying to make their innovation successful that they ignore all the other warning signs. Eventually, the innovation fails for it is the customer who determines whether it is an innovation. These pitfalls can be summed up in no better way then in Franklin's words, a warning to any organisation and the idea generators within the organisation.[187]

3.13.   Summary

This chapter can be summed up by stating that innovative organisations require a specific structure. An organisation might require an operational and an innovation structure. In addition to the culture and structure, strategy plays an influential role in the innovation process. The structure that the organisation follows is normally derived from the strategy of the organisation. Therefore the importance of strategy needs to be emphasised to the extent that the organisational structure is dependent on it. As with other management principles, change management needs to be acknowledged as an important component of innovation. The study has now reached the stage where the concepts of organisational learning and innovation have been explored.

The following chapter will aim to analyse any relationships that exist between the two concepts. The analytical study will focus on comparing the views of authors identifying points of agreement and those identifying areas where distinct differentiation exists. By following this approach, the study will aim to highlight

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fact. The group's common ambition could lead members to switch off critical thinking, discount any evidence that they might be wrong and ignore alternative ways of thinking p. 90-94.

[187] Carl Franklin, 2005. …*So if you are an entrepreneur, beware of the following traps:*

- o   *Ego involvement with the project*

- o   *Over-optimism about the product and the market's demand for it*

- o   *Ignoring what the market and the environment are telling you*

- o   *Groupthink and ignoring feedback from others*

- o   *Holding on to losers* p. 94.

information that might give some clarification on assumptions that exist regarding the concepts of organisational learning and innovation.

Chapter 4

Innovation and Organisational Learning

4. Introduction: Innovation and organisational learning

The purpose of this chapter is to analyse the concepts of innovation and organisational learning by comparing them. As previously indicated, the purpose is to identify and analyse any relations that might exist between the two concepts. Graphical representation and tables will be used, where possible, as such visualisation assists in the comparison of information. It is possible that there will be some duplication from previous chapters.

4.1. High-level synopsis

The two concepts have a number of similarities that cannot be ignored. Both concepts are highly dependent on information and, more specifically, knowledge. When talking of knowledge as opposed to information, there is already a defined link to learning. Innovation as a concept does not rely so much on knowledge, yet the idea generators cannot create ideas without knowledge. If knowledge is examined in detail, it will be noted that tacit knowledge is more prominent than explicit knowledge. Tacit knowledge imbedded in mental models is more difficult to transfer compared to explicit knowledge. Tacit knowledge is obtained through experience. It could then be argued that knowledge plays a significant role in both organisational learning and innovation.

Individuals are another fundamental aspect of both concepts. It is individuals who generate ideas and it is individuals who learn. Organisations in turn consist of individual members.

Organisations are not prerequisites for innovation to take place, but they are mainly responsible for innovation. As mentioned above, individuals learn, but organisational learning cannot take place without the organisation.

The individual, the organisation and knowledge can be seen as the cornerstones of the two concepts. Without them, neither organisational learning nor innovation can take place. Later in the chapter, the specific details of the similarities will be discussed.

Innovation and organisational learning must also have certain outcomes or products.[188] Innovations are the outcome of the generation of ideas. End products are, however, fundamental for both to exist and there are various interrelationships that can exist. End products can, therefore, not be seen in isolation. This study has not covered the 'end products' of both the concepts explicitly, but reference has been made in certain instances. The following is a proposed graphical representation of how the concepts interact:

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[188] Herman J. van Niekerk, 2004. *Organisational knowledge is the outcome of organisational learning* p. 54.

Fig 4.1 - Cornerstones for innovation and organisational learning
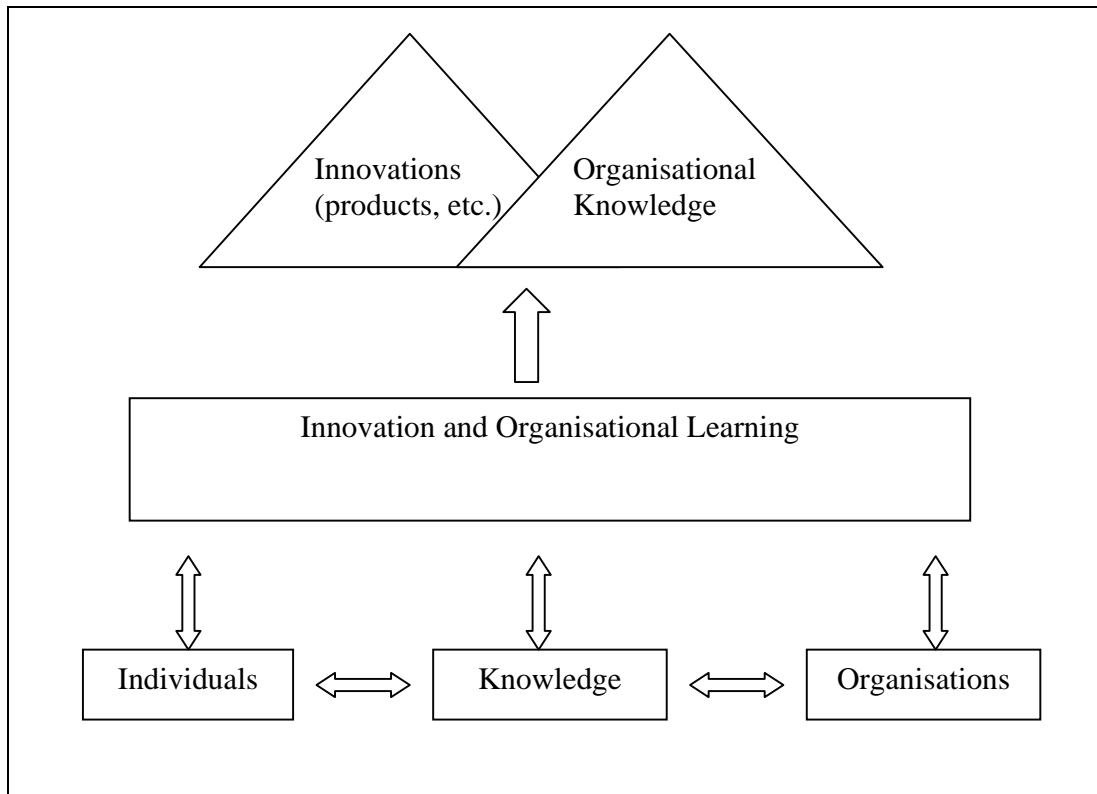
This representation can be expanded by interpreting the notions of theorists of innovation who have acknowledged the fact that learning plays a role in the innovation process and have written about and debated the role of learning. The following is a short explanation of the role of knowledge and learning in the innovation process as described by some of these theorists.

The theories start off by noting that innovation is a product of knowledge and learning. It is also known that organisational knowledge is the result of organisational learning and that learning has to take place before organisational learning can take place. Innovation could therefore be one of the results of learning.[189] It is also clear

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[189] DF Batten, CS Bertuglia, D Martellato, S Occelli, 2001. *Innovation is a product of human knowledge and learning, and learning is an interactive dynamic process* p. 1.

that, since learning is an interactive dynamic process, the creation of knowledge about innovations is important. Learning to learn and learning to innovate all form part of an interactive cycle.[190] Learning and, specifically, learning through actions cannot be ignored. Any innovation has gone through periods of testing or trial without initial success. However, with each trial learning takes place and this knowledge is used to achieve the innovation as intended.[191] The knowledge obtained through these experiments is tacit knowledge most of the time and is therefore difficult to translate. This is one reason why a lot of organisations invest in Research and Development departments. Already the importance of understanding learning and the creation of knowledge are evident.

The evolutionary "searching-learning system" is a theoretical term, which Sundbo explains.[192] This explanation addresses one thing important for an organisation that innovates: learning. Does this imply that organisations by themselves have to be innovative in order to learn, which again enables the organisation to change to allow for adoption?

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[190] DF Batten, CS Bertuglia, D Martellato, S Occelli, 2001. *A fundamental point we would like to emphasize is that we also need to be innovative in our representations of innovation...Creating 'knowledge' about innovations is therefore an essential determinant if innovation is to be an ongoing process of urban development and societal change* p. 251.

[191] DF Batten, CS Bertuglia, D Martellato, S Occelli, 2001. *Secondly, innovation generated by learning-by-doing, and the issues related to knowledge embodied in people and organisations, have also come to the fore* p. 13.

[192] Jon Sundbo, 1990. *The company is a searching-learning system, which changes its behavior according to what it learns from its previous actions. It learns and chooses its behavior on the basis of certain routines, and its ability to survive and develop depends on its having the right searching-learning routines. The company's development is a slow evolutionary process, driven by searching-learning routines* p. 111-112.

4.2.   The purpose of each concept

Understanding the concepts of innovation and organisational learning extends past the theoretical understanding of the definitions. The reasons for the existence of the two concepts must be understood.

Idea generation is the starting point of innovation. Why is innovation required? Innovation takes place for various reasons. An inventor can invent something as part of science and this type of invention might not be used widely, but the invention proves or disproves a notion in the world of science. To reach the point of invention entails a learning process; knowledge was required to enable the creation of the invention. The invention, in its turn, creates a platform for explicit learning. The individual and the society as a whole obtain benefit from the knowledge acquired.

Innovation entails taking an idea or invention and turning it into an innovation. An invention requires substantial use and benefit before it can be seen as an innovation. In organisations innovations are mainly adopted to improve a current process, resulting in a cost saving or a higher profit margin. Innovations in the organisation can also form part of the strategy of the organisation to become a market leader. Through innovation, the organisation can become a leader in a specific field, outperforming its competitors. In a fast-changing environment, the organisation needs to launch new products in the market on a continuous basis. The main principle behind innovation for a profit organisation is the financial benefit that must be realised.

Organisational learning focuses more on the inherent benefit of learning for the members of the organisation and the organisation itself. Through organisational learning, the organisation grows intellectual capital that in the end has benefit for the organisation. The organisational learning concept itself does not have a direct impact on the profit margins, but does have a medium- to long-term influence on the prosperity of the organisation. The benefit of organisational learning is not as tangible as, for instance, the innovation of a new product that an organisation can market. Another important point to note is that learning is part of innovation and innovation is part of learning, in a theoretical sense.

4.3.   The micro- and macro-environments

The micro- and macro-environments referred to can be seen as the base for the concepts. These exclude the organisational climate and culture, which will be dealt with separately in sections to follow. The macro-environment is the environment outside the organisation and the micro-environment prevails within the organisation.

The macro-environment can be something of a tangible nature such as the urban area, region or country, but can also refer to the economy, which is intangible. The macro-environment consists of the physical area outside the organisation, but also aspects outside the organisation over which the organisation has no control. This is important to understand, for not only can the actual environment be the urban developed city where most organisations are based, but it can also be in rural and remote areas. This is, for instance, important from a networking perspective; if no other organisations are close by, it is more difficult to interact and to share information. This is important both for organisational learning as well as for innovation.[193] Idea generation needs to be encouraged and the more remote the organisation from the urban centres, the more difficult it is for stimulation to take place.

The country where the organisation is based is also important for innovation – more so for innovation then for organisational learning, because the success of an idea is based on the perception of the users or customers who will use the innovation. In a poor country, for example, the success of a high-technology innovation will be very low if the country struggles to meet even the basic needs of its own people. The same applies if the country's infrastructure is not adequate to support the innovation; for instance, in South Africa telecommunication infrastructure is inadequate to handle high- and broad-speed data traffic, as is possible in countries abroad. This ultimately limits the potential uses of technologies reliant on bandwidth. The cities or the

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[193] King and Anderson, 2002. *Individuals in roles which cross organisational boundaries, and professionals who have access to formal and informal networks of fellow professionals, have the opportunity to come across new ideas which could be applied within their own organisations* p. 139-140.

metropolitan areas where innovation takes place also influence the likelihood of the success of the innovation. Castells refers to these environments as the milieu of innovation. According to his work, the high-technology-led industries in most countries are centred on the leading metropolitan areas. Castells refers to these high-technology-led industrial milieus of innovation as technopoles.[194]

However, organisational learning cannot be ignored when referring to the environment. It might be that the macro-environment does not have a direct link to organisational learning, but it can still have an influence on learning, even if only on an individual level. Earlier it was said that the macro-environment includes intangible aspects, such as the level of personal mastery of the individual. What this means is that every member of the organisation will have individual needs and goals as part of his or her personal mastery. This includes not only career goals, but also personal goals within family ties, whether it is having four kids or a new car. So to prosper in their personal lives, individuals need to have a career in which learning forms a part of their development within their careers, which in turn forms a part of their personal goals and therefore cannot be ignored.[195] If this is studied from a systems perspective, it becomes evident that this is a network of complex systems that relate to each other in one form or another.

Castells explains the relationships between innovation and organisational learning in the micro-environment in a simple yet effective manner. He uses Ikujiro Nonaka's

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[194] Manuel Castells, 2000. *Most notably, it is clear that in most countries, with the important exceptions of the United States and, to some extent, Germany, the leading technopoles are in fact contained in the leading metropolitan areas: Tokyo, Paris-Sud, London-m4 Corridor, Milan* p. 421.

[195] PM Senge, 1990. *Lastly the artificial boundary between work and family is anathema to systems thinking. There is a natural connection between a person's work life and all other aspects of life* p. 307.

model of 'the knowledge-creating company', which is based on the organisational interaction between tacit and explicit knowledge as the source of innovation.[196]

What does the micro-environment look like or what does the organisation look like? Traditionally, the organisation's structure very much defined the micro-environment. The organisations were mainly structured around a strong leadership with clear lines of authority, with a top-down approach, typical of a hierarchical structure. Owing to its nature, this kind of hierarchical organisation is not conducive to organisational learning or innovation. Dixon refers to an infrastructure that can promote organisational learning. This infrastructure consists mainly of four aspects:

- o Structure to allow for information to flow across organisational boundaries;
- o A structure to support system level dialogue;
- o Work is organised to distribute decision making for speed and flexibility;
- o Ability to learn from the results.

The structure must allow for information flow, which is a fundamental part of learning. In the traditional organisation, information flowed mainly from top to bottom in the hierarchical structure. The communication was also normally one-sided, which is not conducive to information sharing. The structure of the organisation needs to be project driven, with the best skilled person to lead the specific project. The responsibility for managing the projects will differ depending on the skills required. The teams will be made up of individuals from the organisation best suited for the project. This allows for individuals from different segments within the organisation to work together and share information, which would normally not have taken place. If we take Nonaka's work, which highlights the importance of sharing of information, it is evident from studies focusing on the Japanese companies that a knowledge-creating

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[196] Nonaka and Takeuchi, 1995. *When markets shift, technologies proliferate, competitors multiply, and products become obsolete almost overnight, successful companies are those that consistently create new knowledge, disseminate it widely through the organisation, and quickly embody it in new technologies and products. These activities define the 'knowledge-creating' company, whose sole business is continuous innovation* p. 22.

company must allow for a structure whereby information can be shared.[197] The employees or members of the organisation are hereby not only more empowered to take decisions, but also to make effective and correct decisions, because knowledge is acquired that can only be obtained through learning. Decision making goes together with responsibility and accountability, which are all conducive to learning. By doing the above, individuals are empowered and fulfil a part of their personal mastery. Another aspect of the structures of organisations is parallel learning, which allows for learning through trial and error in a separate unit and without interrupting the normal operations. Bushe and Shani refer to this type of structure as a separate unit within the structure of the organisation whereby the organisation's learning is increased.[198] This is very similar to the 'reservations' in innovative organisations, where environments are created separate from the operational side of the organisation.[199] This allows for the developing and prototyping of new ideas. The principle is to design the organisation to allow for separate business units that form part of the organisation, but function separately from their operations.

The theory of organisational learning and innovation is graphically presented below. Instead of indicating learning organisations and innovation within the environments, they are presented the other way round. This is done to emphasise the importance of

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[197] Nonaka and Takeuchi, 1995. *The fundamental principle of organisational design at the Japanese companies I have studied is redundancy – the conscious overlapping of company information, business activities, and managerial responsibilities* p. 36.

[198] Gervase R Bushe, AB (Rami) Shani, 1991. *We offer the term 'parallel learning structure' as a generic label to cover interventions where: (a) 'structure' (that is a specific division and coordination of labor) is created that (b) operates 'parallel' (that is, in tandem or side-by-side) with the formal hierarchy and structure and (c) has the purpose of increasing an organisation's 'learning' (that is, the creation and/or implementation of new thoughts and behaviors by employees)* p. 9.

[199] Starkey, Tempest, McKinlay, 2004. *Reservations are organisational units, such as R & D groups, that are totally devoted to creating new ideas for future business* p. 211.

the fact that no clear distinction can be made owing to the complexity of the systems. The overlapping indicates the principles of systems theory where inter-relationships exist between the different systems.[200] The macro-environment is depicted in shades of green and the micro-environment in orange. The yellow text boxes are some examples. The following is a proposed graphical representation adapted from the research:

Fig 4.2 Innovation and Organisational Learning within the Micro- and Macro-environment
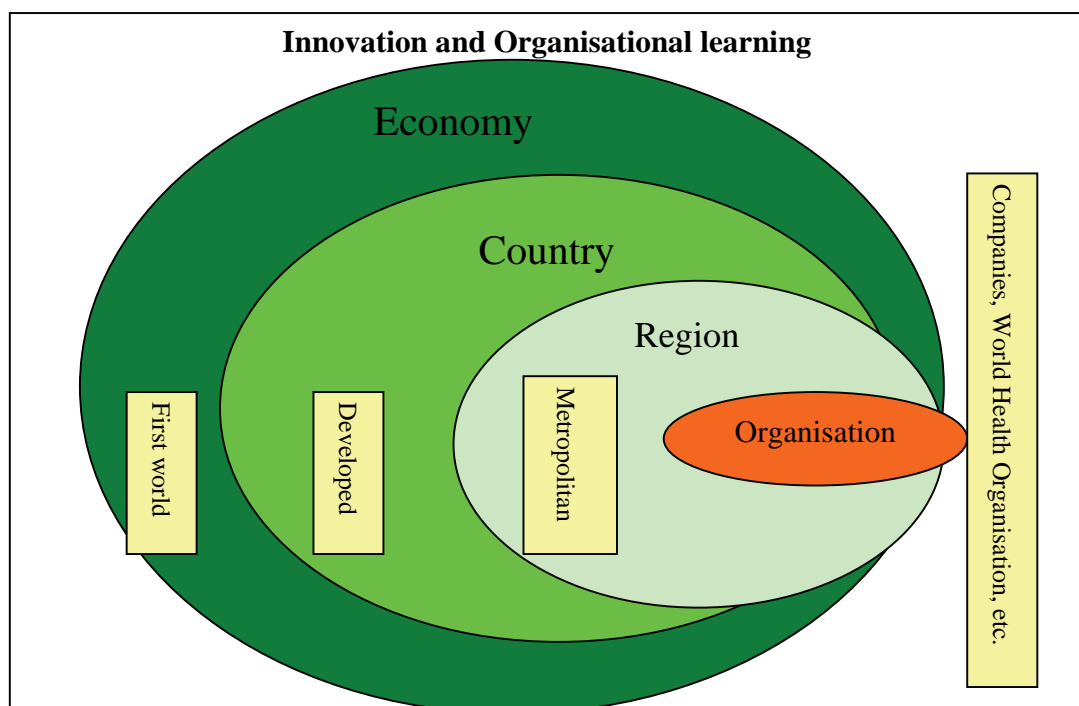
The micro- and macro-environments are as important for organisational learning as they are for innovation. This is mainly because organisational learning, knowledge creation and idea generation (innovation) are related to each other in the organisation (micro-environment) and that learning cannot be restricted to boundaries. When examining innovation in the micro- and macro-environments, it is the perception of

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[200] Eve Mitleton-Kelly, 2003. *Although I make a conceptual distinction between a 'system' and its 'environment' it is important to note that there is no dichotomy or hard boundary between the two...in the sense that a system is separate from and always adapts to a changing environment* p. 29.

people or the customers that can have an influence on innovation. In the macro-environment, it is also the infrastructure of the country that plays an important role. It is, however, the micro-level or organisational level where the structure can be influenced and changed.

4.4.　　　The culture and climate

The culture and climate are discussed in one section simply because many theorists treat climate only as an extension of culture, that is, they see it as part of the same concept. Where structure was more concerned with the physical and actual design of the organisation, culture refers to aspects not so tangible. By definition, the culture of an organisation constitutes the behaviour and unwritten rules by which the members of the organisation conduct their actions. These actions and behaviour determine the climate of the organisation, that is, how the members experience these actions or unwritten rules.

Culture is categorised in different ways by various theorists but, if examined closely, the details or definitions are quite similar.　In this chapter the categories used by Dixon will be used as point of reference. Dixon has identified the scope of culture on three levels:

- o Organisational culture;
- o Industry culture;
- o Nation or hemisphere culture.

These levels can be linked to the micro- and macro-environment referred to in the previous section. Organisational culture will reside within the micro-environment, whereas industry and national/hemisphere cultures can be seen as part of the macro-environment. Although the cultures of nations are important and should always be taken into account, organisations themselves can have a limited impact on them. On an organisational level, however, the organisational culture can be influenced.

To be innovative, the organisation needs to succeed in is the ability to change quickly. This is more complex, since change is culture bound. The culture of the organisation

will determine how likely it is to change and how rapidly it will change.[201] One of the characteristics needed for an organisation to be more innovative is to have an organisational culture more open to change. Innovative organisations must have a specific culture. What does this culture look like?[202] The culture of a learning organisation must then consist of characteristics that overlap with those of an innovative organisation. It is a known fact that experimentation allows for learning within the organisation.[203]

So is there a definition and name that can be given to a culture that will allow for innovation to take place? Anderson has classified culture into groups, all of which have been discussed in previous sections. One of the groups, task culture, is not only conducive to innovation, but also beneficial for organisational learning. The task culture will be associated with the matrix structure.[204] A few reasons for the association with the matrix structure can be highlighted, but the most important is that information is shared in all directions within the organisation. Added to that is the high importance of the values that are placed on individual and team performance. Members of the organisation are adaptable, can work in different teams and are at

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[201] Stephen P. Robbins, 2003. *Organisations, by their nature, are conservative. They actively resist change* p. 561.

[202] Stephen P. Robbins, 2003. *They encourage experimentation. They reward both success and failures. They celebrate mistakes. At Hewlett-Packard, for instance, top management has successfully built a corporate culture that supports people who try something that doesn't work out* p. 572.

[203] Stephen P. Robbins, 2003. *A learning organisation is an organisation that has developed the continuous capacity to adapt and change. Just as individuals learn, so too do organisations* p. 573.

[204] King and Anderson, 2002. *Task cultures are associated with matrix structures. They stress flexibility, adaptability and egalitarianism within project teams, lateral rather then vertical communication, and place a high value on individual and group achievement. They are commonly considered the most favorable towards innovation, and are routinely prescribed as the ideal type by both popular and academic management writers* p. 136-137.

ease with changes between teams. This cross-functional use of members ensures the sharing of information, resulting in learning taking place. Where learning takes place, knowledge creation will be the result, which is vital for idea generation. Note the important relation between the culture and structure of the organisation in this instance.

The focus is mainly on the organisational culture, but what should not be ignored is that all the members of the organisation will belong to their own culture. The culture of the individual can in turn be influenced by the nation or the industry where the individual lives and works. This is especially true for innovation. The culture of the nation is very important in determining whether the innovation is acceptable and useful. It can be that the use of a new product (innovation) is seen as not acceptable within a specific culture. The culture of the nation might not have a great influence on organisational learning, but it still cannot be totally ignored.

One aspect that has not yet been covered is the technology factor as it relates to culture. Sundbo makes reference to William F Ogburn, a theorist on social change, who has divided culture into two parts, namely, material culture and adaptive culture. The material culture consists of material objects or what we today call technology. The adaptive culture is the normal behaviour that has been discussed throughout this section. Material culture is technology and most development, as well as innovation, happens in the arena of technology.[205] Material culture, therefore, will change at a rapid pace but not adaptive culture. Therefore, the technology will dictate the pace of change in an adaptive culture.[206] It is important to understand this, for it explains the theory that innovation can be a breakthrough, but yet not be very successful in the beginning. For instance, no one can argue that the Internet and specifically e-business

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[205] Jon Sundbo, 1990. *Technology development is the fundamental type of development and the one that most determines the development of society* p. 67.

[206] Jon Sundbo, 1990. *And since technology development is moving at increasing speed, the adoption system will always lag behind* p. 67.

has one of the major innovations for mankind, but yet a high number of dotcoms crashed almost as soon as they started. The culture of the customers had at that time not yet changed to accept the new way of doing business and shopping by using the Internet.

4.5.   The structure

The structure refers to the actual layout of the organisation. The organisational structure can include the hierarchical structure – indicating the chain of command, rules, organisational policies, the defined role structures – and, depending on the elements, represents a typical bureaucracy or a matrix type structure. This can have a negative or positive effect on either organisational learning or innovation.

Historically, organisations tend to have a structure based on a pyramid, with management on top, middle management below and the rest of the employees. This structure allows initiatives and communication from top to bottom, but usually as one-way communication. This kind of structure is not conducive to the sharing of information and cross-unit transferring of knowledge. An employee might generate a new idea, but will struggle to share the information because of the limited communication channels as a result of the top-down approach. What this illustrates is that this structure limits communication either vertically or horizontally within the organisation. This makes it difficult for any ideas generated to evolve further.

Another structure, the matrix structure, is less rule based and allows for better communication.[207] The matrix structure also breaks down the tendency of departmental members to protect their environment to the extent that the overall organisational goals are neglected. To make more sense out of all the different structures, they can be grouped into two models: the mechanistic model and the organic model. The mechanistic model incorporates all the structures that tend to be

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[207] Stephen P. Robbins, 2003. *The direct and frequent contact between different specialties in the matrix can make for better communication and more flexibility* p. 436.

more formal and rule based, while the organic model is synonymous with structures that are flatter, team based and with a free flow of information.[208]

Although it might not be clear which structure is the best for either organisational learning or innovation, it can be said that the organic model will be the most conducive to both innovation and organisational learning. To understand the structure, the reason for the structure should be understood.

Structure should follow strategy.[209] The structure might not be right for organisational learning or innovation, but yet be right for the normal operations organisation. The organisational structures for operational organisations differ from those of innovative organisations. Therefore, it might be necessary to have a combination of structures in the organisation for innovation. This can be done by using techniques such as creating an environment that is separate from the normal operations of the organisation. Reservations themselves can have a formal structure or be informal. This is a familiar practice in many organisations, as seen in the research and development (R&D) units in the organisation. This is a unit within the organisation responsible for idea generation and ultimately for innovation.[210] There are various different ways to apply this, from more formal to informal structures. 'Microworlds' would be a specific environment, separate from the operations, that allows for the creation and simulation of ideas without affecting operations. Microworlds do not constitute a formal business

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[208] Stephen P. Robbins, 2003. *This model looks a lot like the boundaryless organisation. It is flat, uses cross-hierarchical and cross-functional teams, has low formalization, possesses a comprehensive information network (using lateral and upward communication as well as downward), and involves high participation in decision making* p. 440.

[209] Stephen P. Robbins, 2003. *An organisation's structure is a means to help management achieve its objectives. Because objectives are derived from the organisation's overall strategy, it's only logical that strategy and structure should be closely linked* p. 440.

[210] Starkey, Tempest, McKinlay, 2004. *Reservations are organisational units, such as R & D groups, that are totally devoted to creating new ideas for future business. The intention is to reproduce a garage-like atmosphere where people can rapidly and frequently test their ideas* p. 211.

unit as R & D units, but form an environment that can be used by all the members of the organisation. Microworlds are similar to the concept of a playroom for children. No matter if the organisations make use of reservations such as R&D units or microworlds, there are still certain aspects of the organisational structure, from a holistic point of view, that will be conducive to innovation. By implication, no matter what organisational structure exists, it must consist of idea generators, sponsors and change agents. These roles should be evident in all innovative organisations. The idea generator role can be filled by any member in the organisation's R&D function or by members on the operational floor. It can be that an employee identifies a solution to a problem through a daily activity.[211] To support the idea generator, funding must be provided and the sponsor will be in the role responsible for the support.[212] The sponsor must have the proper authority to be able to support the idea through providing adequate funding for its testing and implementation. The idea also needs to be protected against its critics. The person in this role is called the orchestrator and will be responsible for promoting the new ideas and protecting the idea generator. Again, the orchestrator must have adequate authority to be able to protect the idea and the idea generator. The orchestrator should therefore be part of management. Another role that cannot be ignored is the role of the change agent, probably the most important role. No matter how good the idea, if not accepted by the users, it will not be successful. This is where the change agent must manage the change process. These roles can be applied in all the different structures described in this section.

Certain fundamentals must be present in the structure of an organisation, firstly, to be conducive to organisational learning and, secondly, to innovation. However, it is the strategy of the organisation that will determine the structure and in turn determine if

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[211] Starkey, Tempest, McKinlay, 2004. *The idea generator is usually a low-level person who experiences a problem and develops a new response to it* p. 207.

[212] Starkey, Tempest, McKinlay, 2004. *To carry an idea through to implementation, someone has to discover it and fund the increasingly disruptive and expensive development and testing efforts that shape it. The sponsor must also recognize the business significance of an idea* p. 207.

the organisation will be an innovation organisation or a learning organisation, or a combination of both.

4.6.   The creators and users

This section deals with the actual users of the new ideas or innovation but also with the users of organisational learning, the learners. This might seem a bit abstract but, if analysed, is very much part of both organisational learning and innovation. The creators of both organisational learning and organisational innovation are individuals, members of the organisation.

The users of organisational learning are the members of the organisation, but since the members are individuals, when they leave the organisation they take their knowledge with them.

Organisational innovation is created from an idea. The idea will be generated by the members of the organisation in a way similar to learning in the organisation.

The users of innovation can, however, differ since the innovation might be an internal improvement in a process that will be used by the members of the organisation. It can, however, be a new product sold to a consumer, who will then be the user of the innovation.

Although the knowledge created can be used internally by the organisation, this is sometimes not the main purpose of the innovation, but for an organisation that wants to make new products for the consumer, the innovation will be used outside the organisation. This represents the boundaryless environment allowing for the different relations between users and creators of both innovation and organisational learning.

4.7.   Deliverables

"Deliverables" is the term used to refer to the expected output, which will be linked to the strategy of the organisation. A deliverable, for the purpose of this study, is the result of organisational learning and organisational innovation. This is important, for the success of the organisation's strategy is defined by its deliverables.

By now it is known that knowledge is the end product of learning. Therefore, organisational knowledge will be the end result of ongoing organisational learning.

Innovation, however, is not so clear-cut. Will innovative organisations be innovative? It can be argued that innovation will be the result of idea generation. Looking at innovation in more detail, it can be said that a new product or a more effective business process will be the result of innovation.

4.8. Dependencies between the concepts

What is meant by dependencies? Dependencies refer to the relations that exist between organisational learning and innovation as part of systems theory. These are the relations required if organisational learning or organisational innovation is to take place. Knowledge, the result of organisational learning, is one of the prominent dependencies for innovation. There is a definite link between the different types of knowledge in the organisation. This is because a lot of the knowledge acquired in the organisation comes from experience and cannot all be communicated through the organisational communication procedures. Through trial and error, a lot of the knowledge is transferred and in turn can lead to idea generation. Idea generation can result in an innovation. The easier it is to transfer knowledge, tacit or explicit, the greater the chance of idea generation.[213]

4.9. Characteristics of the concepts

The characteristics are those of both organisational learning and innovation. It might be that some of the characteristics are unique to one concept whereas others are the same for both. The characteristics of organisational innovation have been compared in a previous section with the characteristics of innovation in general. Since the focus

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[213] Manuel Castells, 2000. *And yet the sources of innovation multiply when organisations are able to establish bridges to transfer tacit into explicit knowledge, explicit into tacit knowledge, tacit into tacit, and explicit into explicit* p. 171.

is on organisational innovation, and most innovations evolve from within an organisation; only characteristics of organisational innovation will be compared with organisational learning. Where possible, a similarity that exists between characteristics will be highlighted. The characteristics proposed in table 4.1 are adapted from the work of King and Anderson, Dixon, PM Senge, and Stephen P Robbins.

Table 4.1- Characteristics of organisational learning versus innovation

Organisational Learning			Innovation		
Characteristic	**Description**	**Theory reference**	**Characteristic**	**Description**	**Theory reference**
Is non-tangible	Is a process	Dixon, (1999)	Is tangible	A product, process or procedure within an organisation	N King, N Anderson, (2002)
New to the learner	Individual will learn something new from some already existing knowledge	Dixon, (1999)	Must be new	An innovation must be new to the social setting	N King, N Anderson, (2002)
Intentional or unintentional	Learning itself can be spontaneous, unintentional or intentional for organisational learning processes.	Dixon, (1999)	Be intentional	An innovation must be intentional rather then accidental	N King, N Anderson, (2002)

Organisational Learning			Innovation		
Characteristic	Description	Theory reference	Characteristic	Description	Theory reference
Discard the old	People discard the old ways of thinking and the standard routines.	Stephen P. Robbins (2003)	Not a routine	An innovation must not be a routine change	N King, N Anderson, (2002)
Expanding its capacity	Aimed at continually expanding its capacity to create its future.	PM Senge, (1990)	Aimed at producing benefit	An innovation must be aimed at producing benefit to the organisation, some subsection of it, and/or the wider society	N King, N Anderson, (2002)
System of interrelationships	Think of all process, activities, functions and interactions with the environment As part of a	Stephen P. Robbins (2003)	An innovation must be public in its effects	If it has no impact, it will not be considered an innovation	N King, N Anderson, (2002)

Organisational Learning			Innovation		
Characteristic	**Description**	**Theory reference**	**Characteristic**	**Description**	**Theory reference**
	system of interrelationships.				
Shared vision	A shared vision everyone agrees on	Stephen P. Robbins (2003)			
Open communication	Communication takes place openly, vertically and horizontally.	Stephen P. Robbins (2003)			
Cohesive effort for the organisation	Focus on the shared vision of the organisation and not that of the department or individual	Stephen P. Robbins (2003)			

4.10.   Enablers

These are conditions that must exist to create an environment conducive to organisational learning, on the one hand, and innovation, on the other. The application or definition of the enablers might differ for organisational learning and innovation, but will need to be present for both.

Strategy is one of the enablers for both concepts. The strategy of the organisation determines the direction of the organisation. The strategy will dictate the structure of

the organisation.[214] Management need to be aware of their strategy and what influence changes to the strategy have for the organisation as a whole. It might be that the organisation will not have a specific strategy for organisational learning, but still, whatever strategy is adopted will determine to what extent organisational learning will play a role. Organisations can adopt an innovation strategy to direct the organisation to be more innovative.

The *structure* has been discussed above and is also a requirement as much as it is an enabler. The structure will follow the strategy of the organisation, but without the structure the means will not be appropriate for the organisation to reach its objectives and goals. By now, it is clear that the preferred structure for an organisation must be based on the organic model, for it is conducive to organisational learning. The important factor to remember is that the structure will have an influence on organisational learning and/or innovation.

The *people* (members) are seen as part of the organisation. People can be enablers if their skills match the requirements of the role they must play within the organisation. Innovation starts with idea generation. Idea generation originates from the members of the organisation and, considering that only a small percentage of the population will be amenable to accepting new ideas and open to changes, they can constitute an important factor.[215] Therefore, appointing the right people will have a positive effect on innovation. In the context of organisational learning, the situation is less complex. Learning takes place on an individual level first before learning on an organisational level can take place. Therefore each individual member of the organisation can contribute to organisational learning.

Culture, and specifically the culture of the organisation, needs to be conducive to creating an environment for learning and/or innovation. Culture can also be grouped

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[214] Stephen P. Robbins, 2003. *If management makes a significant change in its organisation's strategy, the structure will need to be modified to accommodate and support this change* p. 440.

[215] Carl Franklin, 2005. *Innovators: Making up just 2.5 % of the population, the innovators are cosmopolitan, affluent, technologically savvy, educated, daring and open to risky new ideas* p. 44.

into different categories. The type and category of culture that exists will determine the effect it has on both organisational learning and innovation. The enablers listed above are more visible and tangible, and therefore easier to recognise. There are, however, other enablers to consider that are not so easy to recognise.

The first to be discussed will be *tacit knowledge*. The reason it is listed is that all the members of the organisation have tacit knowledge, the so-called mental models referred to by Senge.[216] These mental models need to be shared, and transformed into explicit formats to make the learning process easier for the members of the organisation. It is this knowledge that will be used during the innovation process. Note that only tacit knowledge is referred to as an enabler; the reason for that is that explicit knowledge is one of the outcomes of organisational learning.

Individual learning is closely linked to tacit knowledge. This is one of the core principles Senge refers to in his work. Individual learning could be seen as a requirement for organisational learning to take place simply because, without individual learning, no organisational learning can take place.[217] Individual learning is closely linked to tacit knowledge, because tacit knowledge belongs to the individual. The role of individual learning during innovation is not as direct and clear as with organisational learning, but it still cannot be excluded from innovation, because learning takes place through all the phases of innovation. Innovation starts off as an idea, by accident or pre-determined, and evolves into an innovation. When making a mistake, for instance, learning takes place through the experience.

The last of the enablers is *leadership*. The management of the organisation would play a prominent role from a leadership perspective, but leadership itself will not be restricted only to management. This is important because the typical learning and/or

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[216] PM Senge, 1990. *That is why the discipline of managing mental models – surfacing, testing and improving our internal pictures of how the world works - promises to be a major breakthrough for building learning organisations* p. 175.

[217] PM Senge, 1990. *Organisations learn only through individuals who learn. Individual learning does not guarantee organisational learning, but without it no organisational learning occurs* p. 140.

innovation organisations tend to have less formal management structures. However, leadership is central to the management of the organisation. Therefore, it is important to understand the role of leadership in organisational learning and/or innovation. As with the strategy of the organisation, leadership will give the members a cohesive direction to follow. The management of the organisation needs to apply leadership principles to direct, mentor and motivate the members of the organisation. It can be argued that leadership is applicable to all kinds of organisations, not only to learning or innovative organisations. Thus it is all the more important to understand the role of leadership when considering the complexity of innovation and organisational learning. For example, people are resistant to change; this needs to be managed and, by adequate leadership, the transition can occur faster and easier. The role will also be different from the traditional operational organisation, which has a clear line of command. The leadership style of management needs to be more subtle in the learning and innovation organisations.[218]

4.11. Time

Time is discussed on its own for it is difficult to see it only as an enabler as it can also be a stumbling block. It is also not unique to organisations but a universal aspect. Time is everywhere, so it cannot be ignored. The first aspect is the timeline, which gives an indication of the how long it will take for an innovation to take place and what role time plays during organisational learning, or even whether time play a role at all during these cycles? This might not be measurable in all instances. To start with, time is important in today's society in general; it is the time factor that drives us, that drives organisations. The world is changing at a much faster rate than 10

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[218] PM Senge, 1990. *In a learning organisation, leaders are designers, stewards and teachers. They are responsible for building organisations where people continually expand their capabilities to understand complexity, clarify vision and improve shared mental models – that is, they are responsible for learning* p. 339.

years ago and is continuing to change ever more rapidly.[219] It is interesting that these types of new information technologies are the result of innovation. The same innovation that made them possible is also the cause of organisations becoming more innovative. The importance of this for organisational learning and innovation is that organisations need to be innovative, need to change at a more rapid rate to stay ahead of the competition. This places pressure on the members of the organisation to be more innovative and at a faster rate. This, however, is in opposition to what is required by the individual to learn.[220] In terms of the mental models, the individual will need time to share, compare and analyse in order to learn. To ensure that time is available is one of the responsibilities of the management.[221] Examining time in the macro-environment gives a new insight into time. Time goes together with the increase in changes and globalisation. Globalisation has made the world accessible to all through new information technologies such as the Internet. Through media such as the Internet it is possible to get information or do transactions, which, depending on the time difference, may even be in the future. In essence, time disappears.[222] Castells refers to this as the 'timeless time'.

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[219] PM Senge, 1990. *Time is compressed and ultimately denied in culture, as a primitive replica of the fast turnover in production, consumption, ideology and politics on which our society is based. A speed only made possible because of new communication technologies* (Manuel Castells, 2000: 493) p. 302.

[220] PM Senge, 1990. *How can we expect people to learn when they have little time to think and reflect, individually and collaboratively? Learning takes time* p. 302.

[221] PM Senge, 1990. *The management of time and attention is an area where top management has a significant influence, not by edict, but by example* p. 302.

[222] Manuel Castells, 2000. *Capital's freedom from time and culture's escape from the clock are decisively facilitated by new information technology, and embedded in the structure of the network society* p. 464.

4.12.   Summary

Examining organisational learning and innovation separately in Chapters 2 and 3 of this study allowed for analysing the relationship between the two concepts in Chapter 4. Identifying points of similarity, as well as differences, produced important points, strengthening the relevant theories of the authors of these subjects.   The most significant aspects identified are that structure, culture and strategy can play an influential role in determining the success of organisational learning and innovation.

There are other important points or elements that also need to be considered in addition to structure, culture and strategy. In Chapter 5, the salient elements identified are stated in such a manner as to allow the reader to determine and understand the relationships that can exist between the concepts. Furthermore, there is an indication of the areas where the study did not necessarily allow for conclusions, and where possible areas for future studies exist.

Chapter 5

Salient Elements

5.   Salient elements of the concepts

The conclusion aims to sum up, highlight and identify the most important insights derived from the previous sections. Yet, despite the complexity of the theories of organisational learning and innovation it is possible to identify some salient elements indicating why, in recent years, the idea of a learning organisation has gained credence, and why it is often brought into the discussion regarding innovation.

There is a definitive relation between the concept of organisational learning and innovation. This can be largely explained through the principles of systems theory, since both are open systems. Open systems in systems theory share information between the systems. What this implies is that both organisational learning and innovation enhance the ability to learn and/or to innovate. Castells has explored this notion through his theoretical work, positing that the sources of innovation will increase when organisations reach the position where tacit knowledge can be transferred to explicit knowledge and vice versa in a continuous cycle.

Nonaka explains that the companies that continuously create new knowledge distribute it within the organisation and then capitalise on the knowledge to create new products or technologies. This continuous creation of knowledge defines what can be described as an organisation of which the primary focus of business is continuous innovation. Nonaka's idea strengthens the thinking that, for an organisation to be a learning organisation, it also needs to be an innovative organisation.

The vision of the organisation, together with other complementary management and organisational principles, will determine the direction of the organisation. This vision

will include the strategy, goals and objectives of the organisation. In the previous chapters it became evident that the organisation's management, together with its leadership, plays an influential role in the structure and the culture of the organisation. Robbins refers to the structure of the organisation as an enabler for management to achieve its objectives. These are all aspects that will determine to what extent the organisation will be a learning organisation and/or an innovation organisation.

The three dominant elements that can influence the type of organisation are strategy, culture and structure. These elements will each be discussed separately in more detail as part of the conclusion to this chapter.

5.1.   Strategy

Strategy should be a determining factor of the type of structure the organisation adopts. Strategy is an imperative element for determining whether innovation will occur. The type of strategy will allow an organisation to be an innovative organisation or not. This is true because the objectives of the organisation are derived from the overall strategy of the organisation and therefore it follows that the strategy should be closely linked to the structure of the organisation.

To illustrate, consider the instance in which the management of an organisation chooses to adopt an innovative strategy, and hence a specific structure will be required that is supportive of a strategy of innovation. The management of the organisation is responsible for determining how the organisation will reach its strategic goals and objectives. Therefore the organisation's management will be responsible for determining what kind of organisational structure will be required to ensure a cohesive alignment of all members of the organisation to reach the organisational goals and objectives. The importance of this strategic planning has been emphasised by Sundbo, for one, as the main factor of a new paradigm of innovation. This will, of course, also apply to organisations adopting the strategy to become a learning organisation.

In the broad sense, most organisations make organisational learning part of their strategies, but it might not be the primary strategy. An organisation can choose a

strategy of imitation and that requires the fundamentals of organisational learning to also complement idea generation. (An imitation strategy requires the structure of an organic and mechanistic organisation.) The organic structure is more favourable to innovation.

Strategy gives direction to the organisation and determines if the goals or objectives will be associated with innovation or organisational learning or both. Building or following on strategy is the organisational structure.

5.2. Structure

Strategy is an influential element in determining the structure of the organisation. The choice of structure can either act as an enabler or inhibitor to the organisation fulfilling its strategy. If strategy can be seen as the foundation on which an organisation can build a learning organisation or an innovative organisation, then hypothetically speaking the structure will be the walls. However, both these types of organisation require a structure that is different from the traditional organisation with its bureaucracy of hierarchical levels, clear chain of command, and specialised roles and tasks. Different authors refer differently to the structures, but all have the fundamental structure that allows for wide information generation and communication over organisational boundaries, away from the traditional structures.

Dixon's model for the infrastructure that is required for organisational learning is best described using four quadrants. This model was depicted above as Figure 2.2 in Chapter 2. The first quadrant must facilitate the spread of information across the organisation's boundaries in all directions, so the members of the organisation can use the information. This can be done through establishing an infrastructure that, through multi-functional project teams, allows for the using of resources from the different functional groups within the organisation. The electronic era also makes available technology such as knowledge databases to share information. An organisation does not have to venture into expensive technologies to facilitate the sharing of information; simple techniques such as informal networking meetings and joint

meetings of different departments can be as successful. These kinds of meetings allow for face-to-face contact and promote the transfer of tacit knowledge.

The transfer of knowledge requires system level dialogue that is addressed in quadrant 2 of the Dixon model. This can be done through making use of information technology or group discussions, bringing members of the organisation together who, geographically, are separated from the rest of the organisation, such as with highly decentralised organisations. Sharing information or knowledge means that it is distributed within the organisation and that sensemaking mostly still takes place on an individual level. To be able to make collective sense, the distributed knowledge needs to be interpreted in a collective manner. The knowledge gained must be used to the benefit of the organisation contributing to the continuous learning cycle. To promote applying the collective knowledge, Dixon indicates that the infrastructure should consist of three significant elements. These elements are:

o Responsibility and autonomy for actions;

o Units need to be shareholders in the organisation's success;

o The size of the local unit should be kept small.

The last quadrant of the model requires that members accept accountability. This encourages the commitment to learn from their actions and mistakes. An important segment of the organisational learning cycle is that learning through experience is an effective means for obtaining long-term knowledge. The structures of organisations have been studied under various headings, allowing for the derived opinion that the organic model structure proposed by Dixon should be the most cohesive. The organic model contains some or most of the salient elements proposed. The organic model as described by Robbins is a flat structure allowing for communication laterally, as well as upwardly, making use of cross-functional teams that are strengthened by a high involvement in the decision-making process. A structure similar to the organic model structure is that of the matrix structure. One of the most obvious characteristics of the matrix structure is that it breaks down the unity of command concept. This allows for better communication and dual lines of authority for functional departmentalisation, as well as for product departmentalisation.

The innovation concept, from an organisation's viewpoint, requires a typical organic structure, but this structure alone will not necessarily ensure innovation. To facilitate innovation, the organisation requires a structure that propagates innovation implicitly. An organisation that adopts the strategy of being only an innovative organisation will require a different structure from an organisation in which innovation is only a subset. Organisations will more likely adopt a structure that allows for an operational structure and a structure for innovation as a subset within the organisation. The structure allowing for innovation must be specific and contain certain attributes. The structure of the organisation must, therefore, be designed to encourage innovation through specifically designed processes and reward schemes. The entire structure should be designed to do something for the first time. This structure includes specific roles and definitions that are unique to an innovative organisation. This structure must include the roles of idea generators, sponsors and orchestrators. Additional to this, the structure must make provision for differentiation; a process to separate the operational from the innovating organisation.

There are different ways in which the separation can be accomplished, one method used to accomplish this is known as a reservation. The reservation can take the form of a physical, financial or organisational separation. Separation is not only necessary, as seen from a management perspective, allowing for the organisational structure to be aligned with the strategy of the organisation, but also because the concepts of innovating and operating entail two opposing logics.

This is similar to the approach by other theorists, such as King and Anderson, who propose an innovation organisation based on the organic model mentioned at the beginning of this section. These two authors also propose certain roles to be present in the innovation organisation, but warn that there is no easy recipe that will ensure the success of innovation. They place a lot of emphasis on the change agent, whose role is almost similar to, yet different from, the role of the orchestrator, and they also refer to the role of the idea champion. These proposals indicate that, for innovation, specific roles need to be assigned and certain elements – for example, the type of industry, organisational culture, etc. – need to be adjusted to ensure the best possible structure. There is, however, a link between the structure of the organisation and the

culture of the organisation. Starkey, Tempest and Mckinlay explicitly state that, if the dominant part of the culture of the organisation does not support innovation, then the need for separation will be greater. The importance and the role of organisational culture for both organisational learning and innovation will be summarised in the section to follow.

5.3.   Culture

The organisational culture is important not only from the perspective of organisational learning, but also for innovation. This is of particular importance considering that, predominantly, the strategy dictates the structure of the organisation and that different cultures can be associated with different types of organisational structures. The focus of the study is primarily on organisational culture, because the organisation's management has some influence on the culture of the organisation, whereas the cultures of the macro-environment cannot be directly influenced by the organisation. Organisational culture is a set of collective meaning structures that organisational members use to interpret and try to understand their direct environment and their relationships to it. In some, if not most, cases the culture is embedded in a tacit format within the organisation. This requires a model or framework to assist with the decoding of the inherent complexity of culture. King and Anderson propose categorising the approaches to culture in either a structural or interpretive manner. The interpretive approach views culture as symbols, rituals and myths infused in the organisation. Change management, when dealing with organisational culture or the change of culture, is by implication an important element for the management of the organisation. This is partly due to the fact that managing changes involves the manipulation of the above-mentioned symbols, rituals and myths.

Task cultures are defined under the structural approach proposed by Charles Handy (1985) and used by King and Anderson. King and Anderson explain that task cultures can be associated with the matrix structures, which stress adaptability through the use of project teams, lateral rather than vertical communication throughout the organisation, and emphasise the importance of individual and group achievement.

This is considered by experts in the field to be the most preferable structure for organisations adopting innovation as a strategy or organisations that aim to be more innovative.

It has been noted above that leadership of the organisation recognises the importance of change management and, in addition to that, the leaders (founders) of the organisation have an influential impact on the culture of the organisation. The derived assumption that the leaders of the organisation can drive change management also leads to the notion that changing the culture of the organisation will mainly be the responsibility of the organisational leadership.

The relations between the two concepts contribute to the complexity, especially as change itself is culture bound. In organisations that have an organisational culture that promotes risk taking, and change itself is seen as favourable, the organisation will be less reluctant to change quickly, resulting in an organisation more conducive to organisational learning and innovation. Organisational members, however, tend to be resistant to change. This resistance is seen as one of the primary stumbling blocks for organisational learning and innovation. Robbins emphasises this by stating it in a reverse manner: a learning organisation is an organisation that has adopted the ability to adapt and change in a continuous manner.

What, then, can organisations do to facilitate the process of changing the culture of the organisation? Organisations need to develop an understanding of the underlying meanings of the symbols and rituals within the organisation; these must be communicated and discussed throughout the entire organisation. This implies changing meanings from a tacit format to a more explicit format, so they can be discussed and understood by the members of the organisation. This will facilitate the direction towards organisational learning, contributing to members being less resistant to change by seeing change as part of the collective meaning of the organisation.

The focus of this study has been mainly on organisational culture, but this does not imply that the culture of the individual, industry, country and customers do not have an influence on organisational learning and innovation. On an individual level it is

evident that not all individuals or members of the organisation have the same ability or mindset to be entrepreneurial by nature. To truly understand the concept of culture, a holistic approach to culture will be required by the management of the organisation. Although all forms of culture contribute to the level of organisational learning and innovation within the organisation, it would be accurate to assume that organisational culture will be more prominent. Alone, these salient elements, discussed in the preceding paragraphs, however, will not ensure innovation or organisational learning. There are also auxiliary elements, some of which have been discussed briefly in earlier chapters, or a combination of such elements that can also have an impact. These types of elements will be briefly listed in the next paragraph.

5.4. Conclusion – auxiliary elements

The strategy, structure and culture of an organisation were identified as salient elements for organisations striving to become learning and/or innovation organisations. There is, however, a great deal more that organisations will have to achieve or prevent to allow for organisational learning or innovation to occur. These variables all need to be considered when deciding on an approach, but their utilisation will differ from one organisation to another.

An example of an auxiliary element not explicitly discussed in this chapter is the members (individuals) of the organisation itself. All types of organisations consist of individuals who are unique and so are their interactions with the environment, including the organisations they belong to and interact with. The management of these organisations need to make informative decisions relating to organisational learning or innovation, and are therefore required to have a superior understanding of these types of elements.

The enablers and stumbling blocks for either organisational learning or innovation have not been discussed in detail in this chapter. This, however, does not imply that these enablers and stumble blocks are less important. To complement some of the conclusions and statements made in this study, and specifically in this chapter, the enablers and stumbling blocks have been listed in summarised form in the table

below. This is done in a comparative manner, facilitating the identifying of resemblances or differences between organisational learning and innovation.

The enablers and stumbling blocks are summarised from the work of King and Anderson, Carl Franklin, Jon Sundbo, Dixon, PM Senge, Gervase R Bushe and AB (Rami) Shani and Stephen P. Robbins as proposed in Table 5.1:

Table 5.1- Enablers and stumbling blocks

| Organisational Learning			Innovation	
Enablers	Stumbling Blocks		Enablers	Stumbling Blocks
Mental models (Tacit knowledge)	Resistance		Corporate culture	Hyping
Shared vision	Organisational infrastructure		Marketing	Innovators are totally outnumbered by non-innovators
Team learning	Learning disabilities		Merit (Inventive, operational, embodiment and market)	Entrepreneurs are over-confident (Ego involvement)
Prototypes	Internal Politics		Demand pressures	Groupthink
Time	Time		Socio-cultural factors	Ignoring the market and the environment

Organisational Learning			Innovation	
Enablers	Stumbling Blocks		Enablers	Stumbling Blocks
Personal mastery			Technological opportunities	Rigid boundaries within efficient organisations create barriers to innovation
Learning through experience			Strategy	Resistance
Leadership			Approach of: Dynamic management, customer value, competitive advantage and extendibility	

The above table gives some indication of auxiliary elements that can have an effect on organisational learning or innovation, either alone or in combination. This implies that, apart of the salient elements, other auxiliary elements are also influential and need to be considered. These elements cannot be considered as single entities, but only together with the relations that exist between them and other elements. Organisations are seen as complex, evolving systems with relations between the elements and the environment that dictates the management approach to also include systems thinking theories.

This entails that inter-relationships, interactions and interconnectivity of the elements within the organisation (system) and between the organisation and its environment exist, and evolve in co-existence with each other. This might be the single most

credible reason why there can be no exact proposal or solution that can ensure organisational learning or innovation. This strengthens the notion that dependencies do exist between organisational learning and innovation, but this does not necessarily mean the one will lead to the other. Enablers, however, do contribute to the success of organisational learning and innovation. The success of organisational learning in an innovation environment will therefore increase the likelihood of the success of innovation. Organisational learning can be an enabler in the innovation environment. The following is a proposed graphical representation adapted from the research:

Fig 5.1 Innovation and Organisational Learning Relations
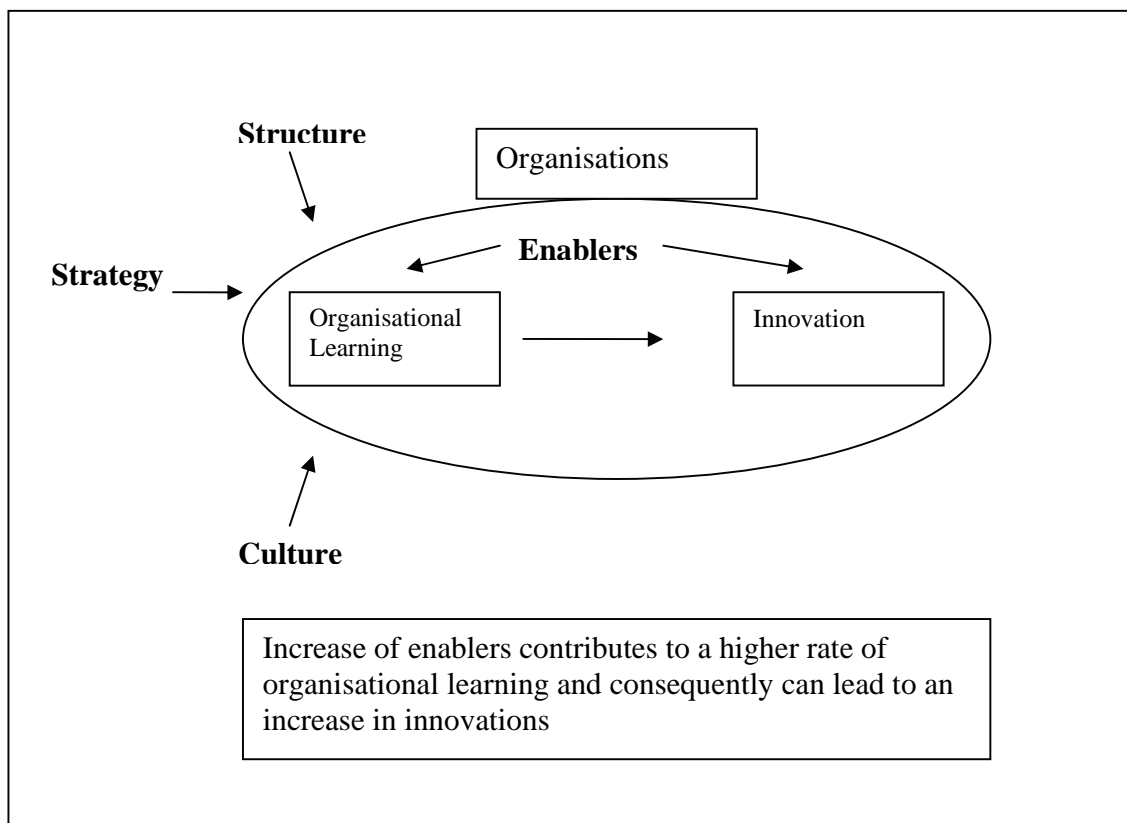
5.5.   Future research

Future research can consider the theories discussed above to evaluate the ever more rapidly changing environment globally, which can in itself be seen as one of the

drivers for organisations to adopt organisational learning and innovation principles. The future will change faster, meaning that organisational learning and innovation will have to take place ever more rapidly. The impact of the fast rate of organisational learning or innovation on knowledge management can be explored with reference to time and space as a basis for the research.

Bibliography

ALDRICH HE, RUEF M. 2006. *Organisations evolving.* 2nd ed. London: Sage

BAKER WE, SINKUL JM. 2002. Market orientation, Learning orientation and Product innovation: Delving into the organisation's black box. *Journal of Market focused management.* 5(1): 5-23 [Online]. Available: http://springerlink.metapress.com.ez.sun.ac.za/content/m66j23uh878772g0/?p=86 b16a712f7b41cebeb8d7b6b5326f6b&pi=3 [April 2008]

BATTEN DF, BERTUGLIA CS, MARTELLATO D, OCCELLI S. 2000. *Learning innovation and the urban evolution.* Dordrecht: Kluwer Academic

BROWAEYS MJ, BAETS W. 2003. Culture complexity: a new epistemological perspective. *The Learning Organisation.* 10(6): 332- 339.

BROWN JS, DUGUID P. 1998. Organising Knowledge. *California management review.* 40(3): 90-111

BROWN TE, ULIJN J. 2004. *Innovation, entrepreneurship and culture. The interaction between technology, progress and economic growth.* Cheltenham: Edward Elgar

BUSHE GR, SHANI A.B. 1991. *Parallel Learning Structure. Increasing Innovation in Bureaucracies.* Reading, Mass: Addison-Wesley

CASTELLS M. 2000. *The Information Age: Economy, Society and Culture Volume 1. The rise of the Network Society.* 2nd ed. Oxford: Blackwell

CASTELLS M. 1989. *The Information City.* Oxford: Blackwell

CHANAL V. 2004. Innovation management and organisational: a discursive approach. *European journal of Innovation Management.* 7(1): 56-64

CHANDLER GN. 2000. Unraveling the determinants and consequences of an Innovation-Supportive Organisational Culture. *Entrepreneurship: Theory and Practice.* 25(1): 59

COMMON KNOWLEDGE ASSOCIATES. *Biography of Nancy Dixon.* [Online]. Available: http://commonknowledge.org/userimages/bio_nancy_dixon.pdf [August 2007]

COMMON KNOWLEDGE ASSOCIATES. *Review of Nancy Dixon's book The Organisational Learning Cycle by Bill Godfrey – Mt Stuart, TAS Australia.* [Online]. Available: http://commonknowledge.org/userimages/review_organisational_learning.pdf [August 2007]

COOK DN, BROWN JS. 1999. Bridging Epistemologies: the generative dance between organisational knowledge and organisational knowing. *Institute for operations research and the management sciences (IINFORMS).* Organisation Science

DAVIS G. 1998. Creating scenarios for your company's future. *The 1998 conference on corporate environmental, health, and safety excellence.* New York

DE PABLOS PO. 2006. Transnational corporations and strategic challenges. An analysis of knowledge flows and competitive advantage. *The learning Organisation.* 13(6): 544-559.

DIERKES M, ANTAL B, CHILD J, NONAKA I. 2001. *Handbook of Organisational Learning and Knowledge.* Oxford: Oxford University Press

DIXON NM.1999. *The organisational learning cycle. How we can learn collectively.* 2nd ed. Hampshire: Gower

ECONOMIST.COM. Extract a*rticle referring to innovation failure from Carl Franklin's book.* [Online]. Available: http://www.economist.com/science/tq/displaystory.cfm?story_id=2019853 [August 2007]

EMERALD FOR MANAGERS. *Book review of Carl Franklin's book: Why Innovation fails.* [Online]. Available:
http://managers.emeraldinsight.com/resources/reviews/innovation.htm?PHPSESSID=dcc524b5d11f53e4a686cef887c772b0&PHPSESSID=dcc524b5d11f53e4a686cef887c772b0 [August 2007]

FLOOD RL. 1998. *Rethinking the fifth discipline. Learning within the unknowable.* London: Routledge

FRANKLIN C. 2005. *Why innovations fails. Hard-won lessons for business.* London: Spiro

GHAURI PN, GRØNHAUG K. 2005. R*esearch methods in business studies. A practical guide.* 3rd ed. Harlow England: Financial Times Prentice-Hall

GROSSMAN GM, HELPMAN E. 1993. *Innovation and growth in the global economy.* Cambridge, Mass: M.I.T. Press

HALES S. 2003. Better understanding knowledge for personal and business success. *Insighting Knowledge and Change Management, UK.* [Paper]

HENNINGER S. 2001. *Advances in Learning Software Organisations: Third International Workshop, LSO 2001.* Organisational learning in dynamic domains. Berlin: Springer. Volume 2176. [Online]. Available:
http://springerlink.metapress.com.ez.sun.ac.za/content/20jeur5jmw7xp9q0/?p=6295769e291d4db8bd1486eb6152f208&pi=0 [April 2008]

HEY J. 2004. *The data, Information, Knowledge, Wisdom Chain: The Metaphorical Link*

HILDEBRAND C. 1999. Does KM = IT. *Intellectual Capitalism – Enterprise Magazine.* [Online]. Available: http://www.kmnetwork.com [August 2007]

HONGMING X, CHANGYONG L, CHUNHUI C. 2007. Relationships among market orientation, learning orientation, organisational innovation and organisational performance: An empirical study in the Pearl River Delta region of China. *Frontiers of business research in China.* 1(2). [Online]. Available:

http://springerlink.metapress.com.ez.sun.ac.za/content/2270366335348150/?p=f4 41966df28c48d686a43f7f2498a3a1&pi=9 [April 2008]

HONDERICH T. Defining Culture. *The Oxford Companion to Philosophy- edited by Ted Honderich. [Study reader]*

HUBERMAN BA. 2001. The dynamics of organisational learning. *Computational and mathematical organisation theory.* 7(2). [Online]. Available: http://springerlink.metapress.com.ez.sun.ac.za/content/t53r864r0201t421/?p=5d7f 3037cf23469087d74480c40e41c3&pi=12 [April 2008]

JORNA RJ. 2006. Organisational forms and knowledge types: A semiotic perspective. *Faculty of management and Organisation.* Groningen: University of Groningen

KANTER RM. 2001. *Evolve. Succeeding in the Digital culture of tomorrow.* Boston, Mass: Harvard Business School

KING N, ANDERSON N. 2002. *Managing innovation and change. A critical guide for organisations.* London: Thomson Learning

KURTZ CF, SNOWDEN DJ. 2003. The new dynamics of strategy: Sense-making in a complex and complicated world. *IBM Systems Journal.* 42(3): 462-483

LAM A. 2004. Organisational Innovation. [Research paper] BRESE, School of Business and Management: Brunel University

LYNN SG, SIMPSON JT, SAUDER WE. 1997. Effects of organisational learning and information-processing behaviors on new product success. *Marketing Letters, Springer: Netherlands.* 8(1)

MALHOTRA Y. 2001. Expert systems for knowledge management: crossing the chasm between information processing and sense making. *Expert Systems with Applications.* (20): 7-16

MALHOTRA Y. 2001. Enabling next generation e-business architectures: Balancing integration and flexibility for managing business transformation. [White paper] *Dr Yogesh Malhotra*

MALHOTRA Y, GALETTA DF. 2003. Role of commitment and motivation in knowledge management implementation: Theory, conceptualization, and measurement of antecedents of success. *Proceedings for the 36th Hawaii international conference on system sciences.* 0-7695-1874-5/03

MALHOTRA Y. 2004. Integration knowledge management technologies in organisational business processes: Getting real time enterprises to deliver real business performance. *Journal of knowledge Management (Emerald)* Special issue on knowledge management and technology. Q3

MARWICK AD. 2001. Knowledge Management Technology. *IBM Systems Journals.* 40(4)

MCDERMOTT R. 1999. Learning Across Teams. How to build communities of practice in team organisations. *Knowledge Management Review.* Volume 8. May/June

MIDDELTIN-KELLY E. 2003. *Complex systems and evolutionary perspectives on organisations.* Oxford: Pergamon.

NIJKAMP P. A *Changing Spatial of Innovation.* [Online]. Available: http://www.bis-berlin.de/events/telecity/doc/nijkamp.pdf [August 2007]

NONAKA I, TAKEUCHI H. 1995. *The Knowledge-Creating Company.* New York: Oxford University Press

ODAGIRI H, GOTO A. 1996. *Technology and industrial development in Japan Building capabilities by learning, innovation and public policy.* Oxford: Clarendon

PIERCE J. Knowledge: What is it? *Knowledge Management for beginners.* [Online]. Available: http://www.knowledgeboard.com/library/kmfb_john_pierce_01.pdf [August 2007]

ROBBINS SP. 2003. *Organisational Behavior, International Edition.* Cape Town: Pearson Education South Africa

ROWLAND G. 2004. Shall we dance? A design epistemology for organisational learning and performance. *Educational technology research and development.* 51(1). [Online]. Available: http://springerlink.metapress.com.ez.sun.ac.za/content/ax6868586053641r/?p=ae90e484a6894699a0ae93c2dae68260&pi=5 [April 2008]

SCHEIN EH. 2004. *Organisational culture and Leadership.* 3rd ed. San Francisco: Jossey-Bass

SENGE PM. 1990. *The fifth discipline. The art and practice of the learning organisation.* London: Random House

SICILIA MA, LYTRAS MD. 2005. The semantic learning organisation. *The Learning Organisation.* 12(5): 402-410.

SMIT PJ, CRONJE GJ.DE J. 1997. *Management Principles A contemporary edition for Africa.* 2nd ed. Cape Town: Juta

SNOWDEN D. 2002. Complex Acts of Knowing: Paradox and descriptive self-awareness. *Special edition Journal of Knowledge Management.* 6(2): 100-111

SOCIETY FOR ORGANISATIONAL LEARNING. *Reference to Dr Peter N* Senge's books and publications. [Online]. Available: http://www.solonline.org/aboutsol/who/Senge/ [August 2007]

SPENDER JC. 1994. Organisational knowledge, collective practice and Penrose Rents. *International Business Review.* 3(4): 353-367

STARKEY K, TEMPEST S, MCKINLAY A. 2004. *How Organisations learn. Managing the search for Knowledge.* 2nd ed. Padstow: Thomson

STEHR N. 1996. *Knowledge as a capacity for action.* [Research paper] University of British Colombia: Peter Wall Institute for Advanced Studies

STENMARK D. 2002. *Information versus Knowledge: The role of intranets in Knowledge Management.* Proceedings for the 35th Hawaii International Conference on System Science. 0-7695-1435-9/02

STENMARK D. 2001. The relationship between information and knowledge. Proceedings for IRIS 24, Ulvik, Norway

SUNDBO J. 1999. *The theory of Innovation. Entrepreneurs, Technology and Strategy.* Cheltenham, England: Elgar

THERIN F. 2002. *Organisational learning and Innovation in High-Tech Small Firms.* Proceedings for the 36th Hawaii International Conference on System Science. 0-7695-1874-5/03

TUOMI I. 2002. The Future of Knowledge Management. *Livelong Learning in Europe (LLinE).* Vol. VIII. (2): 69-79

UNIVERSITY OF HUDDERSFIELD. *Reference to Professor Nigel King's books and publications.* [Online]. Available:
http://www.hud.ac.uk/hhs/dbs/psy/staff/cv/nki_cv.htm [August 2007]

VAN DER SLUIS LEC. 2004. Designing the workplace for learning and innovation: Organisational factors affecting learning and innovation. *Development and Learning in Organisations.* 18(5):10-13.

VAN NIEKERK HJ. 2004. *Enabling Organisational Knowledge Through Action Learning: An Epistemological Study.* Stellenbosch: University of Stellenbosch. (Thesis)

WEICK KE. 1995. *Sensemaking in Organisations.* Thousand Oaks, Calif: Sage

WEISBER GRW. 2006. *Creativity Understanding innovation I problem solving, science, invention and the arts.* Hoboken: John Wiley and Sons

WHITTEN JL, BENTLEY LD. 1998. *System analysis and design methods.* 4th ed. Burr Ridge III: Irwin

WRIGHT S. 1994. *Anthropology of Organisations.* London: Routledge