Conceptions of Knowledge Transfer in Organisations –
a Bibliometric and Content Analysis of three Journals

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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 sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

23 February 2015

OPSOMMING

Sentraal tot hierdie studie is die voorstelling van kennisoordrag in die literatuur. Die doelwit is om te bepaal hoe die begrip "kennisoordrag" in drie tydskrifte naamlik *MIS Quarterly; Organization Science* en *Management Science* begryp word. Die studie bied 'n oorsig van die groei en ontwikkeling van die begrip binne die konteks van organisatoriese bestuur en identifiseer die historiese en opkomende temas en tendense daarvan. Die studie fokus op artikels met die terme 'kennisoordrag', 'deel van kennis' of 'kennisvloei' in die opsommings óf titels van artikels. 'n Totaal van 146 artikels is geïdentifiseer en ontleed met behulp van bibliometriese- en inhoudsanalitiese navorsingsmetodes. Die resultate van die studie toon 'n geleidelike toename in artikels rakende kwessies rondom kennisoordrag in organisasies.

Die historiese temas wat geïdentifiseer is, sluit in kontekstuele faktore, meganismes, geografiese faktore, organisatoriese konteks, studie areas, agente, kennisvloei en verskillende tipes kennis. Volgens die historiese temas is kennisoordrag 'n groeiende literatuur met talle teorieë en modelle, kontekste en doelwitte, praktyke en maatstawwe. Dit is 'n aktiewe proses en nie bloot die nabootsing van goeie praktyke tussen organisasies nie. Praktyke moet verander word om nuwe kontekste en kulture te pas. Outeurs het verder gevind dat die proses van kennisoordrag 'n ernstige impak op organisasies se kennisbestuur pogings het.

Die opkomende tendense sluit in organisatoriese prestasie, organisatoriese leer, organisatoriese verandering, innovasie en verandering en kennis-netwerke. 'n Ontleding van opkomende tendense toon dat kennisoordrag in organisasies plaasvind met die oog op 'n toename in wins en doeltreffendheid. Outeurs bevraagteken die gewilde siening dat kennisoordrag 'n meganiese proses is. Die opkomende temas toon dat kennisoordrag 'n komplekse proses is wat verskillende faktore behels wat aandag moet geniet voordat suksesvolle oordrag kan plaasvind. Hierdie faktore sluit in die motivering van werknemers en die skep van 'n gunstige omgewing met betrekking tot organisatoriese kultuur en struktuur.

Die studie sluit af met die oogpunt dat kennisoordrag as 'n inisiatief van 'n organisasie se bestuur herevalueer moet word in 'n poging om dit verder te verduidelik en die verhouding daarvan met ander bestuurskonsepte te bepaal.

SUMMARY

Central to this study is the transfer of knowledge in organisations. The aim of this study is to ascertain how the concept of Knowledge Transfer (KT) is represented thematically in the three journals *MIS Quarterly, Organization Science,* and *Management Science*. It reviews the growth and development of KT in the context of organisational management and determines the historical and emerging themes and trends thereof. The study focuses on articles that listed any of the following concepts: 'knowledge transfer', 'knowledge sharing' and 'knowledge flow' either in the abstract, as a keyword, or in the title of the paper. A total of 146 articles were identified and analysed through the use of bibliometric and content analysis research methods.

The results show that there has been a gradual increase of articles addressing KT related issues in organisations. The historical themes identified include contextual factors, mechanisms, geographic factors, business context, areas of study, agents, flow of knowledge and different knowledge types. From the historical themes, knowledge transfer is a growing literature with many different theories and models, contexts and goals, practices and measures. It is an active process and not a simple act of imitating an example of good practice from one organisation to another. Practices need to be modified to fit new contexts and cultures and authors find that the very process of transferring knowledge, if not implemented properly, has a severe impact on organisational efforts aimed at knowledge management.

The emerging trends include organisational performance, organisational learning, organisational change, innovation and change and knowledge networks. From the emerging trends, the clear result is that knowledge transfer is conducted by organisations in order for them to maximise profits and work efficiently. It is in the emerging themes that authors are questioning the popular view of knowledge transfer as a mechanical process. Emerging themes reveal that knowledge transfer is a complex process, involving many different players and factors that must be addressed before a successful transfer can occur. These include, motivating the employees, creating an enabling environment in terms of organisational culture and structure.

The study concludes that knowledge transfer as a notion of management in organisations must be re-examined in order to clarify it and establish the relationship it has with other managerial concepts.

ACKNOWLEDGEMENTS

This thesis is especially dedicated to my beloved brother Nathan - you have been a study partner, a brother, and a best friend one could ever ask for in a life time!

Mfowethu ngiyabonga

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ABBREVIATIONS

I-Space	Information Space
IT	Information Technology
ISI	Institute for Scientific Information
KM	Knowledge Management
KT	Knowledge Transfer
SCIE	Science Citation Index Expanded
SECI	Socialisation, Externalisation, Combination, Internalisation
SSI	Social Sciences Index

Chapter One

RESEARCH QUESTION AND BACKGROUND

This chapter includes the background to the study, statement of the problem, research questions and methodology, significance of the study, scope and limitations. The chapter ends with a broad overview of the whole thesis.

1.1.   Introduction

Interest in knowledge transfer (KT) research has increased in recent years, resulting in voluminous output of literature on the subject, such as books, databases and journal articles. It also became embedded in other fields of study, such as engineering, information technology, and organisational and management science. This increased publication activity on KT did not happen independently, but emanated from the parent field of knowledge management (KM). This research study, while acknowledging the parent-child relationship between KM and KT, focusses on the latter. The intended outcome is to clarify the notion of KT and outline how it has developed thematically in three selected journals, namely, *Management Science, Organization Science* and *MIS Quarterly*, and establish how it relates to other managerial concepts in the organisation. It undertakes a conceptual analysis of the three journals to establish their productivity levels and patterns. In addition, content analysis is used to deduce themes, patterns and trends in KT literature, as presented in these journals.

1.2.   Growth and Development of Knowledge Management Literature

Knowledge management has been described as an emerging field with a long history.[1] The field, as young as it seems, appeals to other disciplines, and as such Ma and Yu describe it as having an unusually high degree of interaction with other disciplines[2] such as management, information science, economics, engineering, information systems and technology and

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[1] Wiig K. 1999. An Emerging Discipline rooted in long history.

[2] Ma, Z.Yu, K.-H. 2010. Research paradigms of contemporary knowledge management studies: 1998-2007. 14(2),175–189.

organisation science, leading to a variety of literature being produced. Several studies that outline the growth and development of the KM literature have been conducted. For example, Wilson in 2002 conducted a bibliometric study that listed all articles with the phrase "knowledge management" in their titles. The results of his study are presented in Figure 1 below.
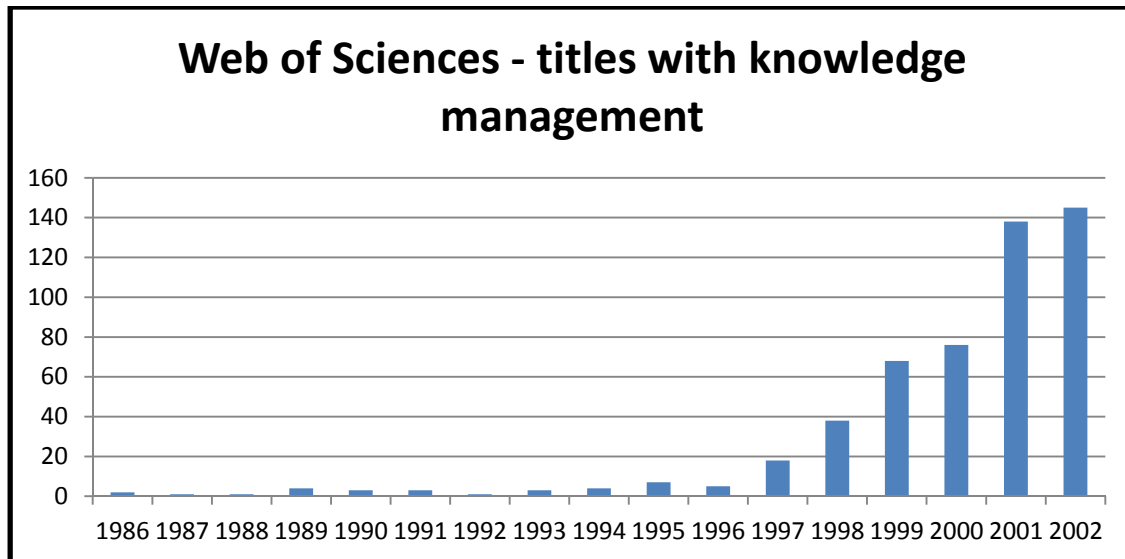
Figure 1 : Web of Sciences - titles with knowledge management. Adapted from: Wilson 2002 [3]

A similar study, carried out by Gu in 2004, discovered that 2,727 authors had contributed to a total of 1,407 KM publications since 1975.[4] Wallace, in March 2007, outlined the growth and development of KM literature and found 3,566 articles listed in the Social Sciences Index that contained the phrase 'knowledge management.[5] These were published between the 1970s and March 2007. A decade-by-decade analysis carried out by Wallace revealed the following: (See Table 1 below):

Period	Number of Articles
1970s	7
1980s	9
1990s	425
2000s	3125

Table 1 : Per decade Analysis of knowledge Management Articles. Adapted from Wallace[6]

Wallace's findings, though limited to the use of the phrase 'knowledge management', show remarkable growth patterns of the literature on the field that demands further analysis. In

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[3] Wilson TD. 2002. The Nonsense of Knowledge Management. *Information Research* 8(1).

[4] Wilson TD. 2002. The Nonsense of Knowledge Management. *Information Research* 8(1).

[5] GU Y. 2004. *Global Knowledge Management Research*, 172-190

[6] Wallace D. 2008. *Principles of Knowledge Management: Theory, Practice, and Cases*

response to this demand the current study explores publication activity in the field, with specific focus on KT as an aspect of it in the context of organisational management.

1.3.   Research Activity in Knowledge Transfer

Since the 1990s the field of knowledge management has experienced growth in publication output.[7] Gu observes that from 1997 there was a sharp increase which rapidly peaked in 2001[8]. Small and Sage in 2005/6 discovered that "…while a survey of the literature yields numerous KM articles, frameworks and models, and assessment tools, few focus on Knowledge Transfer[9]" thus creating a gap for further research to fill. Kumar and Ganesh observed that "the literature on KT appears not only extensive but also highly variegated"[10] This study employs KT as a construct within the broader field of KM in organisational settings, to delineate the components, subjects and patterns that are central to KT. To achieve this, the study adopted a mixed method research design, which included a description and content analysis of publications in the selected management journals.

1.4.   Statement of the Research Focus

KT is recognised as a critical success factor in today's organisations and as a result has received considerable attention from researchers, scholars and practitioners. The result has been a surge in the number of articles published in scholarly journals that represent the notion of KT. There are constricted ideas about the content of KT as, firstly, some scholars describe the concept as a mechanical process that involves a sender and a receiver;[11] secondly, others view it from a technological perspective, creating the impression that KT can be achieved through the use of technology;[12] and thirdly, some scholars state that KT is inherently human and as such regard people as a critical success factor in the process.[13] These different observations have confused the notion of KT and made it difficult to pinpoint and relate it to other managerial concepts in organisations. The inter-disciplinary nature of KT has exacerbated the situation in that different disciplines bring in their own views and experiences of how it occurs.

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[7] GU Y. 2004. Global Knowledge Management research, 172-190

[8] GU Y. 2004. Global Knowledge Management research, 172-190

[9] Small CT. Sage ap. 2005/6. Knowledge Management and Knowledge Sharing: a Review

[10] Kumar JA, Ganesh LS. 2009. Research on KT in organisations: a morphology 161-174

[11] Lihui et al. 2005 A Sender Receiver Framework for Knowledge Transfer. 29,2:197-219

[12] Grant A. and Grant T. 2008. Developing a Model of Next Generation Knowledge Management. 5:272-590

[13] Koenig Michael, E.D. Srikantaiah KT. 2004. Knowledge Management Lessons Learned: What works and What Doesn't

1.5.   Objectives of the Research and Research Questions

This thesis is an attempt to contribute to clarifying the notion and practice of KT. It does so by tracing how the notion has developed thematically in three selected journals.

The objectives of the analysis of the selected journals are:

1   to identify the various meanings attached to the notion of KT

2   to identify historical and emerging patterns of KT as an aspect of management in organisations

3   to identify different relationships that exist between KT and other concepts of management in organisations

4   to reflect on the implications, from the literature, for KT theory and practice in organisations.

To achieve the above objectives, the following questions will be addressed in this thesis:

1   How is Knowledge Transfer understood by different authors of scholarly publications?

2   What are the dominant or recurring themes of KT literature as reflected in the three journals selected?

3   Which concepts of management in organisations have direct relationships with KT?

4   What are the implications for the identified themes and patterns of KT in organisations?

1.6.   Research Methodology

This section describes the research methodology that was used in this study. The first part discusses the data gathering methods while the second discusses the data analysis procedures.

1.6.1. Data Collection Methods

Bibliometrics and content analysis, specifically conceptual analysis, are the methods of data gathering in this study. Bibliometrics, as a quantitative method, was used to select and analyse the journals and articles that constituted the unit of analysis in the study. It focuses on what Paisley, in Beck and Manual call "extrinsic facts about publications, broadcasts and other forms of communication."[14] In this study, bibliometrics was used to identify the journals, identify and count the articles, identify and count the keywords, categorise keywords and analyse them. Conceptual analysis was used as the principal research method, as it focuses on the intrinsic content of articles and seeks to develop coding categories based

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[14] Paisley 1989:707

on a theory of the relationship of the text to intentions, effects and the symbolic environment.[15] Bibliometrics, on the other hand, is largely concerned with the statistical productivity levels, citations and author output. In this study, the two methodologies were viewed as complementary and thus integrated as (i) bibliometric research techniques of publication output, in which co-occurrence analysis was used to obtain statistical data for the study; (ii) conceptual analysis, as the central method used to ascertain historical and emerging themes and dimensions of KT in organisational settings. This resulted in a comprehensive analysis organised according to themes, and captures both the statistical output and the thematic patterns of the emergent field.

1.6.2. Data Presentation and Analysis

Both concept analysis and bibliometric tools of data collection imply that data analysis begins at the same time as the data gathering and continues until the end of the research. The data gathered through bibliometric methods was analysed through bibliometric indicators and indices that were statistically derived. This involved a number of articles being published over time for each journal. Thus, tables with cumulative frequencies, as well as graphs and charts, were used to illustrate the findings. These were interpreted statistically to calculate percentages and determine the growth patterns of the literature. The interpretation of concept analysis data was made during data collection as well as after all the data had been gathered. The intention was to discover patterns, ideas, explanations and themes that characterised the sub-field. The process included several stages, as follows.

Data coding involved examining the data for themes, categories and keywords, and marking identified words, phrases and possible quotations. These were collated and analysed later in the data analysis chapter. Descriptive or analytical codes were generated in order to frame themes and patterns from the articles. These were categorised into concepts to denote major trends and developments as emanating from the data. The results were presented in a narrative interpretive form and related to the literature review. Evidence was drawn from the raw data, for example, direct quotations from the literature.

Inductive analysis was used to arrive at themes that emerged naturally from the data. Once dominant themes were identified in the data through open coding, the researcher linked and reorganised themes in an attempt to develop a dominant structure. To bolster the arguments,

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[15] Beck SE, Manuel K. 2008. Practical Research Methods for Librarians and Information Professionals

quotes and anecdotes were used as examples of the types of data that led to the extraction of themes and connections.

1.7.   Significance of the Study

The main contributions of the study will lie in their achievement of a refined understanding of KT to provide a platform for better identification of gaps in the KT literature, and guidelines to further research on underexplored issues related to KT, such as organisational learning and the learning organisation. The study will create new insights by revealing the mainstream research themes, underexplored directions, isolated subject areas and potential subject areas of the KT domain in organisations

The study will make significant contributions to understanding the relationship that KT has with other organisational management concepts. It builds on existing studies in order to map out the developments in KT as distinct from but grounded in KM. It thus constitutes a beginning for the study of literature of KT as it exists across disciplinary fields. It will act as a guide for knowledge managers who wish to improve the process of KT in their organisations, by referring them to the relevant literature. Concept analysis will contribute to the better understanding and identification of historical and emerging themes and their interconnections to other managerial concepts in organisations.

1.8.   The Significance of the three Journals

The role of journals in scholarly communities is critical, constituting an important form of publication for the dissemination of scholarship and research in an academic field. Herubel, affirms the importance of journals in scholarship, stating that,

"Often publications include both monographs and journals, yet increasingly journals constitute the majority of published scholarship. Journals emerge as vehicles of communication between scholars and scientists who through formal and informal acculturation accept disciplinary consensus as expressed in the journal pages." [16]

In building a collective knowledge base, journals form the most comprehensive, up-to-date, and authoritative archive of information in a given scholarly field.[17] Solomon asserts that journals form an archive of knowledge for a particular discipline.[18] Journals in this study are therefore viewed as sources of publication activity in the field of KM, which merits

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[16] Herubel VW.1999. Historical Bibliometrics: Its Purpose and Significance to the History of the Disciplines. 380-388

[17] Solomon DJ. 2007. The Role of Peer Review for Scholarly Journals in the Information Age

[18] Solomon DJ. 2007. The Role of Peer Review for Scholarly Journals in the Information Age

conducting a bibliometric analysis to enhance this kind of understanding. In building scientific communities journals also act as a means of tying together a scholarly community in a number of ways. For example, communication amongst scholars is improved. Solomon states that "a hallmark of a discipline's coming of age is the establishment of a new journal: in essence, staking out the intellectual territory of the new field."[19]

In validating the quality of research, journals also play a role in maintaining community standards in how research and scholarship are conducted. To some extent, this is done as journals filter what is published and hence disseminated.[20] The mechanism of peer review has solidified the reliability of publication output in journals. They have a specific disciplinary focus, and therefore tend to have higher degrees of specialisation in a particular field. Journals are representative of the growth of a field. In the light of the above postulates, the following three journals were selected and their publication activity on KT evaluated.

The journals are listed in Table 2 below.

Journal Title	Listing in the Thomson Reuters List of Academic Journals	ISI - Web of Science Accreditation	Impact Factor
MIS Quarterly	Yes	Social Sciences Citation Index and ISI	2010: 5.041 [21]
Management Science	Yes	Social Sciences Citation Index and ISI	2010: 2.221 [22]
Organization Science	Yes	Social Sciences Citation Index and ISI	2009: 3.126[23]

Table 2 : List of Journals in the Sample

While the postulates presented above refer to the role of scholarly journals in general, they played a critical role in the identification of the three journals in Table 2. The general postulates were viewed as strategic in the identification and justification of the use of journals over other sources of articles, such as databases, but were not adequate in justifying the

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[19] Solomon DJ. 2007. The Role of Peer Review for Scholarly Journals in the Information Age

[20] Solomon DJ. 2007. The Role of Peer Review for Scholarly Journals in the Information Age

[21] http://www.misq.org/about/

[22] http://www.informs.org/Pubs/ManSci

[23] http://orgsci.journal.informs.org/

selection of the three journals analysed in this study. This gap necessitated the need to enrich the debate.

The three journals were significant in a number of ways.

1.8.1   An established history in circulation

The three journals have been established for several decades, with *Management Science* established in 1954, *MIS Quarterly* established around 1977 and *Organization Science* established around 2000. The journals have thus been in circulation for long enough to have captured a wealth of information on organisational concepts, such as knowledge management and its processes.

1.8.2   Peer Review

The postulates above discuss peer-reviewed journals and describe them as being purely scholarly. The three journals were selected because of their use of 'blind peer review', a process in which scholars read and edit each other's work without the knowledge of who the author is. This has facilitated the production of well-researched articles that meet set academic standards.

Most bibliometric studies use data originating from one or more of the three citation indices supplied by Thomson Scientific Institute for Scientific Information (ISI), founded by Eugene Garfield in 1958 and now a part of Thomson Scientific. The three most important indices in the ISI are the citation index for medicine, life science and the natural sciences, known as the Science Citation Index Expanded (SCIE). There is also a Social Sciences Citation Index and an Arts and Humanities Citation Index. The three journals selected above are listed in the Social Sciences Index (SSI).

Some of the advantages of the Thomson Reuters citation indices are:

1   Multidisciplinary
2   Go back many years
3   Contain citation data
4   Include full journal content – not just parts
5   Reasonably standardised.[24]

One scholar estimates that from all three indices, Thomson Scientific indexes about 8 500 of an   estimated   number   of   more   than   22,000   active,   refereed   scientific   journals

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[24] Solomon DJ, 2007. The Role of Peer Review for Scholarly Journals in the Information Age

(Ulrichsweb.com). Since the Thomson Scientific institute uses the reference lists from publication records in their own indices to select what journals to include, it is reasonable to assume that the Thomson citation indices contain the most cited and most influential academic journals.[25]

By selecting journals that are listed in the ISI, the researcher hopes to ensure that the unit of analysis is representative of the publication output on KT (See Table 2. above). As seen in Table 2 above, the journals included in this study are listed in the Thomson Reuters ISI web of Science and have an impact factor that ranges from 2.0 to 5.041.

1.8.3 Journal Impact Factor

The Impact Factor introduced by Eugene Garfield is a fundamental citation-based measure for significance and performance of scientific journals. It is perhaps the most popular bibliometric product used in bibliometrics itself, as well as outside the scientific community.[26] The impact factor is a ratio between citations and citable items published, thus, the 1980 impact factor of journal X would be calculated by dividing the number of all the SCI source journals' 1980 citations of articles journal X published in 1978 and 1979 by the total number of [citable] source items it published in 1978 and 1979. Thus, the impact factor is "a measure of the frequency with which the average cited article in a journal has been cited in a particular year"[27] From its inception, the impact factor was intended as a means to evaluate the significance of a particular work and its impact on the literature and thinking of the period, now it is used to determine the value of journals and to rank them as well. Impact factors measure the average number of citations to articles for many journals in the sciences and social sciences. Overall, the impact factor indicates the relative significance and influence of a particular journal within its field of research/discipline. It helps a scholar determine the most authoritative and influential journals in a particular field and locate the most influential research in a specific discipline. It was also used to select the best journals in this study, and is the most commonly used assessment aid for deciding which journals should receive a scholarly submission or attention from research readership. Journals with a high impact factor were thus selected. Having analysed the critical role of the impact factor, the three journals (See Table 2.) were included in the study.

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[25] Solomon DJ, 2007. The Role of Peer Review for Scholarly Journals in the Information Age

[26] Glanzel W, Moed HF. 2002. Journal Impact Measures in Bibliometrics Research, 171-193

[27] Garfield E. 1972. Citation Analysis as a tool in Journal Evaluation, 471-479

1.8.4   Editorial Policy/Focus on Management Issues

An editorial policy is referred to as the guidelines and policy statements set forth by the editor(s) or editorial board of a publication.[28] The guidelines and policy statements determine and influence areas such as subject coverage and the extent to which those subject areas must be covered. In this study these were considered in order to determine whether the subject coverage area included KT or all aspects of KM. The editorial focus for the three journals included in this study is tabulated below.

Journal Title	Editorial Focus	Source
MIS Quarterly	It focuses on the achievement and communication of knowledge concerning the development of IT-based services, their management, use and impact. Use of IT with managerial, organisational and societal implications. Professional issues affecting the information systems field as a whole.	http://www.misq.org/about/
Management Science	The scope includes research that addresses management issues using tools from traditional fields, such as mathematics, statistics, industrial engineering, psychology, sociology, and political science, as well as cross-functional, multi-disciplinary research that reflects the diversity of the management science profession.	http://www.informs.org/Pubs/ManSci
Organization Science	The journal publishes ground breaking research about organizations, including their processes, structures, technologies, identities, capabilities, forms, and performance.	http://orgsci.journal.informs.org/

Table 3 : Editorial policies

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[28] Fourie P. 2001. Media studies: Volume one; institutions, theories and issues

Central to these journals is a focus on management in organisations. *MIS Quarterly* states that it publishes articles that concentrate on the communication of knowledge and development of IT-based services and their management. *Management Science* addresses management issues while *Organization Science* publishes ground-breaking research about organisations and their performance. In addition, in 2006 *Organization Science* appointed five senior editors, and of interest to this study was the appointment of Ray Reagans who was charged with overseeing publications in the areas of intellectual leadership, social networks, KT and organisational demography.[29] His appointment is evidence that KT is a managerial concept in organisations and the journals selected above are appropriate for the research.

1.8.5   Stellenbosch University Library Holdings

The Stellenbosch University library holdings guaranteed the researcher access to articles in the three journals of this study with minimal limitations, except for an embargo (one year or more lag) system used by the library in accessing articles. As a result, the researcher accessed articles up to the end of 2012, with only abstracts and not full content. This information is reflected in Chapter Four.

1.8.6   The Researcher's Judgement

The researcher's judgement played a critical role in selecting journals that constituted the unit of analysis, for example the inclusion of journals such as *Organization Science* was based on the researcher's belief that KT is part of any organisation and therefore it would naturally have good articles on the topic. Secondly, knowledge is definitely as a managerial concept and therefore it follows that journals such as *Management Science* would have a sizable number of articles on the topic. Thirdly, KM was once considered an information systems concept and since the main focus of the *MIS Quarterly* is management information systems, articles on KT would be found in these kinds of journals.

1.9.   Unit of Analysis

A unit of analysis is the most basic element of a scientific research project, that is, it is the subject (who or what) of a study about which an analyst may generalise.[30] It refers to the person, collective, or objects that comprise the target of the investigation. Understanding the unit of analysis is important because it determines what type of data must be collected for a study and where it is collected from. The units of analysis of studies may be classified into fewer categories or levels in the social sciences. Dolma has identified at least four categories:

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[29] Argote L. 2006. From the editor. 417

[30] Trochim W. 2004. Research Methods Knowledge Base

firstly the individual level, on which persons make up the unit of analysis, for example, students, registered voters, and union members. Secondly, the group level, on which multiple individuals can be a unit of analysis, for example, families, study groups and employees. Thirdly, the organisational level, which involves investigating units that are wider than groups and usually involve multiple groups within themselves, for example, business corporations, not-for-profit organisations, unions, army divisions, schools and universities. Lastly, the social artefacts and social interaction level, which are described as products of social beings or interactions between social beings, for example, buildings, books, journals, songs, jokes, tales, scientific discoveries, weddings, wars, strikes, laws, constitutions and meetings, as possible units of analysis.[31] It is in the last category that this study finds focus, namely the three journals.

The journals listed above constitute the unit of analysis while the articles on KT constitute the unit of observation for the study. The unit of observation is described as the entity on which measurements are obtained or objects on which data is collected.[32] There is a close relationship between the unit of observation and the unit of analysis, and in some studies it is the same. The unit of analysis is usually broader than the unit of observation and it is easier to make generalisation on the unit of analysis level than at the unit of observation. In this study, articles on KT were viewed as the unit of observation but generalisation and conclusions on the concept of KT were drawn at journal level, which made the journals the unit of analysis.

1.10. Sampling

The sampling technique employed in this study was purposive, because it allowed the researcher to hand-pick subjects on the basis of specific characteristics. Purposive sampling relies on the judgement of the researcher in selecting the unit of analysis, for example, people, cases/organisations, events, and pieces of data that are to be studied.

The summary of characteristics that were sought in the selection of journals included the following: Accreditation and listing in the Thompson Reuters; Focus on management issues in organisations; Listing in the Social sciences index; Editorial policy – including disciplinary focus and availability and accessibility in the Stellenbosch University online library.

The articles and research papers were searched for on the basis of four criteria: (i) the article had to be published in any of the three journals included in the study; (ii) the second criterion

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[31] Dolma S. 2010. The central Role of the Unit of Analysis Concept in Research Design. 169-174

[32] Dolma S. 2010. The central Role of the Unit of Analysis Concept in Research Design. 169-174

was the use of the following terms to retrieve relevant articles: KT, Knowledge Sharing, and Knowledge Flow. The terms had to be contained in the following areas: in the title of the article, in the list of keywords, and in the abstract. For an article to qualify it had to contain any one of these three phrases; (iii) articles had to be published by December 2012; and (iv) they had to be available in full text, meaning that some articles that met the first three standards above were left out because only the abstract was available. This was necessary because in this study the requirement was that articles had to be studied in their completeness so as to present an in-depth analysis of the concept of KT.

1.11.   Scope and Limitations of the Study

The study deals with KT literature from three journals identified above. The study focuses on KT as distinct from KM in that it is regarded as a critical success factor among other knowledge management processes, such as creation and storage. Moreover, more studies concentrating on publications in KM have been conducted (as indicated above) than on the actual processes. This study considers all publications on KT in the three journals up to the end of 2012, and these are likely to provide a broader coverage of the field than would be the case with just one publication. At the same time, the number of articles involved in working with three journals will allow for in-depth analysis of the themes. The study is limited to peer reviewed ISS journals. This means that otherwise interesting and relevant publications not included in this rating are outside the purview of this study.

1.12. Thesis Overview

The thesis consists of five chapters including this introductory chapter, which has presented the background to the study and clearly stated the research objectives and the statement of the problem. Next the chapter justified the study, highlighting its significance and briefly introducing the chosen research methodology. Chapter Two describes the research methodology, both quantitative and qualitative. Data collection methods, instrument development and measurements for all constructs are presented. Chapter Three reviews the literature on knowledge management, KT and presents the conceptual framework for the study, described as communication theory. Previous research on KT is reviewed. Chapter Four is devoted to data presentation and discussion of the main results of the study. Chapter Five consists of analysis of the data and maps a way forward for KT, followed by a conclusion to the study with a summary of findings.

Chapter Two

RESEARCH METHODOLOGY AND DESIGN

Having introduced the study and laid ground for the development of the whole thesis, Chapter Two discusses the mixed research methodology that was applied in this study. It provides justification for the research design and outlines the research methods that were employed. Initially, an explanation of the research purpose is presented. Then, the research question and objectives are outlined, followed by the choice of paradigm in which the study is located and explained. The research process is presented, with bibliometrics and content analysis as the research methods explained. Finally, issues of reliability and validity are discussed.

2.1.   Purpose of the research

This study is an attempt to conceptually clarify the notion of KT and outline how it has developed thematically in the selected journals namely, *Management Science, Organization Science* and *MIS Quarterly*. It will also establish how it relates to other managerial concepts in organisations. To achieve this, the study undertakes a conceptual analysis of the identified journals and analyses their productivity levels and patterns in relation to KT. Bibliometrics, as a secondary method plays a significant role in the identification of journals and keywords. It also caters for the statistical aspects of the study, for example, the counting of articles and keywords and distribution of articles in each journal.

2.2.   Objectives of the Study

The objectives of this study are five-fold: to clarify the notion of KT; to identify historical and emerging patterns of KT as an aspect of management in organisations; to outline the

development of KT as a mechanical process in organisations; to identify different relationships that exist between KT and other concepts of management in organisations; and to draw implications from the literature for KT theories and practice in organisations.

2.3.   Research Paradigm: Mixed methods approach

The three commonly used research paradigms are quantitative, the qualitative and mixed methods.[33] Easterby-Smith et al. identify two philosophies of management research as positivism and social constructionism, arguing that failure to think through philosophical issues can seriously affect the quality of research.[34] A paradigm informs the formulation and orientation of an inquiry and thus predetermines the kind of questions to ask and the data analysis methods to be used. The mixed methods approach as defined by Creswell is a type of research in which a researcher or a team of researchers combines elements of qualitative and quantitative research approaches, for example the use of viewpoints, data collection, analysis, and inference techniques for the purposes of improving breadth and depth of understanding and corroboration.[35] This study draws on the above notion as it brings together elements from both paradigms in order to clarify KT literature.

The mixed methods approach emerged as a response to counteract the weaknesses shown by using either method alone. The intention was not to replace either of these traditional approaches but rather to draw from the strengths and minimise the weaknesses of both in this single research study. Taking a non-purist or compatibilist position allows researchers to mix and match design components that offer the best chance of answering their specific research questions.[36] In this study the mixed research methods enabled the researcher, on the one hand, to gather hard data that was analysed statistically in order to provide generalisable findings on publication activity of KT, and on the other hand to collect data by teasing out themes, trends and subject areas of concentration that could not be gathered statistically. As Cooper and Schindler explain, quantitative methodologies are used to answer questions that are related to issues of "how much, how often, how many, when, and who."[37] In bibliometric research, these questions are used to investigate issues such as publication output per journal, in a subject area or in a certain geographic area.

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[33] Creswell 2009. Mapping the field of mixed methods. 3(2) 95-108.

[34] Easterby-Smith et al 2008. Management Research: p.56.

[35] Creswell 2009. Mapping the field of mixed methods. 3(2) 95-108.

[36] Johnson et al. pp.14-26.

[37] Cooper and Schindler 2008, p.164.

The mixed research design was found to be suitable for this study as it allowed the researcher to engage the topic from different angles. It further enabled the researcher to carry out a quantitative exploration, for example ascertaining the total number of articles about KT in each journal and qualitative discussion of both historical and emerging themes in KT. The methods used are twofold: review of texts through content analysis and bibliometric methods. A review of relevant literature acted as an initial point of understanding the issues at hand and framework for further analysis.

2.4.   Data Sample selection/unit of analysis

A sample of three journals was selected for review. The sampling technique employed in this study was purposive, because it allowed the researcher to hand-pick subjects on the basis of specific characteristics. Purposive sampling relies on the judgement of the researcher in selecting the unit of analysis, for example, people, cases/organisations, events, and pieces of data that are to be studied. In this study the focus was on the pieces of data (journals). Journals were selected based on the following criteria including:

1   Accreditation and listing in Thompson Reuters
2   Listing in the Social Sciences Index
3   Impact factor
4   Editorial policy/focus on management issues in organisations, which includes disciplinary focus
5   Availability and accessibility in the Stellenbosch University online library

2.5.   Journal Article Audit

Each of the three journals identified was reviewed to identify recent papers that reported empirical findings from original research. Eligibility criteria for the papers selected included the following: Firstly, the papers were published before December 2012, with the earliest acceptable publication date being the date the journal was launched under its current name. Secondly, the paper was centred on the concept of KT from any angle; thirdly, it listed any or all of the following terms as a keyword: KT, knowledge sharing and knowledge flow. Using the above criteria a total of 146 articles from all three journals were retrieved. Table 4, below shows the breakdown of articles in each journal.

Journal Name	Total
MIS Quarterly	27

Journal Name	Total
Management Science	71
Organization Science	48
Grand Total	146

Table 4 : Total Number of articles retrieved

2.6.   Search Strategy

The majority of the literature was gathered by searching online bibliographic databases from the Stellenbosch University Library holdings. To find the articles, the researcher first searched for the journal then began searching within the journal. The following search terms were employed: Knowledge Transfer; Knowledge Sharing and Knowledge Flow. The language used was strictly English and only articles written or translated into the English language were considered. The embargo system utilised by the Stellenbosch Library affected the research, in that only what was available within its holdings was used. The search had to be repeated a number of times to ensure validity and that the results were the same. Due to the embargo system, some of the articles retrieved were only abstracts as full articles were not yet available.

2.7.   Data Extraction

From each piece of literature, common elements of bibliographic data were extracted, for instance, the name of the author, the year of the publication, the title, and the name of the journal, were all considered central to the bibliometric techniques used. Additional bibliographic data was manually extracted from each article, with the total numbers of keywords and the actual keywords listed in an *Excel* spreadsheet in preparation for graphics that were designed. All the bibliographic data was recorded in *Excel* for further analysis.

2.8.   Research Methods

Methodologies as perspectives on research set out a vision for what research is and how it should be conducted. They are the connection between axioms and methods.[38] In this study, the mixed research paradigm was deployed as alluded to above. Research methods, in contrast are tools - techniques of data gathering, techniques of analysis and techniques of writing. Because it is a tool, a particular method can often be used by many different methodologies; (Qualitative, quantitative and mixed methods), therefore methodologies are

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[38] Beck and Manuel 2008.Practical Research Methods for Librarians and Information Professionals p.8.

employed on a more abstract level than are the methods. Methodology is a strategy or plan for achieving some goal, with methods being the tactics that can be used to service the goals of the methodology.[39] The mixed methods approach, as Greene points out, involves the intentional incorporation of multiple mental models into the same inquiry spaces for purposes of generatively engaging with difference towards better understanding of the phenomena being studied.[40] This study employs two research methods, namely, bibliometrics and content analysis. The two were used to complement each other in that bibliometrics helped in generating an accurate publication output of articles on KT while content analysis lent itself to a thematic or conceptual analysis of the articles. These methods are discussed in detail below.

2.9. Bibliometrics

Bibliometrics, described as the performance analysis of science and technology development, utilises quantitative analysis and science mapping to describe patterns of publication within a given field or body of literature. Norton describes Bibliometrics as the measurement of texts and information. Historically, its methods have been used to trace back academic journal citations, however, it has evolved and can now be used to understand the past and even potentially forecast the future.[41] It is used to explore, organise and analyse large amounts of historical data, helping researchers identify hidden patterns that may help researchers in the decision-making process. In light of the above, the bibliometrics method was found to be suitable for this study and was used as an instrument for ascertaining both historical and emerging themes, and the hidden patterns and publication activity in the field of KT. Lundberg et al. stressed the importance of bibliometric indicators tools used by reviewers to analyse research quality and performance in specific knowledge fields.[42] They suggested that several indicators be combined to achieve a more comprehensive picture of the scientific production of a unit. Some common tools that have been used in bibliometrics have been citation analysis; principle of the network of centrality; the counting of articles per classification type; counting of articles per individual author; counting of publications per country; counting of authors per article; counting of references per article; counting of research articles cited per article; counting of articles per journal; and the co-occurrence of

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[39] Beck and Manuel 2008.Practical Research Methods for Librarians and Information Professionals. p.8.

[40] Greene 2007: Mixed methods in social inquiry. P.30.

[41] Norton. M.J. 2001. Introductory Concepts in Information Science.

[42] Lundberg et al. 2006. Is it better or just the same? Article identification strategies impact bibliometric assessments. Scientometrics, 66 (1) 183-197

words. In this study keyword analysis or co-occurrence analysis and the number of articles per journal per year were used.

2.9.1 Counting of articles per journal

This indicator reflects scientific output, as measured by paper count, which provide an initial, simplified and approximate measure of the quantity of work produced by a scientist, a laboratory, a school, a national and/or international research and development team, a country, or a specific discipline.[43] The number of such papers, in itself, constitutes a rough bibliometric indicator, and ought to be qualified and compared to other data sets in order to give it meaning. In the present study, this indicator was mainly used to count the number of articles on KT that each of the three journals had produced since its birth. The counts were arranged per journal per year to determine the patterns and growth of publication output in KT. It is important to note that the study did not take into account other articles in the journals that dealt with different aspects of knowledge management. As a result, no comparison will be made between the total articles in a journal and those that concentrated on the topic of KT.

2.9.2 Co-occurrence of words

This bibliometric indicator was used to examine the intellectual structure of KT on the basis of the main publications on this topic from the three journals. Keyword analysis was used to analyse the content of articles, ascertain trends and to identify topics and preferred approaches to KT. Cambrosio et al. in 1993 argued that co-word analysis draws upon the assumption that a paper's keywords constitute an adequate description of its content or, the links it establishes between problems. Two keywords co-occurring within the same paper are an indication of a link between the topics to which they refer.[44] The presence of many co-occurrences around the same word or pair of words points to a locus of strategic alliance within papers that may correspond to a research theme. Co-word analysis reveals patterns and trends in a specific discipline by measuring the association strengths of terms representative of relevant publications produced in this area. The main feature of co-word analysis is that it visualises the intellectual structure of one specific discipline into maps of the conceptual

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[43] Okubo, Y. 1997. Bibliometric Indicators and Analysis of Research Systems: Methods and Examples

[44] Cambrosio et al 1993.Historical scientometrics: Mapping over 70 years of biological safety research with co-word analysis. 27 (2) 119–143

space of that field, and a time-series of such maps produces a trace of the changes in this conceptual space.[45]

2.9.3 Steps followed in co-word analysis

Words are the most important research elements in co-word analysis. There are two ways to extract words from journal articles, either from keyword lists, title, abstracts provided by the author/ authors, or directly from full-text documents by using some software, for example, *NPtools*.[46] The words or phrases with proper frequency are chosen as the subject of co-word analysis to represent the core topics of the specific field. In this research the first method was used, with which the researcher identified and listed keywords supplied by authors. If no keywords were provided the researcher read the abstracts with the aim of extracting key words. The advantages of this was that the researcher followed and used controlled language, thus avoiding the creation of new terms, and could familiarise the reader with popular terms in KT. The keywords were collected and grouped together in order to establish co-occurrence across articles within the same journal. This was achieved through the use of lines used as links between exact keywords appearing in different articles in the same journal. This technique helped the researcher to determine themes, trends and establish relationships between words and the way they are used by different authors of KT. The method also revealed what could be considered the major concepts in KT in organisations and was also used across journals.

2.9.4 Content analysis

Content analysis consists of procedures for defining, measuring and analysing both the substance and meaning of texts or messages or documents.[47] It is a qualitative method that researchers use to develop theory and identify themes by studying documents, recordings and other printed and verbal material.[48] In this study, content analysis was used to study articles or papers in three journals that were selected through the bibliometric research method. The research questions that the study sought to answer through the use of content analysis included how far the amount of coverage of the concept of KT had changed over time in the three journals; what themes, trends and patterns of KT existed as managerial concepts in organisations; and the relationships of KT with other managerial issues in organisations, such

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[45] Ding et. al. 2000. Bibliometric cartography of information retrieval research by using co-word analysis. Information Processing and Management

[46] Voutilainen 1993. NP tool. A detector of English noun phrases

[47] Beck and Manuel 2008.Practical Research Methods for Librarians and Information Professionals p.8

[48] Zhang and Wildemuth, Qualitative Analysis of Content

as information technology and human resources. These issues could only be established through the use of latent content analysis, which according to Bryman helps a researcher to extend the analysis to an interpretive reading of the symbolism underlying the physical data.[49]

Content analysis may be used in an inductive or deductive way, as determined by the purpose of the study. In this research, inductive analysis was used as there was not enough knowledge about previous bibliometric studies based on the concept of KT as an aspect of management, and publication activity in KT was highly fragmented. Zang and Wildemuth recommended use of the method for fragmented data or data that is being analysed with the aim of creating a thematic model.[50] It was also used to discuss themes, trends and typologies of KT, through the use of inductive content analysis. As the name implies, it relies on inductive reasoning, in which themes emerge from the raw data through repeated examination and comparison.[51]

In carrying out the analysis of the content, a manual examination was conducted by reviewing titles, abstracts, and full text of the publications in the data sample, and noting significant differences, terms or phrases or words with the aim of building a model to describe the phenomenon in a conceptual form. This was done in three phases, recommended for inductive content analysis by Elo and Kynga, namely preparation, organising and reporting.[52]

2.9.5   The Preparation phase

This phase began with a thorough examination of all articles that constituted the unit of analysis. Here the researcher studied the titles of the documents, the abstracts and also the full text of the publications. This was done in order to gain in-depth knowledge and understanding of the concept of KT. Polit and Beck encourage content analysis researchers to read through the written material several times in order to immerse themselves in the data. The authors further argue that no insights or theories can emerge from the data without the researcher becoming completely familiar with them.[53] Thus, the preparation phase in this study was one in which the researcher spent long hours reading and studying the selected articles, and also making notes with the aim of categorising articles and identifying themes, trends and patterns in the field of KT.

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[49] Bryman A. 2012. *Social Research Methods,* 290

[50] Zhang and Wildemuth, Qualitative Analysis of Content

[51] Elo and Kynga. 2008. *The Qualitative Content Analysis Process*, 107-115

[52] Elo and Kynga. 2008. *The Qualitative Content Analysis Process*, 107-115

[53] Polit and Beck 2004. *Nursing Research: Principles and Methods*

2.9.6   The organising phase

After making sense of the data, analysis was undertaken using an inductive approach, which included open coding, creating categories and abstraction. Notes and headings were written in the text while reading it, then the written material was read through again and as many headings as necessary written down in the margins to describe all aspects of the content. For example, the article by Kumar and Ganesh had a heading named "bibliometric/scientometrics study on KT". Through open coding, the researcher reviewed the material, making notes and headings in the text as it was read. This process required repeated reading of the material, after which the researcher transcribed the notes and headings onto a coding sheet. The next step involved grouping the data, reducing the number of categories by combining similar headings into broader categories. For example, the article initially classified as "bibliometric/scientometrics" went under the heading "Research methods used". The headings were then collected from the margins onto coding sheets.

After this open coding, the lists of categories were grouped under higher order headings. The aim of grouping data was to reduce the number of categories by collapsing those that were similar or dissimilar into broader higher order categories. However, the creating of categories did not involve bringing together observations that were similar or related, but rather classifying them as 'belonging' to a particular group, which implies a comparison between these data and other observations that do not belong to the same category.[54] The purpose of creating categories is to provide a means of describing the phenomenon, to increase understanding and to generate knowledge.[55] Thus, the formulation of categories by inductive content analysis enabled the researcher to come to a decision, through interpretation, as to what to put in the same category.

2.9.7   The reporting phase / data presentation and analysis

In this study, the reporting phase was equated to data presentation and analysis and combined results from both bibliometric and content analysis. It involved two distinct but iterative processes, with the bibliometric data analysed statistically while the content analysis was analysed thematically to decode the salient trends in the field. Both tools of data collection imply that data analysis begins at the same time as the data gathering and continues until the end of the research. The data gathered through bibliometric methods was analysed through bibliometric indicators and indices that were statistically derived. This involved the number

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[54] Cavanagh 1997. Content analysis: concepts, methods and applications, 4.5–16
[55] Cavanagh 1997. Content analysis: concepts, methods and applications, 4.5–16

of articles published over time per journal. Thus, tables with cumulative frequencies as well as graphs and charts were used to illustrate the findings. These were interpreted statistically to calculate percentages and determine the growth patterns of the literature. The interpretations of content analysis data were made during data collection as well as after all the data had been gathered. The intention was to discover patterns, ideas, explanations and themes that characterise the sub-field of KT.

2.10. Validity

Given posits that validity refers broadly to the "goodness" or "soundness" of a study,[56] distinguishing between internal and external validity. The former refers to whether an instrument used in a study actually measures what it purports to measure. To achieve this, a pre-test was undertaken and the coding of articles revised accordingly, on the basis of the emerging issues. The latter is also referred to as generalisability, which refers to the likelihood that a study's findings will apply to the larger population represented by the sample. Statistical procedures were employed to assess the degree to which the study exhibited this second general type of validity. Validity is of concern in content analysis when selecting the communications to be studied and sample selection methods. The researcher must choose the sample carefully and follow the rules, such as the sample being representative of the population. Construct validity was the specific type of validity considered most significant to content analysis.[57] Construct validity is achieved by testing that variables actually address the research questions. In this study, construct validity was achieved by testing the variables before the research began and also during the coding process. This kind of testing enabled the researcher to ensure that established categories truly answered the research questions.

2.11. Reliability

Reliability refers to the consistency and repeatability of a measurement when the testing procedure is repeated on a population of individuals or groups. It is viewed as a property of the instruments, such as tests and observation schedules that quantitative researchers use to measure the phenomenon they are studying. An instrument is considered reliable if it consistently produces the same results when administered to similar or comparable individuals.[58] There are two types of reliability that must be maintained in content analysis,

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[56]Given 2008. Quantitative Research. 713-726.

[57] Kondracki N. and Wellman N. 2002. Content Analysis: Review of methods and their applications in Nutrition education, 224-230

[58] Given 2008. Quantitative Research. 713-726

namely intercoder and intracoder.[59] The former is an issue in studies with multiple coders while the latter is performed at the end of the analysis. In this study, reliability was enhanced by the use of one coder who also performed intracoding, wherein the researcher took a sample and recoded it to see if the same results were produced repeatedly.

The test for validity and reliability was aided through pre-testing the data. The use of statistical analysis enhanced the reliability and validity of the collected data and interpretation of findings.

2.12. Conclusion

This chapter has outlined the research process that was used in this study. It has justified the choice of methodology as well as the sampling procedures employed in this study. The next chapter reviews literature related to knowledge, knowledge management and finally KT.

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[59] Kondracki N. and Wellman N. 2002. Content Analysis: Review of methods and their applications in Nutrition education, 224-230

Chapter Three

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

This chapter provides an overview of previous research on KT, to establish a satisfactory overview of the subject, including its historical development, the principal themes, actors and publications, and its present state. It reviews publication activity in the field of KT as an aspect of management in organisations and introduces the theoretical framework that identifies the place of KT within the broader field of KM. The chapter is organised as follows:

1   An explanation of the specific purpose of literature review for this particular study

2   Positioning KT in the broader field of KM

3   KT concept

4   Research activity in KT

5   Role of KT in Organisations

6   KT models

7   Conceptual framework of the study

3.1.   Purpose of the literature review in this research

The main purpose of the literature review is to survey previous studies on KT in an effort to show the gradual growth of the field of KT and determine whether or not there has been publishing activity directed specifically at KT. This created a strong base for the study and helped in pre-data selection for the actual unit of analysis discussed in detail in the previous chapter. The goal was to show that there has been publishing activity in KT as a managerial concept in organisations that can be studied bibliometrically. Relevant publications were found in the literature of a number of academic domains, including artificial intelligence, business studies, information science, information systems, organisation science, psychology,

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science and technology, sociology and strategic management. Most of these publications took the form of research papers.

3.2.   Positioning Knowledge Transfer in the broader field of Knowledge management

Grant and Grant, Snowden, McElroy, Karl Wiig, and Koenig and Srikantaiah have researched and published works that narrate and analysed the history of knowledge and knowledge management. In this section of the literature review the works of the scholars above are used to critique the development of KM literature and to position KT as a construct in the field of KM. These authors use different terms to refer to the development processes in KM, for example, Grant and Grant identify four stages, Koenig and Srikantaiah three stages, McElroy two generations, and Snowden three ages. While the authors use different terminology, similarities and overlaps are discernible.

3.2.1   Knowledge as the domain of philosophers and scientists - 3rd and 4th century (Grant and Grant's stage 1)

This stage is dominated by the views of Plato and Aristotle, and the struggle is about understanding the nature of knowledge. In this stage it is considered as a true belief, as perception and as a true belief with account.[60] This is one of the definitions of knowledge that have dominated the field for many years.

3.2.2   Precursors to knowledge as a management issue (Grant and Grant's Stage 2)

This stage is highly influenced by the work of Michael Polanyi entitled Personal knowledge, with the theory based on a belief that all knowledge is to some degree tacit.[61] The author establishes his argument on the role of language in communicating knowledge, setting out the possibilities that knowledge can be transferred through language, and that sometimes people know things that they find difficult to articulate to the next person. Polanyi also believes that individuals are able to learn from observing certain skills.[62] Stage two also introduces the 'Information Era', a stage that plants potential seeds of KT and its impact on which the current debate of KT finds its strengths. It is in this stage, that a few current leading themes on KT are identified, for example, the difficulties in transferring knowledge and instruments such as language that are employed. KT also emerges in this stage as being influenced by the type of knowledge available in the organisation.

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[60] Grant A. and Grant T. 2008. Developing a Model of Next Generation Knowledge Management, 5:572-590

[61] Polanyi M. 1958. Personal Knowledge: Towards a Post-Critical Philosophy. University

[62] Grant A. and Grant T. 2008. Developing a Model of Next Generation Knowledge Management, 5:572-590

3.2.3 The emergence of Knowledge Management discipline and first generation knowledge Management (Grant and Grant's stage 3)

This stage is characterised by the first appearances of KM as a discipline. Grant and Grant argue that it is only reasonable to believe that the first generation emerged in 1996,[63] whilst McElroy argues that the term is relatively younger and made its initial appearance in the mid-1990s, with a strong base on the laws of supply and demand.[64] Snowden concurs with this argument, describing it as the second age of KM made popular by Nonaka and Takeuchi's SECI model of 1995.[65] In stage three, Grant and Grant clearly identified six themes, namely, the management and exploitation of intellectual capital; social views of knowledge; organisational learning and communities of practice; knowledge work and knowledge models and processes; the widespread use of IT to capture, codify and share knowledge; and finally the need to manage knowledge activities at both the strategic and operational levels.[66] In this stage the concept of KT appears as a theme under the category of knowledge processes guided by the use of IT to capture, codify and transfer knowledge. Stage three is similar to Koenig's stage one of KM. According to Koenig and Srikantaiah, (stage 1 for Koenig and Srikantaiah) the hallmark phrase in this stage is best practices, which is now described as lessons learnt. The major aim in this stage is KT through technological means such as intranets.[67] Both views have one single concept in common: the prevalence of information technology. These two views (Grant and Grant, Koenig and Srikantaiah) emphasise the use of technology in enhancing one key process in KM which is KT and sharing. The engagement of technology gives organisations a competitive advantage in achieving KT.

3.2.4 The Codification and transfer of knowledge (McElroy's Stage 1)

McElroy, in his first stage, summarises this phase of growth in knowledge management using two statements. Firstly, it involves capturing, codifying and sharing valuable knowledge, and secondly, delivering the right information to the right people at the right time. These two statements sum up the essence of supply-side KM, which is also described as first generation

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[63] Grant A. and Grant T. 2008. Developing a Model of Next Generation Knowledge Management, 5: 572-290

[64] McElroy Mark W. 2003. The New Knowledge Management: Complexity Learning and Sustainable Innovation

[65] Snowden D. 2002 Complex Acts of Knowing; Paradox and Descriptive Self-awareness, 6 (2): 1-14

[66] Grant A. and Grant T. 2008. Developing a Model of Next Generation Knowledge Management,5:572-590

[67] Koenig Michael, E.D. Srikantaiah KT. 2004. Knowledge Management Lessons Learned: What works and What Doesn't

KM.[68] McElroy concludes that the slogan for most KM practitioners at this stage is: "enhance the transfer of knowledge and better organisational performance will follow."[69]

3.2.5 Who is the driver of Knowledge Transfer -people or Technology? (Koenig's second stage)

Koenig's second stage presents a diversion from technology to people, dominated by the view that knowledge is inherently human and that technology can only facilitate the way in which it flows. Two major themes emerged in this stage, namely organisational learning and the discovery and conversion of tacit knowledge. It also concentrates on knowledge creation and sharing. Koenig sums up the stage well when he states that its hallmark phrase is 'the communities of practice'.[70] Thus, during this stage, knowledge is transferred through communities of practice. Technology, as the realisation was made, becomes a chief enabler of KT, not a channel through which knowledge is transferred.[71] Similar sentiments are echoed by McElroy, with his 'demand side' KM, that concentrates not only on the codification and sharing of existing knowledge but also the production of new knowledge, encompassing the development and support of environments that facilitate innovation. The demand side tends to involve people more than the supply side.

In McElroy's words, the second generation is about understanding how knowledge is created, how it is shared and diffused throughout the organisation. It does not simply state how to codify and record it in artificial form, or map it into business processes, but rather lies at the very heart of the profound movement from first to second generation thinking.[72] The latter involves human social systems. For Koenig, the third stage of KM "is the awareness of the importance of content and, in particular, an awareness of the importance of the retrievability and therefore of the arrangement, description and structure of that content."[73] In particular, the third stage is about finding relevant content, and about taxonomy development and

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[68] McElroy Mark W. 2003. The New Knowledge Management: Complexity Learning and Sustainable Innovation

[69] McElroy Mark W. 2003. The New Knowledge Management: Complexity Learning and Sustainable Innovation.

[70] Koenig Michael, E.D. Srikantaiah KT. 2004. Knowledge Management Lessons Learned: What works and What Doesn't

[71] McElroy Mark W. 2003. The New Knowledge Management: Complexity Learning and Sustainable Innovation

[72] McElroy Mark W. 2003. The New Knowledge Management: Complexity Learning and Sustainable Innovation

[73] Koenig Michael, E.D. Srikantaiah KT. 2004. Knowledge Management Lessons Learned: What works and What Doesn't

content management to facilitate this goal. The hallmark phrases in this stage are content management, or enterprise content management and taxonomies.

3.2.6   Next generation knowledge management

Next generation knowledge management marks the end of a consolidation phase and introduces an era that allows qualitative assessments of the field, such as bibliometric studies to ascertain the growth of the discipline of KM.[74] McElroy sees this stage as a consolidation of both the supply side and demand side of KM, asserting that its practitioners have realised that technology-driven KM and the human factor (learning organisations) can and should coexist in order for organisations to realise greater benefits. He refers to this stage as 'The Next Knowledge Management' (TNKM), in which KT becomes one of the processes in the knowledge life cycle framework.

3.3.   Knowledge Transfer Concept

Although the concept of KT is simple, its execution in an organisational setting is not, because organisations often do not know what they know and often have internal factors that hinder the transmission of different forms of knowledge between their various locations.[75] A literature search reveals several standpoints of the concept of KT. Firstly, the simplest approach to KT is to consider it as knowledge sharing among people,[76] which implies the giving and taking of information in a context understood by participants involved.[77] The received information is influenced by the knowledge of the recipient. Since the source and the recipient may be different in their prior knowledge and identities they may have different perceptions and interpretations of the same information. The knowledge received by the recipient is not identical to that of the source. Knowledge sharing implies generation of knowledge in the recipient,[78] categorised by Dixon into five main types, namely serial transfer, near transfer, far transfer, strategic transfer, and expert transfer. Each of these differs according to the purpose, method, and ways in which they are implemented.[79]

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[74] Grant A. and Grant T. 2008. Developing a Model of Next Generation Knowledge Management.

[75]. Dyer J H. Nobeoka K. 2000. Creating and Managing a High Performance Knowledge-sharing Network: The Toyota Case.,21: 345-367

[76] Dyer J H. Nobeoka K. 2000. Creating and Managing a High Performance Knowledge-sharing Network: The Toyota Case, 21: 345-367

[77] Dyer J H. Nobeoka K. 2000. Creating and Managing a High Performance Knowledge-sharing Network: The Toyota Case,21: 345-367

[78] Yang J. 2007. The Impact of Knowledge Sharing on Organizational Learning and Effectiveness. 83-90

[79] Dixon NM. 2000. Common Knowledge: How companies thrive by sharing what they know, Harvard Business School Press

Secondly, some scholars view KT as a process through which knowledge moves between a source and a recipient and where knowledge is applied and used.[80] Within an organisation, knowledge can be transferred among individuals, between different levels in the organisational hierarchy and between different units and departments.[81] Szulanski defines KT as "dyadic exchanges of knowledge between a source and a recipient in which the identity of the recipient matters."[82] The level of KT is defined by the level of knowledge integrated within an individual and the level of satisfaction with transferred knowledge expressed by the recipient. Szulanski's definition and theory are adopted in this study and used extensively as the basis for the conceptual framework.

Thirdly, Almeida, Song and Grant view KT as a process of creation, transfer, application and subsequent development through a combination of the transferred knowledge with the recipient's existing knowledge.[83] Others focus on the resulting changes to the recipient by seeing KT as a process through which one unit is affected by the experience of another.[84] Similarly, Davenport and Prusak suggest that the KT process involves two actions, namely transmission of knowledge to potential recipient and the absorption of knowledge by a recipient that could eventually lead to changes in behaviour or the development of new knowledge.[85]

Having discussed the different definitions of KT, key aspects that emanate include the volume of knowledge movement, the extent to which individuals incorporate acquired knowledge in their work within an organisation and the changes in behaviour and/or performance of a recipient as a result of the KT process. To direct individual knowledge for organisational purposes, an organisation should develop and nurture an environment of knowledge sharing, transformation and integration between its employees.[86] The core of

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[80] Dixon NM. 2000. Common Knowledge: How companies thrive by sharing what they know, Harvard Business School Press,

[81] Szulanski G.1996.Exploring Internal Stickiness: Impediments to the Transfer of Best Practice within the Firm, 27-44

[82] Szulanski G.1996.Exploring Internal Stickiness: Impediments to the Transfer of Best Practice within the Firm, 27-44

[83] Almeida P, Song J, Grant R. M. 2002. Are Firms Superior to Alliances and Markets? An Empirical Test of cross-Border Knowledge Building,147-161

[84] Argote L, Ingram P. 2000. Knowledge Transfer. A Basis for Competitive Advantage,150–169

[85] Davenport H.T. Prusak L. 1998. Working Knowledge: How Organisations Manage What They Know

[86] Nonaka I. Toyama R. 2002. A Firm as a Dialectical Being: Towards a Dynamic Theory Firm, (11): 995-1009

transfer is often described in terms of finding effective ways to let people talk and listen to one another.[87]

3.4. The influence of Taylorism (Scientific Management Theory) on Knowledge Management

De Vos et al. identify five postulates to associate Taylorism with KM, as follows.

3.4.1 Organisations as reified

Under Taylorism, organisations are seen as reified, in which managers are concerned with the prosperity of the organisation while employees concentrate on individual prosperity. The central idea in Taylor's writings is that the organisation exists above the individual employees and their performance. The superior interest of the organisation is also an idea which appears in KM, for example, as it takes the form of a completely separate entity, one which has its own knowledge, a memory, certain routines, and the ability to learn. In this process, the organisation appropriates knowledge from individuals and makes it organisational knowledge. Thus, the individual is treated as a source of knowledge. In this sense, KM becomes a management practice with a deliberate aim of gathering and storing knowledge as an organisational resource. The ultimate goal is that the organisation benefits from this resource and is able to re-create it and transfer it as it evolves.[88]

3.4.2 Organisations without conflict

Both movements, Taylorism and KM, thrive better in conflict-free organisations. Taylor sought to have peace amongst employers and workers during the industrial revolution, a time characterised by labour unrest. He engaged the scientific method to study and analyse tasks and relates this to output and remuneration. Taylor believed that a rational decision reached through scientific management was indisputable, and his ultimate goal was that maximum profits could be realised in conflict-free organisations. The scientific management theory, like KM, demands a conflict-free organisation in order to survive. De Vos et al. argue that the absence of internal conflict is indispensable for the realisation of the goals pursued through KM. A serene climate is necessary to promote knowledge-sharing between individuals.[89]

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[87] Davenport H.T. Prusak L. 1998. Working Knowledge: How Organisations Manage What They Know

[88] De Vos A, Lobert-Maris C, Rousseau A. Wallemacq A. 2002. Knowledge in question: from Taylorism to Knowledge Management

[89] De Vos A, Lobert-Maris C, Rousseau, A Wallemacq A. 2002. Knowledge in question: from Taylorism to Knowledge Management

3.4.3   The principle of transparency

The central focus of scientific management theory is prosperity for both employers and workers. Taylor supports the idea of scientific observation of task and work, and in Taylorism managers observed the know-how of workers, through using scientific techniques, and designed procedures that allowed organisations not only to increase their level of productivity but also to attain the maximum possible. Through the implementation of such procedures, Taylor intended to transform a personal science into an organisational one, that is, conversion of tacit knowledge into explicit knowledge that could be shared within the organisation. The application of scientific techniques resulted in the know-how of workers being analysed, broken down, and explained through scientific methods applied by organisational experts, in order that it might be converted into rules of 'best practice' which each worker would be made to follow.

The objective of KM is similar to that of Taylorism in that knowledge is to be created, stored and transferred from individual to individual in order to create common knowledge and form organisations in which knowledge is immediately available to the individual who needs it. The theme of transparency is also present in KM, but the techniques of applying it may differ. The aim is the same, to render the organisation transparent by giving every employee access to others' knowledge, and to the knowledge of the organisation. The idea underlying these descriptions is that of the organisation, transformed into a gigantic warehouse of knowledge into which each employee puts his or her knowledge at the disposal of all the others, and from which each draws knowledge at the moment when it is needed to resolve whatever potential problem he or she might face. This image is supported by tools such as information systems, expert systems and intranet networks. The above discussion allows us to understand how KM has been able to legitimate itself as a management practice in the field of management sciences.[90]

3.4.4   Codification as a process of the instrumentalisation of projects

In Taylorism, the principal mode of the creation of knowledge within the workplace is empirical, and the main type of learning is limited by the know-how of the most experienced workers. According to scientific management theory, they learnt the details of their work by observing those immediately around them, which can be equated to Nonaka and Takeuchi's socialisation process in the SECI model. Taylor notes that this resulted in various methods of

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[90] DE vos A, Lobert-Maris C, Rousseau, A Wallemacq A.2002. Knowledge in question: from Taylorism to Knowledge Management presented

doing the same job, but the aim was to have one method and one implement which is quicker and better than any of the rest, but this can only be discovered or developed through a scientific study. For Taylor, oral transmission from worker to worker of instructions for manufacturing in workshops should be replaced by workplace education set up by management and made available to all. The 'best practices' recommended by Taylor are a synthesis of workers' knowledge and expert knowledge, this being knowledge that is codified, retained under the Taylorian system, and instituted as a procedure to be followed by all the employees of the organisation.[91]

Taylor concluded that the formalisation of knowledge would increase the productivity of organisations, thus 'scientific organisations' consist of an attempt to formalise know-how, comprising the tacit knowledge of workers, and transform it into objective knowledge that could be transmitted to all the employees. Taylorism was centred on its interest in knowledge of the 'know-how' type, and this concentration came from Taylorism's focus on its application in the industrial workshops which it studied. KM texts, on the other hand, insist on a multiplicity of types of knowledge, for example, explicit and tacit, embedded knowledge and how these, through the process of conversion in Nonaka's spiral movement, add value to the creation of knowledge in organisations.

3.4.5   Knowledge is power

This postulate has its origins in the Foucauldian notion that knowledge and power are connected: "It is not possible for power to be exercised without knowledge, it is impossible for knowledge not to engender power".[92] In Taylorism, the notion holds and is based on the concept of division of labour. KM texts recommend participation by all employees within an organisation, leading to a movement in which knowledge is no longer the possession of experts alone, as was the case with the Taylorian project, but rather is made available to all the employees of an organisation who can access it. However, it is important to note that though KM texts recommend participation by all the employees in an organisation this new collective good, in order to be efficient, requires a restructuring of roles and responsibilities, which resembles to some extent the scientific division of labour recommended by Taylor. Nonaka and Takeuchi argue that the knowledge-creating company requires the participation of frontline employees, middle managers and top managers. Everyone in a knowledge-

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[91] DE vos A, Lobert-Maris C, Rousseau, A Wallemacq A.2002. Knowledge in question: from Taylorism to Knowledge Management presented

[92] DE vos A, Lobert-Maris C, Rousseau, A Wallemacq A.2002. Knowledge in question: from Taylorism to Knowledge Management presented

creating company is a knowledge creator, and the value of any one person's contribution is determined not by his or her location in the organisational hierarchy but by the importance of the information she or he provides to the entire knowledge-creating system. The authors caution that this does not mean that there is no differentiation among roles and responsibilities in the knowledge-creating company, leading the argument back to Taylor's division of labour.

The postulates discussed above are that KM is a managerial practice with similarities to scientific management theory, despite the many decades that separate them. Firstly, the two concepts have a common vision, that of a reified organisation, in which organisations command superiority over individuals, and have objectives, values and norms that individuals must follow. This is now termed 'organisational culture' and such a vision has proved to be a necessary condition for the successful implementation of KM.

Secondly, both notions believe in a conflict-free organisation, an environment that is a prerequisite to the successful implementation of KT mechanisms. In both cases, transparency is presented as a global objective of the system. It is also noted that the instrumentalisation of the respective projects is supposed to be accomplished through codification. Knowledge is seen as an object which can be applied to a procedure (as in Taylorism) or extracted from individuals for purposes of transfer or even storage (in KM).

Lastly, this proves that knowledge management is not only emerging as a discipline that can be studied on its own but one that owes its origins to the classical management theories of the early twentieth century. Given such a long history of this emerging discipline, it is appropriate here to present its genealogy while also indicating the status of KT as a managerial concept.

3.5.   Research activity in Knowledge Transfer

GU observes that from 1997 there was a sharp increase in knowledge management publications which rapidly peaked in 2001.[93] Small and Sage in 2005 and 2006 discovered that "…while a survey of the literature yields numerous KM articles, frameworks and models, and assessment tools, few are targeted specifically at knowledge sharing,"[94] thus creating a gap for further research to fill. Other scholars, for example Kumar and Ganesh,

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[93] Gu Y, 2004 Global Knowledge Management research, 172-190

[94] Small CT, Sage AP. 2005/6. Knowledge Management and Knowledge Sharing: a Review

observed that "the literature on KT appears not only extensive but also highly variegated."[95] The great publication output has therefore presented a need to classify, categorise, organise and document the literature, in a way that historical and emerging trends can easily be identified. Studies that analysed the growth of literature on KT are very limited. For example, the researcher found one specific article by Kumar and Ganesh that has traced the growth of KT literature. The authors retrieved articles from the EBSCO database using three search terms: KT, knowledge flow, and knowledge sharing, from 1996 to 2007, and found a total of 2,933 results, presented graphically below in Figure 2.

The growth of research on knowledge transfer in organisations 1996-2007
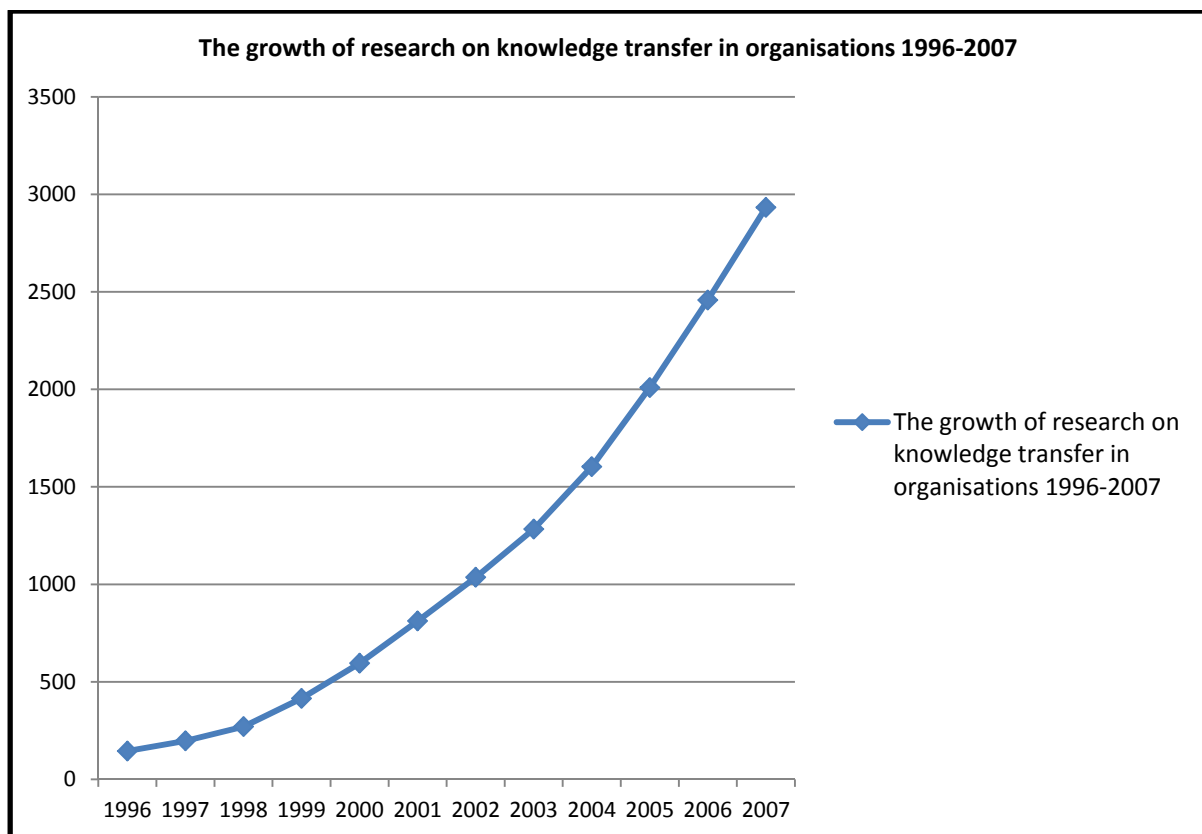
Figure 2 : The growth of research on KT in organisations 1996-2007

Adapted from Kumar and Ganesh[96]

Having identified a total of 2933 articles, Kumar and Ganesh analysed the articles and identified eight dimensions of KT, which are pertinent to the current study as they form a basis for the discussion chapter as historical themes of KT. Kumar and Ganesh's study depicts the structure and demonstrate the diversity of the existing body of literature on KT.[97]

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[95] Kumar J.A , Ganesh L.S 2009 Research on KT in organisations: a morphology

[96] Kumar J.A , Ganesh L.S 2009 Research on KT in organisations: a morphology

[97]. Kumar J.A , Ganesh L.S 2009 Research on KT in organisations: a morphology

3.6.   Role of Knowledge Transfer in Organisations

The role of KT in organisations has been discussed by various scholars at different levels and viewing KT as a basis for competitive advantage is widely accepted. Research in the area of KT has been conducted in many settings and with various objectives, focussing on international technology transfers in light of Vernon's product life cycle, for example. It has also focused on inter-firm governance modes, such as transfers among strategic alliances and between merged and acquired units. Some research efforts have recently been directed towards understanding knowledge-sharing within co-located and distributed teams.[98] Some articles have also concentrated on the nature of knowledge and difficulties associated with KT. A popular article in this regard is Szulanski's discussion around the "stickiness of knowledge and problems associated with the transfer of knowledge".

Grant argues that knowledge itself, or holding knowledge, does not necessarily lead to a competitive advantage. Only effective use of the knowledge, for example, efficient integration of knowledge or combining new and existing knowledge, may lead to a best practice.[99] KT as seen in the literature plays a critical role in the success of an organisation. In this section of the literature review the researcher presents some scholars who have discussed the role of KT in organisation at length. Szulanski detects a strong connection between the organisation's ability to transfer knowledge and its performance: "the ability of an organization to make available knowledge from one unit to another and the take up of knowledge has been found to contribute to organizational performance although the effectiveness of this varies among organizations"[100]

3.6.1   Knowledge Transfer facilitates the growth and development of organisational learning

The transfer of knowledge in an organisation is described as one process through which organisations learn. KT leads to knowledge creation, and also increases knowledge gain. Van Vliet and Slotman in 1996 argued that KT must be practiced for knowledge gain and learning: "The process of KT is an interactive process; knowledge circulates in which the involved actors learn from each other in this process."[101]

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[98] Joshi KD et al. 2007. Decision Support Systems, 322–335

[99] Grant R M. 1996. Towards a Knowledge-Based Theory of the Firm,109-122

[100] Vliet Van M. Slotman P.1996. The region as a basis for innovation in SMEs, 30 – 36

[101] Vliet Van M. Slotman P.1996. The region as a basis for innovation in SMEs, 30 – 36

3.6.2   Knowledge Transfer enables Innovation

Organisational researchers have been studying how firms can build and sustain competitive advantage. The development for effective strategies presented itself in the form of effective KM. Knowledge management systems were seen as a means to an end, however recent research has indicated that building and sustaining a firm's competitive advantage goes beyond that, to being the successful transfer of knowledge that would allow firms to gain and sustain competitive advantage. Hoopes and Postrel's study aimed at understanding the impact of organisational integration on new product development concluded that the sharing of knowledge among members constitutes an important resource underlying product development capability. Empirical studies over the last 20 years show that a firm may significantly improve its knowledge and innovative capabilities by leveraging the skills of others through the transfer of knowledge both within and across firms. A good example of this was seen in Xerox, a research and development organisation which Brown and Duiguid suggested had an innovative advantage in its ability to manage the flow of knowledge across its constituent communities.[102] KT among organisational units provides opportunities for mutual learning and inter-unit cooperation that stimulates the creation of new knowledge and at the same time contributes to organisational units' abilities to innovate.[103]

3.6.3   Knowledge Transfer improves knowledge management

KT is a critical process in the knowledge management efforts that an organisation may engage in. It plays a crucial role in the successful implementation of KM practices in organisations, in that it ensures effective movement of knowledge from one source to the other. The proactive practices of sharing knowledge and learning among knowledge workers facilitate the entire KM process. Without knowledge-sharing, KM cannot be sustained and the organisation will gradually lose its competitive edge. KT may enable firms to capitalise on best practices and create advantages such as strengthening of the organisational knowledge base and better flexibility in responding to the firm's environment.[104] Knowledge flows enable the transmission of unique solutions from one unit to others, the coordination of various connected units, and the collaboration among them. As a result, knowledge flows

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[102] Brown J S. Duguid P. 1991. Organizational learning and communities' of-practice: Toward a unified view of working, learning and innovation, 240-57

[103] Brown J S. Duguid P. 1991. Organizational learning and communities' of-practice: Toward a unified view of working, learning and innovation, 240-57

[104] Argote L, Ingram P. Knowledge Transfer. 2000. A Basis for Competitive Advantage in Firm, 150–169

enable managers to seize a larger scope of opportunities more quickly and more efficiently.[105] KT increases an entity's capacity for effective action.

3.7.   Knowledge Transfer Models

Literature to date has tended to focus on theories, models or frameworks of KT. Recent reviews have identified as many as 63 different theories or models of KT across fields as diverse as health care, social care and management.[106] Whilst clearly articulated models or frameworks could form the basis for describing KT processes in more detail and evaluating interventions more robustly, the sheer quantity and diversity of the literature makes it difficult for researchers and managers to choose which model to use.[107] In addition, many of the models remain largely unrefined and untested, meaning that their suitability as tools for designing and evaluating interventions is unknown. In this section of the literature review, three models of KT are discussed in detail, namely, the knowledge spiral model proposed by Nonaka, Toyama and Konno in 2000; the communication model developed by Szulanski in 1996 and 2000; and the System knowledge management framework developed by Biloslavo and Zornada in 1993. The communication model developed by Szulanski is adopted in this study in an effort to position KT in the epicentre of critical knowledge management processes in organisations.

3.7.1   The Spiral Model

The spiral model (knowledge conversion model) was firstly developed by Nonaka and Takeuchi in 1995, then expanded upon by Nonaka, Toyama and Konno in 2001. They viewed knowledge creation as a continuous process involving a continual interplay between tacit knowledge and explicit dimensions of knowledge.[108] The model of knowledge creation has three elements, namely:

1   The SECI process
2   "Ba" as a shared context for knowledge creation
3   Knowledge assets, the inputs, outputs, and moderators for knowledge-creating processes.

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[105] Ward V, House A, Hamer S.2009. Developing a framework for transferring knowledge into action: a thematic analysis of the literature: J Health Serv Res Policy, 156-164

[106] Straus S, Graham ID, Taylor M, Lockyer J. 2008. Development of a mentorship strategy: A knowledge translation case study, 117–122

[107] Straus S, Graham ID, Taylor M, Lockyer J. 2008. Development of a mentorship strategy: A knowledge translation case study, 117–122

[108] Nonaka I. Toyama, R, Konno,N. 2001. SECI, Ba, and Leadership: a Unified Model of Dynamic Knowledge Creation, 33: 5-34

SECI is a process of knowledge creation through conversions between tacit and explicit knowledge. It consists of four processes, detailed as follows.

3.7.2 Socialisation

The first stage of the model, socialisation implies sharing tacit knowledge, both internally and externally. Nonaka and Takeuchi stress that employees must be willing to share knowledge to make it happen effectively.[109] Socialisation is the exchange of tacit knowledge among members to create common mental models and abilities, and occurs through the medium of shared experience, and through joint activities such as observations, imitation and practice rather than written or verbal instructions.

3.7.3 Externalisation

The next stage of the SECI model, externalisation, implies converting tacit knowledge into the explicit. Nonaka and Takeuchi stress that this stage of the model is the most difficult and time-consuming one, and emphasise the importance of group commitment for its realisation.[110] Externalisation is the process of articulating tacit knowledge and transforming it into models, concepts, analogies, stories, and metaphors that can be communicated by language.[111] It is a key phase in the creation of new knowledge and is induced by dialogue, collective reflection and writing. Computer-based techniques, for example, visual modelling and decision support systems, are able to help individuals to describe, express and explain their inherent conceptualisation and are prominent in the externalisation phase.

3.7.4 Combination

The third stage of the SECI model, combination, is supported by some typically Japanese practices, such as lack of interdepartmental rivalry, polychronic task orientation, consultative decision-making, purposeful overlap of functional responsibilities, organisational redundancy and more secure context for free and open access to organisational information due to high personal commitment and relatively permanent occupation.[112] It is the process of combining or reconfiguring bodies of existing explicit knowledge in order to generate new explicit knowledge. Knowledge combination is strongly supported not only by computer-based

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[109] Nonaka, I., Takeuchi H. 1995.The Knowledge-Creating Company. New York

[110] Nonaka, I., Takeuchi H. 1995.The Knowledge-Creating Company. New York

[111] Ngoc T B N. 2008. Intra-Organizational Knowledge Transfer Process In Vietnam's Information Technology Companies

[112] Glisby M. and Holden N. 2003.Contextual constrains in knowledge management theory: The cultural embeddedness of Nonaka's knowledge-creating company, 29-36

technologies, as in externalisation, but also by networks. Databases, classification methodologies, web-based tools, intranet and the Internet are focal tools.

3.7.5 Internalisation

The last stage of SECI, internalisation, involves converting explicit knowledge into the tacit through direct experience. Nonaka and Takeuchi stress the importance of the practice of rotation to support it.[113] It is the process of adding to explicit knowledge (principles, procedures, methodologies) and new tacit knowledge (in the form of sensations, memories, images) through experimenting in various ways, such as through real life experience, or simulation through the use of software. The individual acquiring the explicit knowledge embodied in action and practice can re-experience what others go through.

The knowledge spiral model has helped us to understand how intimately connected the processes of transferring and creating knowledge are. The ideal creation of knowledge in organisations is a process that amplifies the creation of knowledge by individuals and adds its results to the knowledge network of the organisation. In the model, the basis of knowledge creation in organisations is a continuous interaction (transfer) among individuals, and continuous conversion from tacit into explicit knowledge (and vice versa) by individuals, supported by the group.[114]

However, the SECI process alone is not enough for knowledge creation and conversion. It requires "ba", a shared space for emerging relationships. These relationships enable the conversion of knowledge within the SECI model, thus providing a platform for individual and collective knowledge. For each mode of KT in the SECI model there is a corresponding type of "ba" suited to that conversion mode. Originating "ba" is the place in which people share feelings, emotions, experiences and mental models through physical, face-to-face contact. It is the primary "ba" where the knowledge creation process begins. Interacting "ba" is characterised by dialogue through which individual knowledge is converted into shared terms and concepts. It is marked by extensive use of metaphors. In contrast, cyber "ba" is a place of interaction in the virtual world, facilitated by the use of information technology such as online networks and groupware. Exercising "ba" facilitates the conversion of explicit knowledge to tacit knowledge for the individual, which is enhanced primarily by using explicit knowledge in real life or simulated applications.

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[113] Nonaka, I., Takeuchi H. 1995.The Knowledge-Creating Company. New York

[114] Ngoc T B N. 2008. Intra-Organizational Knowledge Transfer Process in Vietnam's Information Technology Companies

3.7.6   The Systems knowledge management framework

Developed in 1996, the system knowledge management framework is grounded in two strategic management theories, namely St. Galien's integral management model and Tavčar's model, founded by Bleicher,1995; Gomez and Zimmermann, 1993; Schwaninger, 1994; and by Tavčar respectively. The framework consists of three strategic building blocks: assets, businesses, and orderliness that represent both a static and dynamic view of an organisation as well as the hard and soft part of it. These elements are permeated by four knowledge management processes that are identified as knowledge creation, storage, transfer, and application.[115] These processes are people-based and also technology-based, and mix both knowledge strategies represented by exploitation and/or exploration of knowledge. This framework comprises of three strategic pillars of an organisation borrowed from strategic management. This is presented diagrammatically below.
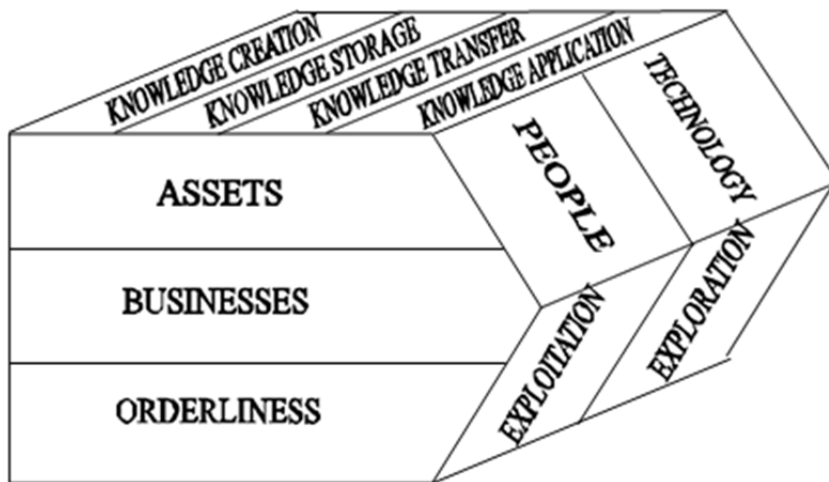
Figure 3 : Systems knowledge management framework
Adapted from Biloslavo and Zornada116

The conceptual framework identifies four processes of KM, namely creation, storage, transfer and application. A brief description of what happens at each stage is provided below but the main focus of this study is KT, which this framework positions as one of the major activities in KM. The framework also has two basic elements, people and technology, also discussed.

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[115] Biloslavo R, and Zornada M. 2003. Development of a Knowledge Management Framework within the Systems Context, 25-31

[116] Biloslavo R, Zornada M. 2003. Development of a Knowledge Management Framework within the Systems Context,25-31

3.7.7   Creation

The knowledge creation process inside an organisation is a dynamic interaction between knowing and knowledge at the individual and social level, in which new knowledge is generated within the process of learning.[117] This process is composed of four distinctive processes popularised by Nonaka and Takeuchi (socialisation, externalisation, combination, and internalisation) that take place inside a micro-community or communities of practices. Knowledge creation is a continuous process and happens through both formal an informal means.

3.7.8   Storage

New knowledge that is created in the knowledge creation process needs to be stored for later use as an organisational memory. The processes of knowledge storage involve finding ways to convert documents, models, human insights and other artefacts into forms that make retrieval and transfer easy without losing the "true meaning" of the knowledge.[118] Currently, organisations achieve this through the use of information technology, which facilitates the development of repositories, such as databases and data warehouses. In these repositories large amounts of information about customers, projects, processes, supplier information and industry knowledge will be found.

3.7.9   Knowledge Transfer

KT occurs at various levels of an organisation, for example between individuals, between individuals and groups, between groups, between groups and an organisation, and between organisations.[119] In this model the process of KT is supported mostly by information and communication technology as in an organisation that uses a codification strategy or by extensive personal networks as in an organisation that uses a personalisation strategy.[120]

3.7.10 Knowledge Application

Without knowledge application, all the aforementioned processes are useless. Only knowledge application can ensure that the organisation's knowledge represents a viable source of competitive advantage.

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[117] Biloslavo R, Zornada M. 2003. Development of a Knowledge Management Framework within the Systems Context, 25-31

[118] Staples, D. S, Jarvenpaa SL. 2000. Using Electronic Media for Information Sharing Activities: A Replication and Extension, 117-133

[119] Alavi and Leidner 2001. Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues,107-136

[120] Hansen M. Nohria N. Tierney, T. 1999. What's Your Strategy for Managing Knowledge, 106-116

3.7.11 Basic elements of knowledge management: People and Technology

The systems knowledge management framework describes people and technology as the two basic elements in knowledge management that have divided scholars into two schools of thought, the so-called technology and human-oriented researchers.[121] The merit of this framework is its ability to combine the two and present them as equals in the successful implementation of a knowledge management strategy in an organisation. Biloslavo and Zornada argue that "… knowledge is inseparably linked to people; therefore an organization cannot create new knowledge without them. On the other hand, an organization cannot efficiently use disposable knowledge without the right technology."[122]

3.8. Conceptual Framework of the study

The conceptual framework comprises the following aspects.

3.8.1 The Communication Model/Sender Receiver Framework

In this study, the Communication theory was used as it is the most cited model in the literature, and it has given birth to several other models, designed in an effort to improve on it. It is specific to KT and does not begin at a broader level of knowledge management then succinctly cover KT. It is widely used in organisations and as such is perceived as the "best" when in reality it is a restricted perception of KT. Alternative theories exist in the literature, but they were not selected because they are either industry specific, which makes it difficult to generalise them, or they have not been fully tested in reality so research on them is limited. By using this theory, the researcher intends to reshape thinking about the communication model and encourage practitioners to see KT differently. The use of this model will reveal the under-explored notions of KT and those previously not associated with KT that are suddenly analogous to the field, for example organisational learning and the learning organisation. Communication theory helped the researcher to re-interpret the notion of KT and prove that it is not a simple mechanical process but one that requires some cognitive effort from the players involved.

The Shannon and Weaver communication model developed in 1996/2000 views KT as the transmission of knowledge from source to a recipient. In this model, transfer is seen as a message transmitted from a source to a recipient in a given context. The process follows four stages: initiation, implementation, ramp-up, and integration.

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[121] Biloslavo R, Zornada M.2003. Development of a Knowledge Management Framework within the Systems Context, 25-31.

[122] Biloslavo R, and Zornada M.2003. Development of a Knowledge Management Framework within the Systems Context, 25-31

3.8.2 Initiation

This phase begins with the formation of the transfer idea and comprises all events that lead to a decision to transfer. In this stage, organisational participants need to be aware that this knowledge exists within the context of the organisation and that it may be feasible to use this knowledge to address their needs. In addition, organisational participants should know what knowledge they need, what knowledge they use and where that knowledge belongs. They also must know this if they are to collect information on how, when and where the knowledge can be of use in fulfilling the purpose of implementing the KT process. It is important to decide which information is useful and how it will be stored in the system, since the collection of uninteresting and meaningless information wastes time and other resources and should therefore be avoided.[123] In this stage, the organisational participants should be able to recognise the knowledge to be transferred.

To sum up, the initiation stage of KT involves all events leading to a decision to transfer. This includes recognising a need for knowledge, searching to satisfy that need, and exploring the feasibility of transferring knowledge identified to meet the need.

3.8.3 Implementation

This stage begins with decision to proceed. This decision may be taken formally in a centralised authoritative manner, or informally, and in some cases, even if it is unobservable. Once the decision to transfer knowledge has been taken, resources (pieces of communication and documents) can be released by one party and received by the other. In this stage, adaptation of the knowledge occurs in both the sources and recipients. Knowledge is changed at the source location to meet the perceived need of the recipient. The ease of this transfer depends on the experiences the parties have acquired in earlier transfer, the similarity of the source and recipient, and the quality of the knowledge itself.

In summary, the implementation stage of KT commences once a transfer decision is made. It encompasses the flow of knowledge resources from source to recipient, establishing social ties between recipient and source, customising the transfer to suit recipients' needs, and avoiding problems that may have been encountered in prior transfer.[124]

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[123] Davenport and Prusak, 1998

[124] Ngoc T B N. 2008. Intra-Organizational Knowledge Transfer Process In Vietnam's Information Technology Companies

3.8.4   Ramp-up

The ramp-up stage begins when the recipient starts using the transferred knowledge, that is, after the first time of use. In this stage, the new knowledge will be proved valuable in a different context. The recipient of the knowledge begins to apply the knowledge to solve problems in his/her daily work. In this stage, the recipient starts to evaluate the knowledge according to its ease of implementation and application, and the success it will bring to solving his/her problem.[125]

3.8.5   Integration

The integration stage begins after the recipient achieves satisfactory results of applying transferred knowledge. In this stage, he or she gradually applies the knowledge in solving problems that arise during work. Use of the transferred knowledge gradually becomes routine. As the time passes, a shared history is developed and KT between the sources and the recipients is increased. The knowledge can flow more freely and it adds new applications to existing knowledge.

In this study, this framework was used to tease out the salient themes that characterise KT. This is because the framework emphasises the various dimensions of KT, such as the influence of organisational factors and the external environment. The conceptual framework provides the language with which to describe the emergent themes that are unlikely to be found in the data.

3.9.   Conclusion

This chapter has reviewed related literature in an effort to position KT as one of the critical processes in knowledge management. It achieved this in a number of ways, for example, by discussing the origins of KM in an effort to position KT. The publication activities in KT were also part of the literature review. Three different frameworks were discussed. The communication theory was chosen as the framework of the study and its benefits highlighted and discussed. In the next chapter, the researcher presents the findings from the literature and discusses their impact.

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[125] Ngoc T B N. 2008. Intra-Organizational Knowledge Transfer Process In Vietnam's Information Technology Companies

Chapter Four

DATA PRESENTATION AND ANALYSIS

This chapter presents and assesses the results of the research that became visible through the process of reading, transcribing and analysing the articles. This study searched for KT-related academic articles published in three journals, *MIS Quarterly, Management Science,* and *Organization Science*. The papers were chosen through the Stellenbosch University online Library database by searching for abstracts that contained the keywords, "Knowledge Transfer," "knowledge sharing," and "knowledge flow". The results from the search process are presented below.

	# of articles under each search term per Journal			Total
Journal name	Knowledge Transfer	Knowledge flow	Knowledge sharing	
MIS Quarterly	19	1	7	27
Management Science	54	7	10	71
Organization Science	32	7	9	48
Total	105	15	26	146

Table 5 : Number of articles under each search term

The objectives of this study are fivefold:

1   To clarify the notion of KT

2   To identify historical and emerging patterns of KT as an aspect of management in organisations

3   To outline the development of KT as a mechanical process in organisations

4   To identify relationships between KT and other concepts of management

5   To draw implications from the literature for KT theories and practice in organisations.

The results from the bibliometric methodology are presented first, followed by the results from content analysis, which mainly involve themes. The following subheadings are used to guide the presentation of the results:

1   Article and keyword distribution

2   The notion of KT as presented in the journals

3   Themes and trends of KT in organisations

   •   Historical themes in KT

   •   Emerging themes in KT

4   KT as a mechanical process

5   Managerial concepts related to KT

6   Implications for KT theories

7   Implications for KT practices in organisation.

4.1.   Article and keyword distribution
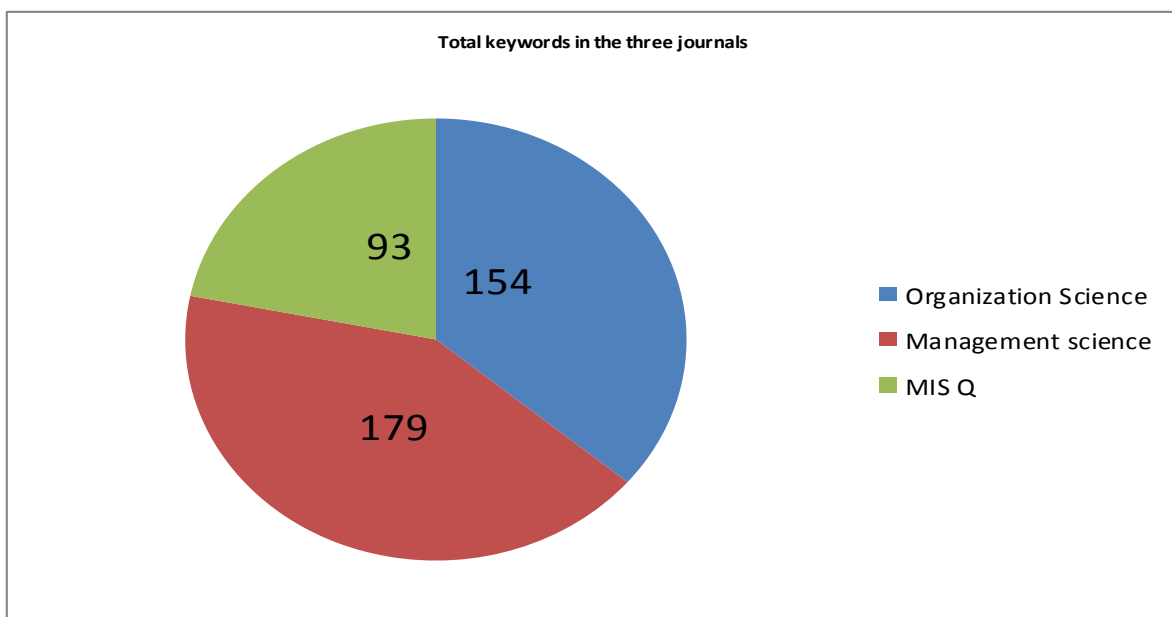
Figure 4 : Total Key keywords

In the methodology chapter, it was stated that the use of the bibliometric indicator co-word occurrence would help the researcher identify different keywords that occur across articles in the same journal and across journals. This exercise was labour-intensive, and involved listing each keyword from the 146 articles under study in an *Excel* spreadsheet, and the results from that exercise are presented in Figure 4 above. This was followed by grouping exact words together within the same journal then across journals, after which the synonyms were identified and also grouped together. From this exercise the researcher realised that not all 426 keywords were going to be analysed or allocated to a group, some keywords were thrown out and categorised as "other". Amongst the keywords classified as other, were nouns (organisational names, information systems names). Some keywords were excluded from the analysis because they were thought to be outside the scope of the study. The results from this categorisation are presented in Table 6 below.

Keyword Category	MIS Q	Management Science	Organizational Science	Total per category across Journals
Knowledge Transfer	11	12	9	32
Knowledge Management	4	4	16	24
Organizational learning	5	14	11	30
Knowledge sharing	9	7	14	30
Social networks	5	2	0	7
Strategy	6	2	1	9
Human resources	4	9	6	19
Information technology	4	3	1	8
Geographic areas	5	1	3	9
Type of organization	2	9	9	20
Innovation & Change	2	6	1	9
Intellectual Property	0	4	1	5
Means of KT	0	1	2	3

Keyword Category	MIS Q	Management Science	Organizational Science	Total per category across Journals
Cultural factors	1	2	3	6
Organizational Performance	1	12	11	24
Trust	0	5	4	9
Knowledge Types	0	2	6	8
Work Practices	4	15	18	37
Research Methods	7	2	5	14
Other	23	67	33	123
Total keywords per Journal	93	179	154	426

Table 6 : Keyword categories

The categories in this table were used as themes and trends, later discussed under content analysis in Chapters Four and Five.

4.2.   The notion of Knowledge Transfer

The transfer of knowledge is an important process of knowledge management in organisational settings as it enables the movement of knowledge to locations where it is needed and can be used. However, this is not a simple process in that organisations often do not know what they know and have weak systems for locating and retrieving knowledge that resides in them.[126] Communication processes and information flows drive KT in organisations. The literature under study reveals that there is varied terminology used to refer to the process of KT, the most popular ones being knowledge sharing, knowledge flows and knowledge exchange. From the different taxonomies used, varied definitions of the notion of KT emerged. The articles revealed that emphasis is on the following issues: information technology, elements of KT and mechanisms of KT.

4.2.1   Definitions of Knowledge Transfer

The objective of defining the notion of KT was not a common feature in the literature, most articles choosing to deal with more conceptual issues of KT without defining it. Only three

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[126] Huber, G. P. 1990. A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence and Decision Making. 47-71

articles made an attempt to define the concept and the definitions are presented below. From the three definitions listed the most common feature was that of a source and a recipient. The majority of the articles that did not define the notion of KT surprisingly discussed the common feature of source and recipient, although using different terms in some instances. For example, 'sender' and 'receiver' were used by by Lihui et al. and by Szulanski et al. Dong et al. wrote that: "There are many extant definitions of KT. In the past, some researchers equated knowledge sharing with KT for example Huber in 1991. Recently, much KT research has adopted "source and recipient" generic model."[127] Results from the unit of analysis correspond with this observation.

Definition	Source
Dyadic exchanges of organisational knowledge between a source and a recipient unit in which the identity of the recipient matters	Szulanski 1996, p. 28
The process through which one unit (e.g., group, department, or division) is affected by the experience of another	Argote and Ingram 2000, p. 151.
KT is the communication of knowledge from a source so that it is learned and applied by a recipient	Dong-Gil, Kirsch, Laurie and King. 2005.p. 59-85

Table 7 : Definitions of Knowledge Transfer

4.2.2 Conceptualising Knowledge Transfer

Gupta and Govindarajan in 2000 conceptualised KT or knowledge flows in their terminology in terms of five elements:

1 Perceived value of the source unit's knowledge

2 Motivational disposition of the source (i.e., their willingness to share knowledge)

3 Existence and richness of transmission channels

4 Motivational disposition of the receiving unit (i.e., their willingness to acquire knowledge from the source)

5 The absorptive capacity of the receiving unit, defined as the ability not only to acquire and assimilate but also to use knowledge.[128]

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[127] Dong-Gil Ko, Kirsch L J, King WR. 2005. Antecedents of Knowledge Transfer From Consultants To Clients In Enterprise, 59-85

[128] Gupta A. Govindarajan, V. 2000. Knowledge Flows within MNCs, 473-496

The majority of the literature from the unit of analysis focuses on the third element above, that of the KT channels, sometimes also referred to as mechanisms of KT. These have been classified differently and Table 9 below shows the categories identified in the literature.

Mechanisms / Channels of KT	Source
Informal	Alavi & Leidner 2001. Andrew et al 1988; Singh 2005; Rosenkopf and Almeida 2003; Almeida and Kogut 1999
Formal	Alavi & Leidner 2001.Cummings, 2005; Almeida and Kogut 1999
Personal	Alavi & Leidner 2001.p.120
Impersonal	Alavi & Leidner 2001.p.120
Mobility of personnel	Song et al 2003; Rosenkopf and Almeida 2003
Social networks	Cummings 2001
Communities of practice	Thompson 2005; Wenger and Snyder 2001
Occupational Communities	Bechky 2003
Use of alliances	Song et al.; Rosenkopf and Almeida 2003
Co-location	Song et al. 2003
Foreign direct investments	Song et al. 2003
Licensing agreements	Song et al. 2003
Documents diagrams, procedures	Massey and Montoya-Weiss 2006
Steering committees, technology transfer groups	Reich Benbasat 2000
Training	Alavi & Leidner 2001.
Intranets and Portals	Zellmer-Bruhn 2003
Patenting	Rosenkopf and Almeida 2003; Agrawal and Henderson, 2002

Table 8 : Channels of Knowledge Transfer

It is important to note that the most effective transfer mechanism depends upon the type of knowledge being transferred.[129] Other factors that determine the channel to be used in KT are the culture of the organisations and the personal traits of the source and the unit. Some scholars have argued that even the relationship between the sender and receiver determines what type of channel should be used.

4.3. Themes and trends of Knowledge Transfer in organisations

In the current knowledge-based era, knowledge is the foundation of a firm's competitive edge.[130] In practice, KT has proved to be the core and the most difficult activity of KM. Through a review of literature on KT, several themes and core concepts of KT as a managerial concept were identified. Content analysis was applied to 146 journal articles that selected the terms KT, knowledge flow and knowledge sharing as a keyword. Correspondingly, this study aimed to combine various results from the bibliometric method and content analysis to find out the historical and emerging themes of KT.

As reviewed above, Kumar and Ganesh's article *Research on KT in Organizations* discussed themes surrounding KT, and these form the basis of the discussion around historical themes of KT. In this article, the authors discuss publication activity in the field of KT between 1996 and 2007 (see Figure 2 in Chapter 3) and the following issues emerged.

Firstly, the authors used the EBSCO database and found 2,933 articles that used the terms KT, knowledge sharing and knowledge flow; secondly, they concluded that there has been a continuous gradual increase of articles being published that covered the subject of KT; thirdly the authors make an effort to distinguish the three terms; and finally, they identified eight dimensions of KT, presented in Table 9 below. These dimensions are considered as the historical themes of KT in this study.

Dimension	Possible options	Representative work
Study	Theoretical, case study, cross sectional, longitudinal, experimental	Tallman et al., 2004; Boh, 2007; Reagans and McEvily, 2003; Dyck et al., 2005.
Knowledge	Explicit, Tacit	Kankanhalli et al., 2005; Subramaniam and Venkatraman,

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[129] Inkpen A.C and Dinur A. 1998. Knowledge Management Processes and International Joint Ventures, 454-468

[130] Winter SG, Szulanski G. 2001. Replication as Strategy, 730-743

Dimension	Possible options	Representative work
		2001.
Agents	Individuals, Teams, units of a diversified firm, units of multinational company and firms	Renzil, 2008. Gibson et al., 2007; Miller et al., 2007; Gupta and Govindarajan, 2000; Inkpen and Tsang, 2005.
Flow	Internal flow, inflow, outflow	Srivastava et al., 2006; Schulz, 2003; Schulz 2001.
Mechanisms	Movement of people, movement of tools, movement of tasks, movement of networks, codification, personalisation, cognitive	Berry, 2003; Takii, 2004; Winter and Szulanski, 2001; Argote and Ingram, 2000; Watson and Hewett, 2006; Borgatti and Cross, 2003.
Contextual factor	Social-psychological, social, structural, administrative	Borgatti and Cross, 2003; Bock et al.; Collins and Smith, 2006; Gold et al., 2001; Lee and Choi, 2003.
Geography	Across countries, within regional clusters	Birkinshaw and Arvidsson, 2007; Dahl and Pedersen, 2004.
Business context	Product development, hotel industry, semiconductor, research and development, Retail Franchise	Hoopes and Postrel, 1999; Srivastata et al., 2006; Appleyard, 1996; Rothaermel and Thursby, 2005; Darr et al., 1995.

Table 9 : Historical themes of Knowledge Transfer

Adapted from: Kumar and Ganesh[131]

4.3.1 Historical Theme 1: Study

Kumar and Ganesh view study as the types of different research methodologies that have been used by authors and scholars of KT, for example, case studies, experiments and longitudinal studies.[132] Some of these identified studies have an organisational setting. Theoretical studies in which frameworks were developed are also included in their study. In

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[131] Kumar JA, Ganesh LS. 2009. Research on knowledge transfer in organizations: a morphology, 161-174

[132] Kumar JA, Ganesh LS. 2009. Research on KT in organisations: a morphology, 161-174

this study, the theme study refers firstly to the different conceptual frameworks that have been developed to enhance the understanding of KT in organisations and secondly to those studies that have been carried in organisational settings. Table 10 below presents only the frameworks of KT that were identified, and the results of studies conducted within an organisational setting.

Framework	Brief description	Authors
Sender and receiver framework of KT	A sender receiver framework of KT, which uses four types of information structures, for KT with a focus on the sender-advantage asymmetric information structure and the symmetric incomplete information structure.	Lihui et al., 2005
The knowledge transformation Cycle	KT is a cycle, in which challenges of integrating knowledge in firms can be viewed. The authors use the knowledge transformation cycle, to explain what companies and organisation have to integrate in order to fully benefit from the efforts of knowledge management. The transformation cycle takes into account three processes of retrieval, storage and transformation (which is actually the transfer) to explain the integration of knowledge when novelty, dependence and specialisation are present.	Carlile and Rebentisch, 2003
The integrative Framework of knowledge	The integrative framework is used for organising knowledge management literature and it has two dimensions. The knowledge management outcomes of knowledge creation, retention and transfer are represented along one dimension. Properties of the context within which knowledge management occurs are represented on the other dimension.	Argote et al., 2003

Framework	Brief description	Authors
Social embeddedness framework of KT and learning	The core idea behind this model is that networks shape KT and learning processes by creating channels for knowledge trade and reducing the risk different social ties, the informational properties of private and public knowledge, and how types of KT and forms of learning follow from the networks within which firms embed their exchanges.	Uzzi and Lancaster., 2003
The cumulative Innovation Framework	This framework explains how innovators access and build on the knowledge of others. It is about how knowledge is shared by current innovators and their predecessors because when we innovate we stand on the shoulders of others.	Murray and O'Mahony, 2007.
A general framework of strategic interaction and knowledge sharing	This framework proves that strategic interaction expands knowledge sharing but with caveat that extreme concentration of development could have an opposite effect.	Kuk, 2006.
The framework of KT in Ego centred Networks	This framework is based on the fact that professionals will seek knowledge within their networks when faced with a problem.	Jarvenpaa and Majchrzak, 2008.
The KT classification framework	The key assumption underlying this framework is that organisations have a range of types of knowledge and carriers of knowledge but they differ in their view of the importance of different types of knowledge and their ability to transform and move knowledge across organisational levels.	Inkpen and Dinur, 1998.
Perspective of KT	It reflects a multi-level view of the process of knowledge exchange between providers and recipients and is derived from a review of the motivation and knowledge literatures.	Quigley et al., 2007.

Framework	Brief description	Authors
Model of knowledge sharing, structural diversity and performance in work groups	This model is developed on the argument that external knowledge sharing is more valuable when groups are more structurally diverse.	Cummings, 2004.

Table 10 : Frameworks of Knowledge Transfer

As mentioned in the above paragraph, Table 10 presented the Frameworks and Table 11 below present studies that have been carried out in organisations.

Type of study	Brief description	Authors
Case study on a single organisation with multiple units in it- intra KT/internal KT	The author conducted a study in a large Multi electronics company with 41 business units and explains why some business units are able to benefit from knowledge residing in other parts of the company while others are not.	Hansen, 2002
Case study on a single organisation with multiple units in it- intra KT/internal KT	The authors analysed research and development networks in an organisation named DuPont. They suggest that characteristics of individual positions in an intra-organisational network on inventors or intra-firm knowledge networks, predict the likelihood with which knowledge created by an inventor is used in the firm's research and development activities.	Nerkar and Paruchuri. 2005

Type of study	Brief description	Authors
Case study on a single organisation with multiple units in it- intra KT/internal KT	The authors examine the transfer of experience in organisations groups. They believe that organisation groups may create benefits for their members but problems for those outside the group - they focus on Kibbutz (a utopian organization of Jewish nationals).	Ingram and Simons, 2002
Inter-organisational KT study- in the same industry	The authors argue that knowledge is closely linked to organisational innovativeness and is accessed across organisational boundaries and geographic space via networks operating at different levels of analysis. They conduct an analysis through collecting data on 77 Canadian Mutual fund companies.	Bell and Zaheer 2007
Inter organisational KT study- in the same industry	The authors, using 8 companies conducted a survey with the aim of identifying a moderator, causal ambiguity, which delineates the conditions as to when and how a recipient's perception of the trustworthiness of a source affects the effectiveness of the transfer of organisational practices and knowledge.	Szulanski Cappetta and Jensen 2004
An ethnographic study based on a single organisation	The author conducted an ethnography at EquipCo a company employing over 5000 people. The aim of this study was to test how knowledge is shared between engineers, technicians and assemblers on a production floor of their work contexts.	Bechyky, 2003
An ethnographic study based on a single organisation	The authors conducted an 8 year in-depth field examination of the fundamental claim that the use of templates enhances effective KT at Xerox Europe.	Szulanski and Jensen J.2007

Type of study	Brief description	Authors
Case study on a single Organisation with multiple units in intra KT/ internal KT	The author argues that the value of external knowledge sharing increases when workgroups are more structurally diverse. This argument was tested at Fortune 500 a telecoms company that employed over 100,000 workers.	Cummings . 2004

Table 11 : Studies within organisations

4.3.2 Historical Theme 2: Knowledge Types

In the articles under review, the dominant types of knowledge are explicit and tacit. Explicit knowledge is articulable, easily expressed, easily transmitted, through channels of communication and web technologies. Tacit knowledge on the other hand is inherently human and difficult to codify and transmit. The means mostly employed in the transmission of this type knowledge are also difficult to foster in an organisation. Other knowledge types, such as implicit, know-how and know-why were also identified. In discussing knowledge types, the articles concentrated on are displayed in Table 12, below.

Area of concentration	Brief discussion	Representative work
Difference between tacit and explicit knowledge	Tacit knowledge is non-verbalised, intuitive, unarticulated, resides in the human brain, not easily captured, not easily codified, bounded by distance, subjective and difficult to formalise. It is personal. Explicit knowledge is easily articulated in formal language and easily transmitted	Kalnins and Mayer, 2004
Other types of knowledge identified	Implicit, know-how, know-why, public and private knowledge, informational knowledge, social knowledge, personal knowledge, observable/not observable, complex/simple, dependent/independent of a system	Kogut, and Zander 1995. Leonardi and Bailey 2008 Uzzi and Lancaster. 2003 Kogut and Zander 1995

Area of concentration	Brief discussion	Representative work
The role played by knowledge type in KT	To effectively transfer knowledge, you must know what type it is so that you can select the best medium and reduce the risk of transmission failure	Madsen, Mosakowski, and Zaheer, 2003.
The means of transfer most suitable for the transfer of a particular type of knowledge	Understanding which type of knowledge one is transmitting helps in selecting the means of transferring that knowledge	Madsen, Mosakowski, and Zaheer, 2003.
The benefits brought about by transferring each type of knowledge correctly	KT aids organisational learning and improves organisational performance.	Gray, and Meister 2004

Table 12 : Types of Knowledge as a historical theme

4.3.3   Historical Theme 3: Agents and Flow

In this study the themes, agent and flow have been combined because they are closely related. The themes concentrate on the flow of knowledge from one point to the other, and between whom KT occurs. From the theme above on studies there is evidence that some scholars identify a source and a recipient as being critical in the flow of knowledge. KT occurs between individuals and organisational units. It is said to be either internal or external. For example, Pawlowski and Robey discussed how knowledge is transferred from information technology (IT) consultants outside the organisation to users within it.[133] In this study, the IT consulting firm is the source of knowledge and the organisation outsourcing information technology services is the recipient. The IT professionals apparently become the agents through which knowledge is transferred.

4.3.4   Historical Theme 4: Geography

Past studies have dealt with the issue of geography as occurring across countries and regional clusters.[134] Bender and Fish note that business is no longer limited by national boundaries

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[133] Pawlowski SD, Robey D. and Robinson MJ. 2004. Bridging User Organisations: Knowledge Brokering and the work of Information Professionals, 645-672

[134] Kumar JA, Ganesh LS. 2009. Research on KT in organisations: a morphology, 161-174

and many of the world's corporations, both small and large, are now performing a significant portion of their activities outside their home countries.[135] This means that the transfer of knowledge has followed in the same path of economic development, for example the movement of experts from developed countries to developing countries aimed at the transfer of skills. Miscione studied the introduction of telemedicine systems in Peru, designed by a European Consortium led by a Spanish University.[136] Bender and Fish add that:

> …national borders seem to be almost non-existent with an increase in international joint ventures, companies establishing subsidiaries and sales offices. Such changes make it invaluable to organisations if they are to be successful to manage their knowledge and to transfer existing skills, knowledge and expertise effectively within the organisation especially across borders.[137]

This implies that KT occurs across borders as the world is becoming 'a global village'. A number of articles that covered this theme included the challenges that cross-border companies face as they establish business. They are faced with issues of culture, language and variations in business ethics that affect KT. A good example of this is Chen et al.'s study of the impact of national cultures on structured KT, which concludes that factors such as the nature of knowledge (complexity of knowledge), cultural and language differences, and weak relationships have the power to negatively affect the transfer of knowledge.[138] They also found that if the source and the receiver do not share a common background, and are separated by power and distance, there is a reduced likelihood of successful KT.[139] This theme also discusses the relationship between knowledge type and knowledge channel that could be used for international assignments. Bender and Fish argue that "…knowledge about how to use special equipment, machinery and tools or how to manufacture certain products may require hands on experience, training on the job, teaching and direct supervision from

[135] Bender S. Fish A. 2000. The Transfer of Knowledge and the Retention of Expertise: the Continuing Need for Global Assignment, 125 – 137

[136] Miscione G. 2007. Telemedicine in the Upper Amazon: Interplay with Local Health Care Practices. MIS Quarterly. 403-425

[137] Bender S. Fish A. 2000. The Transfer of Knowledge and the Retention of Expertise: the Continuing Need for Global Assignment, 125 – 137

[138] Chen J, Sun PYT, Mcqueen, R J. 2010.The impact of National Cultures on Structured KT, 228-242

[139] Chen J, Sun PYT, Mcqueen, R J. 2010.The impact of National Cultures on Structured KT, 228-242

trainers."[140] In such cases, face-to-face communication, observation and socialisation are the best means of transferring that kind of knowledge.

4.3.5   Historical Theme 5: Contextual factors

Most articles in this study concentrated on contextual factors, which are described as factors that either inhibit or enhance KT. Kumar and Ganesh identified five options alongside this dimension, namely, cognitive, social-psychological, social, infrastructural and administrative.[141] Hung et al identified four options of categorising factors that either inhibit or enhance KT: (i) cost, which includes loss of knowledge power and codification effort; (ii) extrinsic benefits, which include organisational reward, image and reciprocity; (iii) intrinsic benefits, which include knowledge self-efficacy and enjoyment in helping others; and (iv) contextual factors that include trust, pro-sharing norms and identification.[142] The historical point that is dominant is the identification of factors, listing them, categorising them and provision of explanations of how organisations could reduce the impact of the negative factors while capitalising on the positive factors.

There have also been attempts by authors to associate knowledge types with certain factors, for example Joia and Lemos identify 13 factors that are said to be relevant to the success of tacit KT.[143] Some scholars, such as Hung et al. attempted to rank the factors according to the impact they exert on KT and, in this particular study, the author concluded that IT systems had the most significant impact on organisational KT, followed by a structured learning strategy and an innovative organisational culture.[144] Another diversion to simply listing the factors was carried out by Sun and Scott, who studied the sources of barriers to KT and identified 14.

4.3.6   Historical Theme 6: Business Context

This dimension describes the business context in which KT is being studied,[145] and which in this study also refers to subject disciplines, for example under the field of IT. Pawlowski and

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[140] Bender S. Fish A. 2000. The Transfer of Knowledge and the Retention of Expertise: the Continuing Need for Global Assignment, 125 – 137

[141] Kumar JA, Ganesh LS. 2009. Research on KT in organisations: a morphology, 161-174

[142] Hung JR, Rhodes J, Chuang P L, Bella Y L, Chi-Min Wu. 2008. Factors influencing organizational KT: implication for corporate performance, 84-100

[143] Joia LA, and Lemos B. 2010. Relevant factors for tacit KT within organisations, 410-427

[144] Hung JR, Rhodes J, Chuang P L, Bella Y L, Chi-Min Wu. 2008. Factors influencing organizational KT: implication for corporate performance, 84-100

[145] Kumar JA, Ganesh LS. 2009. Research on KT in organisations: a morphology, 161-174

Robey discovered that IT professionals have the capacity to act as agents for KT.[146] KT has also been studied in the field of management, enlightening managers in best practices for KT. For example, two strategic approaches to KT identified by Joia and Lemos could be followed by organisation in pursuit of its successful implementation, namely personalised and codification.[147] KT has been studied in manufacturing industries, to determine how it could be used to increase learning and improve the quality of the products.[148] The concept of KT has been studied among universities as well as, for example, Agrawal and Henderson, who studied the use of patenting as a means of KT with regard to the Massachusetts Institute of Technology, and concluded that patenting is not yet a well-utilised channel of KT from universities to industries.[149] Haas and Sangchan studied how and why scientists find it challenging to share their knowledge from research and would rather hold onto it.[150]

4.3.7 Historical Theme 7: Mechanisms

Kumar and Ganesh consider 'mechanisms' to be representatives of how knowledge is transferred from one source to the other, and identify six distinct mechanisms, namely, movement of people, movement of tools, movement of tasks, movement of networks, codification and personalisation.[151] Results from this study show mechanisms may be viewed and named differently, for example, as vehicles of KT by Shenkar & Li in 1999; means of KT; methods of knowledge by McNichols in 2010 and channels of KT, but the ideas expressed share common elements[152]. The movement of people as identified by Kumar and Ganesh describe the transfer of knowledge that happens when knowledge that resides in one's mind moves with that person to another location.[153] Madsen et al. have called this process 'personnel mobility', and link it to the principle of retention of employees as a way of KT.[154] An interesting dimension to this theme is brought in by Jasimuddin, who identifies

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[146] Pawlowski SD, Robey D. and Robinson MJ. 2004. Bridging User Organisations: Knowledge Brokering and the work of Information Technology Professionals, 645-672

[147] Joia LA, and Lemos B. 2010. Relevant factors for tacit KT within organisations, 410-427

[148] Ittner CD, Nagar, V, Rajan MV. 2001. An Empirical Examination of Dynamic Quality-Based Learning Models, 563-578

[149] Agrawal A, Henderson R. 2000. Putting Patents in Context: Exploring KT from MI, 44-60

[150] Haas MT, Park S. 2010. To Share or Not to Share? Professional Norms, Reference Groups, and Information Withholding Among Life Scientists, 873-891

[151] Kumar JA, Ganesh LS. 2009. Research on KT in organisations: a morphology, 161-174

[152] McNiholas 2010

[153] Kumar JA, Ganesh LS. 2009. Research on KT in organisations: a morphology, 161-174

[154] Madsen L, Mosakowski E, and Zaheer, S. 2003. Knowledge Retention and Personnel Mobility: The Non-disruptive Effects of Inflows of Experience, 173-191

two different mechanisms of KT, namely, the soft and hard.[155] The former transfers tacit knowledge and involves direct interaction between humans, for example face-to-face. Nonaka and Takeuchi's socialisation and apprenticeships, are some of the examples that the scholar has classified as soft mechanisms,[156] and the use of language and stories, observation of practices have also been classified as such. The latter, hard mechanisms, on the other hand, employ and utilise ICTs significantly. The author mentions that they are most suitable for explicit knowledge.[157] In concluding his argument Jasimuddin proposes a hybrid channel of KT in which both the soft and hard mechanisms are put to use in organisations.

In addition to the above, Jasimuddin realises that the type of knowledge plays a critical role in deciding what channel will be used to transfer knowledge:

…to be both effective and efficient, transmission mechanisms must be tailored to the type of knowledge being transferred, document exchange is a highly effective and efficient mechanism for sharing codified knowledge, however it is highly ineffective for transmitting tacit knowledge. Conversations and the transfer of people, by contrast are effectively inefficient mechanisms for sharing codified knowledge, but they may be the only effective mechanisms for transferring tacit knowledge"[158]

Leonardi and Bailey in 2008 studied how transformational technologies could aid KT, distinguished from communication and storage technologies that have previously been used in the past. The authors argue that communication and storage technologies serve as conduits for messages containing knowledge and information, and also knowledge management systems catering for codified knowledge, while transformational technologies afford the creation, modification, and manipulation of digital artefacts with little alteration to their form or purpose. In their study, the authors also discussed challenges experienced by organisations that utilise transformational technologies as a tool for KT.[159]

4.4.   Emerging themes in Knowledge Transfer

Having discussed the historical trends and themes of KT, the researcher now focusses on the emerging themes of KT. Five emerging themes were identified in the study using the concept of deductive analysis, namely, organisational learning, strategies for KT, frameworks for

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[155] Jasimuddin SM. 2008. A holistic view of knowledge management strategy, 57-66

[156] Jasimuddin SM. 2008. A holistic view of knowledge management strategy, 57-66

[157] Jasimuddin SM. 2008. A holistic view of knowledge management strategy, 57-66

[158] Jasimuddin SM. 2008. A holistic view of knowledge management strategy, 57-66

[159] Leonardi PM, Balley DE. 2008. Transformational Technologies and the creation of New Work Practices: Making Implicit Knowledge Explicit in Task-based offshoring, 411-436

understanding factors of KT, networks and organisational performance and innovation and hybrid solutions of KT.

4.4.1   Emerging Theme 1: Learning

The concept of organisational learning is emerging with links to KT. Learning in general has roots in the field of education and psychology. The link between learning and KT is an area that requires further research. Lapre et al. note that "knowledge has become a critical resource for competitive advantage, and firms have to manage organizational learning efforts directed at building knowledge they can use in the future."[160] From this quotation it is clear that organisational learning builds knowledge in the organisation for the future. A large number of articles have attempted to discuss the concept of organisational learning and KT with an aim of clearly establishing links or relationships between the two. Lapre et al. define organisational learning as the process of improving actions through better knowledge and understanding. It is essentially a feedback process in which decision-makers take time to make comparisons between the real world and goals they have set to move the real world to a desired state.[161] From this definition, it is clear that knowledge has to be transferred if learning is to take place. The authors seem to be pursuing the notion that for learning to take place knowledge has to be sourced, and that it is in the process of sourcing knowledge that learning subconsciously occurs. This point leads to another aspect of organisational learning that endeavours to identify different learning types and their knowledge requirements.

Types of Learning	Relationship to Knowledge and KT	Cited works
Conceptual learning	Acquisition of know-why type of knowledge	Lapre MA, Murkherjee AS, Van Wassenhove LN. 2000
Operational learning	Acquisition of know-how type of knowledge	Lapre, Murkherjee, Van Wassenhove, 2000

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[160] Lapre MA, Mukherjee AS,Van Wassenhove LN. 2000. Behind the Learning Curve: Linking Activities to Waste Reduction. 597-611

[161] Lapre MA, Mukherjee AS,Van Wassenhove LN. 2000. Behind the Learning Curve: Linking Activities to Waste Reduction, 597-611

Types of Learning	Relationship to Knowledge and KT	Cited works
Induced learning	Requires efforts or resources that are not present in the situation. These efforts are deliberately undertaken to create better knowledge.	Lapre, Murkherjee, Van Wassenhove, 2000. Ittner, Nagar and Rajan, 2001
Autonomous learning	Much less cognitive, occurs automatically on the job. Also referred to as learning by doing	Lapre, Murkherjee, Van Wassenhove, 2000. Ittner, Nagar and Rajan, 2001
Learning from the experiences of others also described as experiential learning	Observation, experimentation - these methods require that individuals interpret the product of such direct learning activities and knowledge inferred from the results.	Gray, and Meister, 2004 Ingram, and Simons, 2002
Double loop learning	New knowledge is created when the cognitive system becomes re-defined so that belief, values, attitudes and assumptions are altered, potentially altering individuals' behaviour.	Sun, and Scott, 2005
Learning by hiring	It is described as the acquisition of knowledge through the hiring of experts for certain projects and it is also hoped that, in the process, the knowledge held by expertise will be transferred to other members of the organisation.	Song, Almeida and Wu 2003
Learning by doing	It is described as deep, experiential sharing of knowledge.	Cha et al., 2008. Epple Argote and Devadas 1991

Types of Learning	Relationship to Knowledge and KT	Cited works
Exploitative learning	The refinement and extension of existing competencies, technologies and paradigms that produce returns that are positive, proximate and predictable.	Uzzi and Lanxaster 2003
Explorative learning	The experimentation with new alternatives that produce returns that are uncertain, distant and often negative.	Uzzi and Lanxaster 2003

Table 13 : Types of learning and their knowledge requirements

Another dimension that is emerging under this theme is that of knowledge sourcing. Firstly, it is assumed that knowledge sourcing is an intentional behaviour by recipients who desire to gain knowledge and, secondly, that individuals who on their own accord decide to access others' knowledge and the circumstances in which such behaviour occurs; produce useful learning outcomes.[162] Learning occurs when an individual's cognitive structure is changed, and such structures are key to the transfer of knowledge. Gray and Meister identify three learning outcomes, namely adaptation, innovation and replication, each of which has a strong link with organisational performance. The authors conclude that individuals who engage in higher levels of knowledge sourcing behaviour experience learning outcomes. [163] Organisational learning also follows the flow patterns of KT. For example, Sun and Scott list four levels at which organisational learning is bound to occur, these are, individual, teams, intra-organisational and inter-organisational. From the historical theme of how knowledge flows, it seems that organisational learning follows the same trends of KT.

4.4.2   Emerging Theme 2: Organisational Performance

The relationship between organisational performance and KT can be traced from that of knowledge management and the general performance of the organisation. From the articles under study there is a tendency to associate quality improvement to KT, which in turn is assumed to improve organisational performance. For example, Levin in 2000 conducted research into understanding learning, quality improvement and how the two led to improved

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[162] Gray PH, Meister DB. 2004. Knowledge Sourcing Effectiveness, 821–834
[163] Gray PH, Meister DB. 2004. Knowledge Sourcing Effectiveness, 821–834

organisational performance. There is also a tendency to believe that it is the responsibility of a manager to make knowledge available to employees. Gray and Meister note that "… much of the knowledge management literature that considered the transfer of knowledge focusses on its supply, on the assumption that organisational performance can be improved by ensuring that useful relevant knowledge is made available to employees who need it"[164] They identify three learning outcomes, namely, adaptation, innovation and replication, and establish the link that these three have to KT and organisational performance. Replication is the ability of the employee to realise that particular knowledge already exists in the organisation and does not recreate it. Kogut and Zander argue that such ability is important for organisational growth as it diverts efficiencies to other sectors, resulting in improved organisational performance.[165] Adaptation refers to incremental change, while innovation refers to radical, discontinuous change and can be financially costly, yet when successful it can transform the organisation and even industries.[166]

4.4.3 Emerging Theme 3: Innovation

Innovativeness has long been identified as a crucial firm capability and that knowledge flow strongly relates to firm innovativeness is a consensus shared by some scholars in organisation science studies.[167] In this study a few articles discussed the relationship that KT has with innovation, and described it as established, relatively strong and clear, with a link between inter-organisational knowledge flow and innovation.[168] Below are a selection of applicable quotes under the theme innovation and KT.

1   KT and imitation of the organisational capabilities are the twin elements of competition in innovative and growing markets…"[169]

2   Organisational theorists have built a deep understanding of the conditions affecting knowledge sharing. However for innovation to occur knowledge must not just be shared but also recombined and accumulated.[170]

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[164] Gray PH, Meister DB. 2004. Knowledge Sourcing Effectiveness, 821–834

[165] Kogut B, and Zander U. 1992. Knowledge and the speed of the transfer and imitation of organizational capabilities, 76-92

[166] Gray PH, Meister DB. 2004.

[167] Bell GG, Zaheer A. 2007. Geography, networks and knowledge flow, 955-972

[168] Bell GG, Zaheer A. 2007. Geography, networks and knowledge flow, 955-972

[169] Zander U, Kogut B. 1995. Knowledge and the Speed of Transfer and Imitation of Organizational capabilities: An empirical test. 76-92

[170] Murray F, Omahony S. 2007. Exploring the foundations of cumulative innovator: implications for organisation science, 1006-1021

3 "… Innovation management requires a tight integration of internal and external flows of knowledge within the firm's innovation process to capture the positive effects each innovative activity has on the marginal return of the other."[171]

4.4.4 Emerging Theme 4: Networks

A new theme that has been touched by some scholars is that of networks and how they enhance KT. The networks are broadly divided into the knowledge and the social. It is interesting to note that the scholars who wrote about social networks chose to link the concept to knowledge sharing rather than KT. Scholars of knowledge networks divided them further into intra- and inter-organisational. Table 14 below is a summary of some thoughts from scholars on networks and knowledge sharing.

Brief Description	Cited works
The authors argue that Web 2.0 tools, specifically wikis, have begun to influence business and knowledge sharing practices in organisations.	Kane and Fichman 2009
The author draws from a social network perspective of organisational coordination and investigates the effectiveness of coordination mechanisms on knowledge sharing in intra-organisational networks that consist of both collaborative and competitive ties among organisational units.	Tsai, 2002
The authors argue that the use of blogs has presented organisations with a rich source of knowledge that must be harnessed and brought into organisational knowledge reservoirs, and be integrated into decision-making processes.	Chau, Xu, 2012
The authors argue that professionals are known to seek knowledge from their own personal networks termed 'ego-centred networks' which extend beyond the formal organisational structures. These networks comprise ties of which professionals have had previous experiences.	Jarvenpaa and Majchrzak, 2008

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[171] Cassiman B, Veugelers R. 2006. In search of Complementary in Innovation Strategy: Internal R & D and External Knowledge Acquisition, 68-82

Brief Description	Cited works
The author introduces the concept of knowledge networks within an organisation and explains why some business units are able to benefit from knowledge residing in other parts of the company while others are not.	Hansen 2002.
The authors suggest that the characteristics of individual positions in an intra-organisational network of inventors or intra-firm knowledge network predict the likelihood with which knowledge created by an inventor is used in the firm's research and development.	Nerka,r and Paruchui 2005
The author suggests that knowledge is shared in organisations through the transformation of occupational communities' situated understanding of their work.	Bechky 2003
The author examines whether interpersonal networks help explain two widely documented patterns of knowledge diffusion which are; geographic localisation of knowledge flows and secondly the concentration of knowledge flows within firm boundaries.	Singh, 2005
The authors examine how networks at different levels of analysis influence knowledge flow and how network ties differ in their capacity to carry knowledge across geographical space.	Bell and Zaheer 2007
The author suggests that communities of practice must be allowed to develop informally in organisations and that organisations must support these structures and use them in their knowledge sharing endeavours.	Thompson, 2005.

Table 14 : Networks and Knowledge Transfer in organisations

4.4.5 Emerging Theme 5: Strategies of Knowledge Transfer

The formulation of working strategies around knowledge management has been discussed broadly in the literature, but specific focus on strategies on KT seems to be lagging behind, despite having been identified and described as a key concept of KM. From the literature, Joia and Lemos suggest that without a structured approach to KT, companies are bound to

benefit less from their KM efforts.[172] In addition, the authors argue that strategies for KT should mainly be based on cognitive, organisational and technological considerations. This principle is advocating for a hybrid solution or strategy for KT. In their study the authors identified two strategies, namely codification and personalisation, however, only organisations that incorporate these are able to survive and compete in the business world. Because a codification strategy is aligned to explicit knowledge it fails to accommodate aspects of tacit knowledge and a solely personalisation path overlooks explicit knowledge while catering fully for tacit knowledge. A hybrid or combined strategy enables organisations to maximise KT.

4.5.   Frameworks for understanding the factors of Knowledge Transfer

Most articles that dealt with factors that either enhance or hinder KT concentrated on the identification of these factors, and how they affect KT, however, very few dealt with the development of frameworks that organised these factors in a systematic fashion. Kane states that reviews of research on factors impeding KT highlight a growing understanding of their impact, yet a need to organise them through theory remains apparent.[173] In response to this realisation, Kane developed an emerging conceptual framework which organised factors that impact KT into characteristics of knowledge, units, and the relationship between units.

4.6.   Knowledge Transfer as a mechanical process

The view of KT as a mechanical process was not clearly stated in the literature, with most articles only making inferences. The sender receiver framework developed by Lihui et al. is central to this theme, with articles suggesting that KT is a mechanical process, by presenting a source and a recipient at any time. Different terminology was used to refer to the source and the recipient, for example sender and receiver, by Lihui et al.[174] The use of IT is used to suggest that the transfer of knowledge can be achieved by using the channels of communication that exist in an organisation, such as emails, portals and intranets. This suggestion presents a restricted view of the KT process and reduces it to one of communication. This is one misconception that has misled organisations into believing that IT will help them to successfully transfer knowledge at any time. While this may be true, there is a danger of over-focusing on IT and neglecting other concerns that make the transfer of knowledge more effective in organisations.

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[172]Joia LA, and Lemos B. 2010. Relevant factors for tacit KT within organisations, 410-427

[173] Kane, A.2007. Unlocking KT potential: knowledge demonstrability and superordinate social identity

[174] Lihui L,et al. 2005. A Sender Receiver Framework for Knowledge Transfer.

Another factor that suggests that KT is viewed as a mechanical process is the link between KM processes to Taylorism (see Chapter 3). Because Taylor observed workers at work, sought the best way to complete a task, and documented that procedure, he introduced a belief that procedures could be documented and transferred to other employees. While his method laid a strong foundation for management today it was not without faults. One of the flaws that is manifested today is that organisations still want to document best practices, teach them to other employees and then believe that knowledge has been transferred.

4.7. Managerial concepts related to Knowledge Transfer

One of the objectives of this study is to establish relationships that exist between KT and managerial concepts in an organisational setting. In the literature the following concepts were highlighted.

4.7.1 Information technology

Grant and Grant, in their second stage of KM, known as the 'information era', argue that the introduction of information and communication technology (ICT) in business played a critical role in defining knowledge management strategies employed by organisations. The literature in this study revealed that they affect not only the strategies of knowledge management but also the processes. The authors note that IT was mainly used to capture, codify and share knowledge. Grant and Grant also note that there was an excessive focus on IT in the period 1990 to 2000, with 40% of the literature emphasising the importance of computers in knowledge management.[175] This has affected the processes of KM, such as KT, in narrowing the process and simplifying it as a mechanical process whereby knowledge moves from one point to another. It has also misrepresented knowledge as a commodity that can be packaged and sent via some network only to yield the desired results upon arrival. There are some positive results that this integration brought, for example, the ability to store large amounts of data and rapid speed in processing it.

Leonardi and Balley identified three types of technologies that play a critical role in the transfer of knowledge, namely, communication, storage, and transformational. The authors also concluded that the first two types have dominated research while the role of the third one in KT has been under-explored.[176] Communication technologies represent the means by which messages and information containing knowledge are transmitted. Storage technologies

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[175] Grant A. and Grant T. 2008. Developing a Model of Next Generation Knowledge Management. 5:572-590

[176] Leonardi PM, Balley DE. 2008. Transformational Technologies and the creation of New Work Practices: Making Implicit Knowledge Explicit in Task-based offshoring, 411-436

include knowledge management systems and version control systems that facilitate the storage, retrieval and sharing of knowledge and information that is explicitly codified.[177] Transformational technologies afford the creation, modification and manipulation of digital artefacts in the process of converting input into output.[178]

Communication and storage technologies have received considerable attention from researchers and the literature reveals several problems that crowd the concept of KT. According to Griffith, communication technologies inadequately convey contextual cues and consequently impede separated individuals from establishing mutual knowledge, sharing unique knowledge and deciphering new knowledge.[179] The literature on storage technologies reveals problems of proper application of knowledge retrieved.

Choi et al., in their research on the impact of information technologies on knowledge sharing, application and team performance, established the following:

1 Organisations make significant investments in information technology to support knowledge management practices in teams

2 Information technology support in organisations has a positive impact on knowledge sharing and application

3 Sharing knowledge alone is not enough, organisations must make sure that shared knowledge is applied to improve performance

4 Information technology plays an important role in leveraging knowledge resources in organisations and they often implement information systems that are specifically designed to support various aspects of knowledge management activities such as intranets, search engines, documents repositories and collaboration tools to facilitate effective operations of virtual communities

5 Information technology allows tacit knowledge to be captured in a more standardised format so that it can be readily available in different contexts.[180]

From the above observations, this research concludes that information technologies do indeed play a critical role in the successful implementation of KM practices in organisations and that

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[177] Leonardi PM, Balley DE. 2008. Transformational Technologies and the creation of New Work Practices: Making Implicit Knowledge Explicit in Task-based offshoring, 411-436.

[178] Leonardi PM, Balley DE. 2008. Transformational Technologies and the creation of New Work Practices: Making Implicit Knowledge Explicit in Task-based offshoring, 411-436

[179] Griffith D A, Zeybek, A. Y, O'Brien M. 2001. Knowledge Transfer as a Means for Relationship Development: A Kazakhstan-Foreign International Joint Venture Illustration, 1-18

[180] Choi, C. J., M. Raman, O. Ussoltseva. 1998. Knowledge-based exchange: Inalienability and reciprocity

the impact they have on processes must be dealt with carefully. Information technologies have been used to create the impression that KT is a simple process that involves the conversion of tacit knowledge into the explicit, and transmitting this to the recipient through a network, such as intranet and portals. The over-focus on information technologies has misled organisations into believing that that heavy investment in knowledge management will lead to successful and effective transfer of knowledge, which is not the case. Some factors, for example, the type of knowledge to be transferred, must be considered. Not all knowledge can be transferred through the use of mechanical means.

4.7.2 Organisational Culture

As noted in the introduction, the culture of the organisation is one area that has a direct relationship with KT. Gold et al. argue that, "Perhaps the most significant hurdle to effective knowledge management is organisational culture. Shaping culture is central in a firm's ability to manage its knowledge more effectively."[181] From the above quotation, culture hinders specifically the transfer and creation of knowledge. Transfer is hindered in that individualism that is a part of culture arises. The issue of power is also critical and exposure should one misrepresent facts also emerges, resulting in the hoarding of knowledge. The literature under study mainly helps in identifying what type of culture will either work or not during KT, and how to encourage cultures that favour the effective transfer of knowledge. The notion of culture as revealed in the literature has a significant impact on KT processes. The literature highlighted what works; identified factors associated with organisational culture and discussed their roles. Some of the cultural factors that were identified were trust, experience and a willingness to share. The following section highlights some aspects of culture that impact KT in an organisation.

Alavi et al. found that initial research on organisational values and knowledge management suggests that organisational values are important in facilitating effective sharing practices among firm members. The authors view organisations as mini-societies that are multicultural in nature, each with distinctive competing and potentially conflicting local cultures formed along functional lines, shared fate, professional occupation, ethnic background and job ranking.[182] From this description of culture it follows that culture has to be carefully

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[181] Gold AH. Malhotra, A. Segars, A.H. 2000. Knowledge Management: An Organizational Capabilities Perspective, 185-214

[182] Alavi and Leidner 2001. Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, 107-136

managed if organisations are to be successful in their KT endeavours. To summarise the findings from Alavi et al, the researcher noted the following:

1   The authors concluded that organisations with more open and supportive value orientations are predisposed to constructive knowledge behaviours, such as firm members sharing insights with others. These values form part of the organisation's knowledge infrastructure and may influence the ability to innovate and respond rapidly to change.

2   The authors also noted that value orientations, such as trust and collaboration, will lead to greater willingness among firm members to share insights and expertise and, in contrast, value systems that encourage individual power and competition among firm members will create knowledge-hoarding behaviours.

3   The authors believe that certain types of organisational values will lead to different types of knowledge behaviour, resulting in varied outcomes. Good cultural values such as sharing, and openness, will therefore lead to positive knowledge management behaviours.

4   They conclude that organisations should seek to reinforce and mould those cultural values most consistent with knowledge sharing behaviours.[183]

De Long and Fahey note that organisational culture is increasingly recognised as a major barrier to leveraging intellectual assets.[184] The authors identified several ways in which culture influences behaviours central to knowledge creation, sharing and use:

1   Culture, specifically subcultures, shape the understanding of what knowledge is and also help in deciding which knowledge is worth managing and sharing.

2   Culture defines relationships between organisational knowledge and individual knowledge. It specifies who has what knowledge and who controls it, as well as who is expected to share it.

3   The authors also noted that knowledge sharing is too often compromised if not completely sacrificed at the altar of norms and practices that advocate and reinforce the supremacy of individual knowledge over that of the organisation.

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[183] Alavi and Leidner 2001. Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, 107-136

[184] De Long and Fahey 2000. Diagnosing Cultural Barriers to Knowledge Management, 113-127

4   The level of trust that exists between the organisation, its subunits and its employees greatly influences the amount of knowledge that flows both between individuals and from individuals into the databases, best practice and archives.

5   Low trust cultures constrict the flow of knowledge.

6   Cultures with norms and practices that discourage open and frank exchanges between levels in the hierarchy create a context for communication that undermines effective knowledge sharing.[185]

The above results indicate that there is a direct relationship between KT and the culture of an organisation. The results further show that KT is bound to suffer negative effects should the culture be unfavourable. It is also clear that KT is a dependent variable of culture in an organisational setting and, lastly, it is critical for organisations to carefully manage culture and encourage positive knowledge behavioural traits if KT efforts are to be successful.

4.7.3   Organisational structure

The literature under study reveals that the structure of the organisation plays a significant role in directing the flow of knowledge in organisations. Gold et al. argue that the structure of the organisations is important in leveraging the management of knowledge in organisations. They further state that the structure of the organisation is capable of inhibiting collaboration and sharing of knowledge across internal organisational boundaries.[186] Gold et al. also argue that structures must be designed in such a way that they are flexible and able to encourage sharing and collaboration across boundaries within the organisation. Two types of structures that have been identified are formal hierarchical and informal lateral.[187] Tsai, in his article on organisational structures and multi-units, argues that both formal hierarchical and informal lateral structures have significant impacts on inter-unit KT. Nonaka and Takeuchi developed the idea of a hypertext organisation that enables the successful implementation of the SECI model. The structure discussed by the authors is that which combines a formal hierarchical structure and a non-hierarchical structure and self-organising structure. The underlying concept is that of flexibility within the organisational structure.

Lam identified four typical organisational forms which were drawn from Mintzberg, Aoki and Nonaka and Takeuchi, discussed as follows.

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[185] De Long and Fahey 2000. Diagnosing Cultural Barriers to Knowledge Management, 113-127

[186] Gold AH. Malhotra, A. Segars, A.H. 2000. Knowledge Management: An Organizational Capabilities Perspective, 185-214

[187] Tsai W. 2002. Social Structure of "Coopetition" Within a Multiunit Organisation: Coordination, Competition, and Intraorganizational Knowledge Sharing, 179-190

4.7.4   Professional bureaucracy

This kind of organisational structure emphasises the use of highly trained experts. Coordination is high and it is achieved through standardisation of knowledge and skills through the individual's formal education and training. The source of standardisation originates from professional bodies who actually determine the kind of knowledge in use. The professionals are the key agents of knowledge, relying on their training and professional affiliations to exert control and establish themselves as authorities in the field. This structure inhibits the flow of tacit knowledge.[188] Professional bureaucracies hinder interactions with non-experts in the organisations, instilling fear of sharing knowledge. It is highly suitable for explicit knowledge and its main danger is that it is capable of hindering innovation.

4.7.5   Machine bureaucracy

A machine bureaucracy depends heavily on encoded knowledge. It is designed to achieve efficiency and stability. There is sharp division of labour and close supervision, with a continuous effort to formalise skills and experience into objective knowledge through codification. The knowledge agents in this case are not the individuals but the formal managerial hierarchy responsible for formulating rules. The organisation depends heavily on management information systems, and knowledge is highly disintegrated. The organisation does not depend on individual knowledge, but in this organisation tacit knowledge is easily lost. The end result is that the organisations have flawed KT processes, severely hindering innovation and reducing the organisation's ability to compete effectively.[189]

4.7.6   Operating adhocracy

Operating adhocracy is a type of organisational structure that is highly desired. It relies not only on encoded knowledge but also seeks the know-how type of knowledge, giving individual experts a high degree of autonomy. The organisation has a strong capacity in generating tacit knowledge. Direct interaction among individuals is encouraged and this increases chances of innovation. Learning also occurs in this type of organisational structure.

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[188] Lam A. 2000. Tacit Knowledge, organizational learning and societal institutions: An integrated Framework, 487-513

[189] Lam A. 2000. Tacit Knowledge, organizational learning and societal institutions: An integrated Framework, 487-513

4.7.7   J- Form organisation

The J-form organisation derives its capability from knowledge that is embedded in its operating routines, team relationships and shared culture.[190] This is typical of the structure suggested by Nonaka and Takeuchi, and is mainly about knowledge creating companies. It has a non-hierarchical structure and hence it is actually referred to as a hypertext organisation.[191] It also facilitates the interaction between tacit and explicit knowledge. The transfer of knowledge is enabled through a shared culture and shared values. Trust is a key factor in this structure and it enables the flow of tacit knowledge through personnel mobility.

4.7.8   Available types of knowledge

Knowledge has been characterised along different dimensions using various terms. In this study, different types of knowledge were identified in Table 13, and the authors indicated. This section of the chapter highlights the effects a type of knowledge has on the transfer process. There are only two dominant types of knowledge in the literature, namely tacit and explicit knowledge. Other different types of knowledge, such as personal, implicit, and organisational were also identified. The literature however concentrated on how the dominant types affect the process of KT in an organisation. In the literature it is evident that both types of knowledge can exist in an organisation and be transferred at the same time. This section is divided into two, transfer of tacit knowledge and transfer of explicit knowledge.

The nature of the underlying knowledge will have an important, impact on the KT process, for example, if the relevant knowledge is tacit, and thus not readily communicated in written or symbolic form, it follows that its transfer across the acquirer-acquired boundary will be far from trivial. Such transfers can be facilitated by intense interaction between the two parties, and by the gradual creation of a single organisation with a single social community. In contrast, articulated knowledge, such as that found in patents and blueprints, is likely to be quite straightforward to transfer between acquirer and acquired units, because it does not rely on a strong social bond between the parties.[192]

Transfer of Tacit knowledge

The nature of tacit knowledge (residing in the mind) plays a critical role in how this type of knowledge is transferred from one member to another. Tacit knowledge is intuitive and

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[190] Lam A. 2000. Tacit Knowledge, organizational learning and societal institutions: An integrated Framework, 487-513

[191] Nonaka, I., Takeuchi H. 1995.The Knowledge-Creating Company. New York

[192] Lam A. 2000. Tacit Knowledge, organizational learning and societal institutions: An integrated Framework, 487-513

unarticulated, and cannot be communicated, understood or used without the knowing subject. Since the time of Polanyi, scholars have argued that a large part of human knowledge is tacit, particularly operational skills and know-how acquired through practical experience. Knowledge of this type is action-oriented and has a personal quality that makes it difficult to communicate or formalise.[193] The transfer of tacit knowledge requires close interaction and the build-up of shared understanding and trust amongst participants. Nonaka and Takeuchi note that the socialisation method is effective in the transfer of tacit knowledge.

Explicit knowledge

Explicit knowledge can be codified, abstracted, stored, understood and shared without a knowing subject. Ease of communication and transfer is its fundamental property, via networks such as portals. The use of IT is mostly useful in enhancing the transfer of explicit knowledge

4.7.9 People/ Human Resources

KT involves a complex social process that demands collaborative efforts from different and various factors in organisations. Some of these have been discussed above, such as the culture and the structure of the organisation. A missing link that is closely associated with these two are the individuals in the organisations, broadly referred to as the human resource, who play a critical role in the successful transfer of knowledge. Nonaka and Konno realised "that knowledge resides within individuals and more specifically in the employees who create, recognise, archive, access and apply knowledge in carrying out their tasks."[194] The literature under study makes several suggestions on how to make individual employees active participants in the KT process and reveals that without motivating people to transfer knowledge, organisations are faced with a risk of losing their competitive edge in business.

Bock et al. argue that knowledge sharing concerns the willingness of individuals in an organisation to impart to others the knowledge they have acquired or created.[195] It could be described as a voluntary act in which an individual must willingly participate. The authors conclude that KT cannot be forced but only encouraged.

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[193] Lam A. 2000. Tacit Knowledge, organizational learning and societal institutions: An integrated Framework, 487-513

[194] Nonaka I. Toyama R, Konno N. 2001. SECI, Ba, and Leadership: a Unified Model of Dynamic Knowledge Creation, 33:5-34

[195] Bock G, Zmund RW, Kim YG. 2005. Behavioural intention Formation in knowledge sharing: Examining the roles of extrinsic motivators, social psychological forces and organizational climate, 87-111

Key findings from the literature about people and KT can be grouped into two broad clusters, that is scholars who discussed why people are reluctant to participate in KT and scholars who discussed what organisations could do to motivate and encourage participation in the KT process.

Cluster 1 - Why people are reluctant participants in the process of Knowledge Transfer

1. A key finding in the literature is that most people prefer to discuss and pay attention to commonly held information (i.e., already known by everyone) instead of uniquely held information. One reason for this "common knowledge" effect is that people are often uncomfortable sharing their unique information. This discomfort may even have a rational basis, as research has shown that discussing common information can enhance one's evaluation by other group members, whereas discussing unique information, even if it is not controversial, can negatively influence how one is perceived by other group members.[196]

2. In the literature it was found that people with critical knowledge will often protect it as if it were their own property and they will engage in different behaviours to hide knowledge, consequently demanding some kind of motivation to divulge and share the knowledge.[197]

3. The literature also revealed that employees believe that holding on to their job knowledge gives them a sense of power and importance because they have specific information that no one else has.[198]

4. The issue of trust emerged as one area that makes employees reluctant to engage in KT processes.

5. The literature also discussed culture as one of the reasons that people are reluctant to share information: "If there is a culture of not sharing and being secretive, then employees tend to adopt that culture."[199]

6. One impediment to developing successful KT initiatives is the tendency of practitioners and researchers to focus on tools (e.g., technology) and tasks (e.g., routines), with less attention paid to knowledge-transfer among people; however,

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[196] Argote L, Ingram P, Levine J M, Moreland R L. 2000. Knowledge Transfer in Organisations: Learning from the Experience of Others, 82 (1):1-8.

[197] Amble B. 2006. Knowledge sharing, knowledge hoarding

[198] Amble B. 2006. Knowledge sharing, knowledge hoarding

[199] Amble B. 2006. Knowledge sharing, knowledge hoarding

because a significant amount of knowledge is embedded in individual employees, communication of knowledge among members is a critical aspect of successful KT.[200]

Given such a scenario, organisations often turn to IT, encouraging employees to build databases of knowledge, but if workers are not willing to cooperate these efforts are not very productive. Zweig argues that knowledge sharing requires more personal interaction than person-to-computer links. His argument regards KT as a process that involves humans, only aided and made easier by the use of technology.[201]

Cluster 2 - what organisations could do to encourage participation in Knowledge Transfer.

The question that needs to be asked therefore is how organisations encourage knowledge sharing among individuals. From the literature, some suggestions:

1   Organisations are encouraged to employ both extrinsic and intrinsic factors of motivation to encourage employees to participate in knowledge sharing activities.

2   Organisations are also encouraged to create an organisational climate that facilitates the effective sharing of knowledge, for example, a good organisational structure.

3   It is encouraged that organisations formulate reward policies for knowledge sharing. The organisation can design a specific reward structure for knowledge sharing to make the individual's behaviour aligned with organisational objectives. This structure must be clearly communicated to all knowledge workers.[202]

4   Organisations are motivated to implement efficient knowledge management systems that are easy to use and meet the individual needs of all departments.[203]

5   It is also vital that organisations design employee development schemes, as a way to improve and enhance the personal value of individuals. The skills and competences of knowledge workers need to be continuously developed in order for them to produce valuable contributions to a company. If not, as with other tangible assets, their value will depreciate. Hence, companies have to provide appropriate professional development activities to their employees.[204]

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[200] Burgess D. 2005. What Motivates Employees to Transfer Knowledge Outside Their Work Unit? 324-348

[201] Zweig

[202] Sundaresan S. Zhang Z. 2004. Facilitating Knowledge Transfer in Organisations through Incentive Alignment and IT Investment

[203] Sundaresan S. Zhang Z. 2004. Facilitating Knowledge Transfer in Organisations through Incentive Alignment and IT Investment

[204] Sundaresan S. Zhang Z. 2004. Facilitating Knowledge Transfer in Organisations through Incentive Alignment and IT Investment

6 Organisations are encouraged to develop schemes that will retain employees. Another central issue in KT is how to retain knowledge from being lost. This is where the function of employee retention gains its significance in knowledge management in general. In order to retain employees to work for a company, it is important to provide opportunities for them to grow and to advance their careers. HR policies and practices need to be designed to allow them to meet their personal aspirations. Equally important is the offer of a conducive working environment in which employees feel comfortable and the fostering of job satisfaction among them.[205]

7 It is also imperative that organisations encourage member-to-member KT that is especially beneficial to an organisation's competitive advantage. This type of transfer is less susceptible to "external knowledge spill-over" than transfer involving tools and tasks, which often results in codified knowledge that can be more readily "leaked" to competitors.[206]

4.8.   Implications for Knowledge Transfer theories

The literature review (Chapter 3) found that most theories or frameworks that have been formulated follow communication models. A few theories, such as the SECI Model and Boisot I-space are based on different fundamentals. The KT process has reached a mature stage in which scholars should begin to reassess the process and weigh its benefits to organisations through further research. Some questions that arise at this point include the presentation of KT as a communication process. This view does have value and has contributed tremendously to the understanding of the concept, but is it a complete presentation of the concept? What flaws does such a view bring out that requires clarification from scholars? One imperfection is that it presents the notion of KT narrowly, and as a result misleads organisations into believing that KT is a simple communication process that involves a sender and a receiver.

Issues of organisational learning and the learning organisations are slowly but certainly permeating the field of KM and their relationships to the notion of KT must be investigated and researched.

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[205] Sundaresan S. Zhang Z. 2004. Facilitating Knowledge Transfer in Organisations through Incentive Alignment and IT Investment

[206] Argote L, Ingram P. 2000. Knowledge Transfer. A Basis for Competitive Advantage, 150–169

4.9.   Implications for Knowledge Transfer practices in organisations

The recent interest in organisational KT has prompted the issue of transferring knowledge for the organisation's benefit. The mere transfer of knowledge from point to point is insignificant and neither is it beneficial to the survival of the organisation. KT practices, as described by Alavi and Leidner, must affect the experiences of the receiving department, and the transfer must help and allow workers to respond differently and better, to the same situations prior to the transfer of knowledge and learning. KT is purported to increase innovativeness and responsiveness of the organisations to the environments in which they operate.[207]

From the literature it is clear that all organisations potentially contain a mixture of knowledge types, however, their relative importance can differ. An organisation may be dominated by one type of knowledge more than another and this has serious implications for the strategy and other institutional capacities to be introduced.[208] A good example of this is an organisation that is dominated by explicit knowledge, as it will tend to have a formal hierarchical structure and exhibit highly standardised tasks and routines. It is also common in such an organisation to find an over-focus on IT. The knowledge in this kind of an organisation is highly codified, captured and stored in databases. In contrast, an organisation that is dominated by tacit knowledge will tend to have a decentralised structure and employ informal mechanisms of KT. This is because of the character of tacit knowledge, that is, it is dispersed and subjective and so cannot be standardised or pre-determined. Its mobilisation requires autonomy and commitment on the part of the knowing subject.[209]

Organisations ought to understand the role of individuals in organisational knowledge transfer, and those that depend on agents will rely heavily on the contributions of key individuals and so accord them a high degree of autonomy. In contrast, those organisations that rely on collective and coordinated knowledge from their members will have to devise mechanisms for integrating the knowledge. They also ought to understand that fostering knowledge sharing is more than simply putting people together in a conference room or sending them on experiential learning programmes, but rather is about creating an environment in which people are able to discern whether their colleagues are both knowledgeable and willing to extend their knowledge to the benefit of others.

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[207] Alavi M, Leidner D. 2001. Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, 107-136

[208] Lam A. 2000. Tacit Knowledge, organizational learning and societal institutions: An integrated Framework, 487-513

[209] Lam A. 2000. Tacit Knowledge, organizational learning and societal institutions: An integrated Framework, 487-513

Organisations are urged to cultivate fertile environments for KT, and they should re-look into the notions of culture, the incentives programmes they have in place, and also watch their investments in the IT infrastructure, where possible organisations should integrate institutional capacities in order for them to realise maximum benefits.

4.10. Conclusion

In summary, the chapter has identified the following as the major historical themes discussed in the majority of the articles, also covering the theoretical frameworks: geography, agent, flows, business context, contextual factors and mechanisms. The emerging themes identified include organisational learning, organisational performance, and frameworks for organising factors which hinder or enhance KT and strategies for understanding the concept of KT. It also drew the following conclusions:

1   There is a strong link between organisational learning and KT.

2   Some industries have clear practices that enable KT.

3   Individuals or employees ought to be motivated in order to transfer knowledge.

4   There is a relationship between organisational performance and KT.

5   The nature of knowledge in itself is a critical success factor in the KT process.

6   Explicit knowledge is more easily transferred than tacit knowledge.

7   Certain channels of KT are suitable for certain types of knowledge.

8   Strategy must be formulated if organisations are to better manage their KT processes.

9   There is a direct link between KT and organisational culture.

10 There is a direct relationship between KT and organisational structure.

11 Information technology is a critical success factor in the transfer of knowledge and there is an over-focus on the capabilities of information technology in KT.

12 Organisations which engage in innovative processes are likely to be more successful in their KT efforts.

13 Social networks and knowledge networks play a critical role in the KT process in today's organisation.

Chapter Five

WHITHER KNOWLEDGE TRANSFER

One of the key objectives of this study is to conduct a literature review that identifies historical and emerging trends in KT, and informs the development of the subject in organisations and its relationship to other concepts of management. In this chapter, the results presented in Chapter 4 are analysed and the main messages drawn, with a similar structure. Firstly, the quantitative results are discussed, followed by a discussion of historical themes and emerging themes, before drawing a conclusion for the whole research.

5.1. There is publication activity about Knowledge Transfer in the three journals

The results from the bibliometric research method are divided into two, namely general publication trends and keyword analysis trends. The results showed that the growth of literature on KT has gradually increased from the mid-1990s to the 2000s.[210] This follows similar publication trends as those found in the broader field of KM. Kumar and Ganesh, in Figure 5, show that the publication activity on KT began around 1996 and increased gradually through to 2007. Jacobs in 2004 echoed similar sentiments to those of Kumar and Ganesh, but she generalises the increase in the production of literature to the broader field of knowledge management and not just KT.[211] From the literature in this study it is evident that there was a gradual increase in publication activity in KT from 1999, with the highest peak in 2002, after which a gradual decrease can be seen. The analysis of keywords revealed that KT as an aspect of management in organisations is related to many other managerial concepts, such as innovation, organisational change, organisational learning, organisational performance, social networks, strategy, human resources and motivation, IT, organisational

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[210] Wallace D. 2007. Knowledge Management: Historical and Cross-Disciplinary Themes

[211] Jacobs D. 2004. Growth and Development in Knowledge Management research: A bibliometric study, 211-220

culture and work practices (routines). This clearly establishes KT as a managerial concept in organisations. From these categories the themes and trends of KT are established (see results in Table 6 : Keyword categories).

5.2. Historical themes

There is a growing body of literature on KT, with many different theories and models, contexts and goals, practices and measures. What has been apparent in the literature is that KT is an active process, not merely imitating an example of good practice from one organisation into another. Rather, practices need to be modified to fit new contexts and cultures, and authors find that the very process of transferring knowledge develops and expands it.

The bibliometric analysis has revealed a considerable number of publications addressing the subject of KT and from the results it is clear that the literature on KT spans various disciplines, including organisational learning, psychology, technology and organisational management. Barwick et al. argue that the literature on KT not only spans a number of disciplines but it is replete with differing terminologies, such as dissemination, knowledge utilisation, knowledge diffusion, sharing and technology transfer.[212] In the literature search for this study only three terms were used, namely Knowledge Transfer, knowledge sharing and knowledge flow.

As discussed in Chapter 4, the establishment and discussion of historical themes was based on Kumar and Ganesh's eight themes (Table 9), a common feature in the literature sample reviewed for this study.

5.3. Knowledge Transfer as an organisational concept deserves to be studied within an organisational setting

The theme study, as discussed by Kumar and Ganesh, refers to the different approaches that have been applied to the concept of KT. The authors dealt with issues such as type of study, its being longitudinal, case studies and experiments. General frameworks of KT were also identified by scholars such as Tallman et al., who developed a set of propositions in regional clusters on firms' competitiveness,[213] and Inkpen and Tsang who developed frameworks relating the social capital dimensions of inter-firm networks and KT within them.[214] In the current research, however, this historical theme focussed on studies and frameworks that had

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[212] Barwick. 2002. et al. A KT infrastructure for Children's Mental Health in Ontario

[213] Tallman

[214] Inkpen

a bias towards organisational management. Firstly, all themes of KT were identified and all ten viewed KT as a managerial issue that has clearly established links with others. For example, the knowledge transformation cycle by Carlie and Rebentisch considers KT as a cycle in which firms face challenges in their efforts to integrate knowledge into organisations. In this framework, organisations are educated on what concepts of KM to integrate so as to realise maximum benefits, and these are broadly identified as knowledge retrieval, storage and transfer. The integrative framework of KT also identifies what organisations need to concentrate on if they are to benefit from KT. This particular framework is set in an organisation in which KT as a knowledge management outcome is affected or dependent on other managerial or organisational properties for its success, such as the structure of the organisation and its culture.[215]

Kuk's general framework of strategic interaction and knowledge sharing adds value by viewing KT from a strategic level. The author believes that the integration of knowledge sharing into a general strategy of the organisation is essential to the successful implementation of KT. He also highlights how the failure to incorporate KT into the broad organisational strategy could hamper the efforts of KT.[216]

The frameworks by Jarvenpaa and May in 2008, and Uzzi and Lancaster in 2003 bring in a different dimension of KT, as a social phenomenon, and encourage organisations to treat it as such. Uzzi and Lancaster's social embeddedness framework of KT clearly states, firstly, that networks shape learning processes by reducing the risk of social ties and that, organisations must be aware of this. Secondly, the channels of knowledge sharing are chosen by the organisation in consideration of knowledge types that exist within the organisation, mostly being private and public knowledge. The second framework informs organisations of tendencies that professionals engage in their search for knowledge. For example, a professional would contact historically established networks or links in search of knowledge when faced with a problem. These networks exist either within or outside the organisation. The framework also regards these as ego-centred networks of knowledge sharing.

The second aspect of the theme study as revealed by the results was that most studies were situated within an organisational setting. This clearly affirms KT as an organisational concept

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[215] Argote L. et al 2003. Managing Knowledge in Organisations: An Integrative Framework and Review of Emerging Themes, 571–582

[216] Kuk G. 2006. Strategic Interaction and Knowledge Sharing in KDE Developer Mailing List, 1031-1042

that demands managerial attention. Eight examples of such studies were included in the results chapter (Table 10). From these studies the researcher draws the following conclusions:

1 The literature establishes KT as an organisational concept with strong relations to other organisational concepts, such as routines and work practices. It was argued in a study by Szulanski and Jensen that the use of templates is an effective way of transferring knowledge.[217]

2 The literature also indicates that there is value in both inter- and intra-organisation KT and that, organisations should consider participating in both.[218]

3 KT within the same organisation among different groups is beneficial and there are groups that will benefit more than others.[219]

4 The literature also indicates that there is a strong relationship between KT, innovation and organisational performance.[220]

5.4. There is a variety of knowledge types in an organisation

Kumar and Ganesh identified two different types of knowledge, tacit and explicit. In addition to the two mentioned above, the current study identified more types of knowledge within an organisational setting, as seen in Table 4 Row 2:

1 implicit

2 know-how

3 know-why

4 informational knowledge

5 private knowledge

6 social knowledge

7 personal knowledge

8 observable/not observable

9 complex/simple

10 dependent upon / independent of the system

This study not only identified different types of knowledge but also noted the means by which each type could be transferred within the organisation. The study further established

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[217] Jensen RJ, Szulanski G. 2007. Template Use and the effectiveness of Knowledge Transfer. (11):1716-1730

[218] Cumings JN. 2004. Work Groups, Structural Diversity and Knowledge Sharing in Global Organisations, 352–364

[219] Hansen MT. 2002. Knowledge Networks: Explaining Effective Knowledge Sharing in Multiunit Companies, 232–248

[220] Bell G. Zaheer A. 2007. Geography, networks, and knowledge flow, 955–972

how the type of knowledge shapes the transfer process. For example, Lam argues that explicit knowledge is easily codified and made public to the rest of the organisation. In contrast, the author also established that the nature of tacit knowledge is difficult to articulate and therefore it complicates the transfer process.[221]

5.5. Contextual factors of Knowledge Transfer are at the epicentre of the literature under review

Conventional views of contextual factors of KT are broadly divided into two groups, namely those that hinder and those that enhance the transfer of knowledge. From the results of the content analysis in the previous chapter, the majority of articles analysed concentrated on the following:

1. Identification of contextual factors

2. The classification of contextual factors. Some categories included here are organisational, personal, cultural, and managerial

3. The application of a group of factors in specific scenarios, for example, one article dealt with the issue of culture in multinational companies

4. Application of one single factor in an organisation - the most discussed factor being the issue of trust and how it can either enhance or hinder KT

5. Proposed solution for management that could be used to reduce the impact of the negative factors on KT

6. Advice to organisations on how to capitalise on the positive factors of KT.

5.6. Emerging themes

After deducing the main messages from the historical themes of the concept KT, the researcher now pays attention to the messages emanating from emerging themes. The following were found to be messages worth mentioning under emerging themes.

From the literature studied it is clear that four elements are central to any KT strategy, namely, source, content, medium, and user. Some authors consider the combination of the four critical elements as essential to the efficacy of any KT effort. The literature suggests that the way the source is viewed is critical to the effective transfer of knowledge. Factors that appear essential and closely associated with the source relate to perception, competence of the source, credibility of their experience, motive for producing the information, their relationship with other sources and whether they are trusted by the recipient of the

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[221] Lam A. 2000. Tacit Knowledge, organizational learning and societal institutions: An integrated Framework, 487-513

knowledge. The element of trust emerged as the most central and the most difficult to foster, mainly because it relates to vulnerability of both the source and the recipient. It also addresses the loss of power as it exposes what an individual knows and does not know.

With respect to the content or message, key factors are the credibility of the research methodology and outcomes, cost effectiveness, and the link between outcomes and existing knowledge. Clarity and attractiveness of the information package and timeliness are also key considerations here. The background or existing knowledge on the recipient side also plays a critical role in how the message is perceived. The content must be in a language that both the sender and the recipient understand. The cultural background of both affects how the content will be perceived. Some scholars have also argued that the experiences of both the sender and the receiver determine the content to be transferred and its interpretation upon receipt. Failure to have a concise message results in poor KT, but this is also affected by other factors, for example, the credibility of the source. Scholars also present the issue of stickiness of knowledge and conclude that the higher the levels of stickiness the more difficult it will be to convey the intended message. Polanyi argued that individuals know more than they can tell, and as a result in most cases, especially when dealing with tacit knowledge, they are bound to transfer what they regard as critical knowledge for a particular situation, and only the effects of the transmission will prove whether the required knowledge has been received and applied appropriately in a situation.

To be effective, the KT medium or delivery method must be reliable and have sufficient capacity to reach intended users. The transfer method has to be designed in such a way that it suits the type of knowledge in transmission. The choice of method for transferring and exchanging knowledge will depend on the audience and the message; however, knowledge is most effectively exchanged when using multiple methods. From the literature, the choice of method is closely related to the content type being transferred. A good example is clearly visible when it comes to tacit knowledge. Authors unanimously agree that this type of knowledge is effectively transferred in person through socialisation, observation, association, face-to-face contact and mentoring. Barwick et al. record that it has been documented that building key face-to-face relationships that are maintained over time are critical to successful KT strategies. Such encounters are suggested not only for researchers and decision-makers but also between researchers and practitioners, media and consumers. Exchanges between these key stakeholders and researchers allow for nuance and interrogation. Being linked to a researcher provides a conduit to more than one individual's expertise, as the link becomes a

gateway to the more extensive knowledge of that researcher's entire community. The same process works for the link to crucial stakeholders, who in turn become links to the broader community.[222] Technological means such as intranets and databases are more effective in the transfer of explicit knowledge.

To summarise this section, KT strategies are most effective when the information is considered relevant to the user. They have a greater significance when users are inclined to apply the knowledge (readiness for change). The strategies have a wealth of meaning when sufficient contextual information is provided, and when multiple methods of dissemination are used. The contextual factors must also be considered as they play a greater role in hindering effective transfer of knowledge.

5.7. Knowledge Transfer belongs within the larger context of innovation and change

KT belongs within the larger context of innovation and organisational change. The results presented in the Chapter 4 show a clear link that where there are new developments taking place the rate of innovation is high. This gives rise to the need to disseminate the innovative ideas to the rest of the organisation. One effective way of achieving this is to transfer the newly generated knowledge. The literature also showed that this concept is prevalent in manufacturing industries, health industries and research-based scientific industries. According to Becker, this cycle of innovation and change includes stages of innovation (invention and production of the innovative program), evaluation (determination of its impact, cost-effectiveness, lack of side effects), communication (getting the word out to potential users), dissemination (active strategies that focus on adoption and building potential adopter involvement), capacity-building (helping adopting organisations strengthen themselves in ways that will make them more fertile ground to implement innovations), and change (the actual end-result – use of the innovation to improve services and communities).[223] An interesting dimension noted by Barwick is that the success of KT in innovation and organisational change requires addressing issues of power or authority to implement new knowledge. The literature shows that power is critical to the uptake of knowledge.

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[222] Barwick M.2002. et al., A KT infrastructure for Children's Mental Health in Ontario

[223] Becker M C. Knudsen M P. 2006 Intra and inter-organizational knowledge transfer processes: Identifying the missing links, DRUID working paper 06-32

5.8.   Knowledge Transfer is inseparable from organisational learning

Figure 5 below illustrates that KT is highly intertwined with organisational learning. While the two concepts can be distinguished, they can rarely occur separately, and therefore they do not always follow a particular pattern.
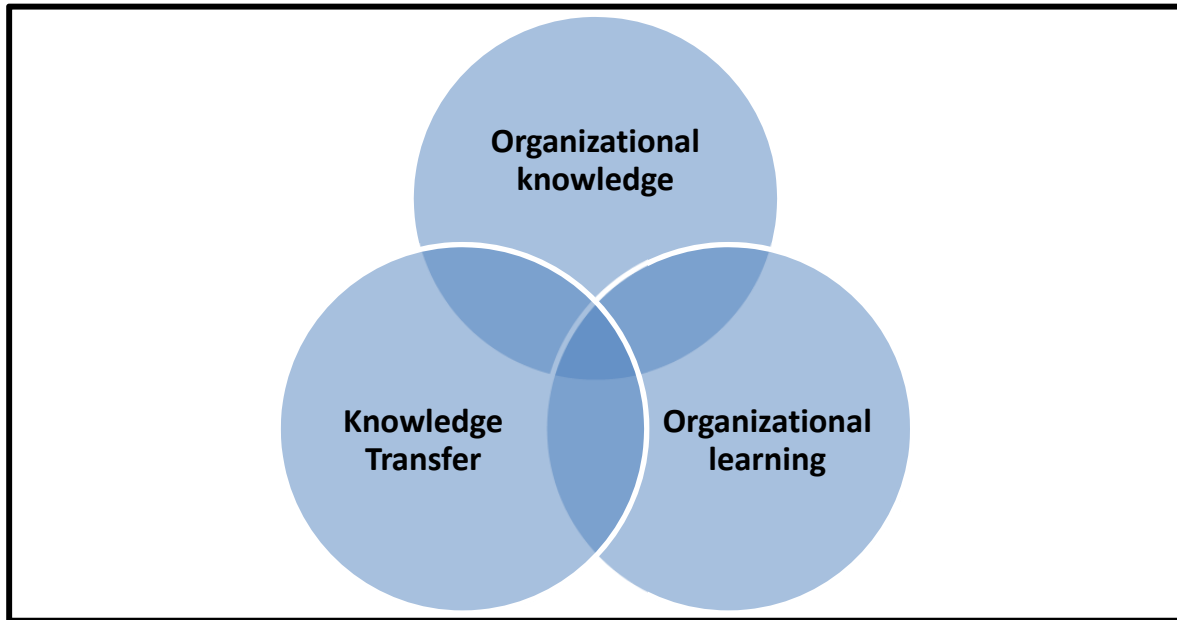

Figure 5 : Relationship between Knowledge Transfer and organisational learning

The idea that transfer, however conceived, is related to learning and cognition is a central message in this study. Perkins and Salomon argue that transfer cannot be neatly separated from learning in general, but it only becomes significant when it is more than a manifestation of ordinary learning.[224] KT does not only occur at the end of the process, project or research study but it is a continuous process. If viewed through the lenses of the transformational cycle it is critical to note that the transfer of knowledge occurs at any given point in the process and as such organisations need to be aware that learning follows the same trend.

Another dimension seen by Argote et al. is that through learning, knowledge is transferred, but the results of that transfer can only be seen if the acquired knowledge is assimilated and applied to real-life situations, resulting in organisational change or improved organisational performance.[225] In the data presentation chapter, the results from the content analysis show that certain types of knowledge are tied to certain learning methods, which enables organisations to select the best learning method for the targeted knowledge type that must be transferred. As organisations encourage learning through processes and structures such as

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[224] Perkins and Salomon 1994. Transfer of Learning. In: Husén, T., Postlethwaite, T.N. (Eds.), 6452–6457

[225] Argote L. et al. 2003. Managing Knowledge in Organisations: An Integrative Framework and Review of Emerging Themes,571–582

double-loop learning and continuing team communication processes they should encourage more KT. The literature describes the learning organisation as an entity that deliberately and continuously acquires processes and disseminates knowledge in order to transform itself, thus the ultimate goal of KT and learning. A key element of learning is the transfer of knowledge. In order to be able to transfer knowledge more effectively organisations will need to understand both the learning and the KT processes and how they are intertwined, and use that information in the formulation of a broad organisational KT strategy.

5.9. Knowledge Transfer plays a critical role in improving organisational performance

The ultimate goal of transferring knowledge is to improve organisational performance. All efforts in the implementation of a KT system are aimed at improving organisational performance. Research has shown that the transfer (or exchange) of knowledge between members has important consequences for a plethora of organisational processes and outcomes, such as the spread of best practices in organisational learning, innovation and, ultimately, performance.[226] When members of any organisation seek knowledge they wish to answer a real life need which in turn may result in improved organisational performance.

Merely having knowledge within an organisation is insufficient, but rather knowledge must be locatable and exchangeable to allow one to learn from another's expertise and ultimately benefit performance. Organisational learning in general and the ability to effectively transfer knowledge from one organisational unit to another in particular, are regarded as important preconditions for organisational performance.[227] It is thus evident that organisational performance is a result not only of KT but also of other activities that surround it. For example, knowledge must be created and made available, the organisation must be able to transfer knowledge when such a need arises, the users in the organisation must be able to apply knowledge to the relevant area and this in turn should have a positive impact on organisational performance. It must also be noted that KT affects organisational performance in a variety of ways for example in project based industries, and has been acknowledged as a key driver affecting various aspects of organisational performance, for instance product

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[226] Szulanski 1996 Stickiness: conceptualising, measuring, and predicting difficulties in the transfer of knowledge within organisations

[227] Argote L. et al. 2003. Managing Knowledge in Organisations: An Integrative Framework and Review of Emerging Themes,571–582

innovation and profitability, new product development, and group efficiency and innovativeness.[228]

5.10. There is a clearly established relationship between Knowledge Transfer and knowledge networks

Driven by a knowledge economy, many organisations have recognised knowledge as a valuable intangible resource that holds the key to competitive advantage and are now supporting the development and growth of knowledge networks, especially communities of practice.[229] This phenomenon is prevalent in multinational corporations in which there is a need to transfer knowledge over geographical boundaries. Social networks are an increasingly common concept and as a result variations are emerging, for example, electronic networks of practice and the traditional communities of practice. Wasko et al., in 2005 conducted a study of electronic networks of practice and concluded that individuals will contribute and share knowledge with strangers when they believe that they are structurally embedded in the network, and that such a network will increase their professional reputations.[230]

Social capital theory suggests that social capital, the network of relationships possessed by an individual or a social network and the set of resources embedded within it, strongly influence the extent to which interpersonal knowledge sharing occurs.[231] Borgatti and Cross also argue that individuals' behaviours are a product of their social network. Through close social interactions, individuals are able to increase the depth, breadth, and efficiency of mutual knowledge exchange.[232] From the quotations above it is evident that knowledge networks are a critical support system in the transfer and sharing of knowledge. Networks have been known to have a favourable impact on KT, and a number of scholars have studied the concept in various ways. Levin and Cross focussed on teams, individuals and external relations, whilst Szulanski and others targeted dyadic relations of KT involving a supplier and a recipient. Hansen and others conducted research on knowledge networks and KT, and concluded that internal knowledge sharing requires a formal hierarchical structure and

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[228] Bresnen et al. 2003. Social Practices and the Management of Knowledge in Project Environments, 157-166

[229] Hansen MT, Mors ML, Bjørn L. 2005. Knowledge Sharing in Organisations: Multiple Networks, Multiple Phases. Academy of Management Journal, 776–793

[230] Wasko MM, FARAJ S. 2005. Why should I share? Examining Social Capital and Knowledge Contribution in Electrical Networks of Practice. 35-57

[231] Borgatti SP, Cross R. 2003. A Relational View of Information Seeking and Learning in Social Networks, 432– 445

[232] Borgatti SP, Cross R. 2003. A Relational View of Information Seeking and Learning in Social Networks, 432– 445

informal lateral relations, in which the latter facilitated the sharing of personal knowledge determined by the type of relationship that exist between a source and a recipient.[233]   As mentioned in chapter 4, this study found that knowledge networks are closely associated with knowledge sharing rather than KT. Scholars such as Malhotra believe that knowledge is inherently human, and see knowledge sharing as involving or requiring the human aspect.[234] KT, on the other hand, could either be related to IT or to people, or to a combination of both.

5.11. Knowledge Transfer is more than a mechanical process

Suggestions from the literature indicate that the process of KT is a complex process that involves several factors at the same time. For a successful transaction, most of the players must be in agreement. The representation of the notion of KT is a narrow view of the entire process, and while it has made significant contributions to the understanding and unpacking of the process a deeper analysis reveals that this view is simplistic and shallowly represents the concept.

By mechanical processes, one implies that the movement of knowledge is firstly an act that could be performed in the absence of individuals, for example, through the use of information systems. This representation is not entirely complete as people are the engines of KT and for an action to begin they ought to be considered. Secondly, considering KT as a mechanical process reduces the knowledge to a commodity that is easily packaged and sent across to the next person, yet the literature has revealed that a common understanding between the source of the knowledge and the receiver is critical. Also, not all knowledge is easily codified and captured in databases, therefore such an action would make organisations miss or underutilise other types of knowledge such as tacit knowledge. Mechanical processes suggest KT could be achieved through the use of machines, for example, computer information that is sent through the use of portals and intranets requires processing. Only after a human mind has processed the information will it be considered knowledge, and only then can organisations conclude that KT has occurred. Thirdly, KT is a process that requires cognitive reasoning and most mechanical processes do not make this kind of reasoning a prerequisite, therefore describing KT as a mechanical process has a tendency to underplay the role of cognitive reasoning, and it also underscores the claim that knowledge resides in the minds of individuals. Fourthly, by mechanical processes, one implies that there are several stages in

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[233] Hansen MT, Mors ML, Bjørn L. 2005. Knowledge Sharing in Organisations: Multiple Networks, Multiple Phases. Academy of Management Journal, 776–793

[234] Malhotra

the process and they happen one after the other, for example the source of knowledge must have it, transfer it and the receiver must get, decipher it and then apply.

In reality, these processes can occur simultaneously so it becomes difficult to separate them from each other and actually state when the transfer of knowledge occurred. Davenport and Prusak argue that organisations can only tell that the transfer of knowledge has taken place when they see the results, hence the observation that transfer has only occurred when the experiences of one unit in organisation affect the operations of the other.[235] Lastly, by mechanical processes, one implies that the duplication of best practises in one area would yield the same good or almost similar results in the next area. The literature has proved this otherwise. With KT, what works in one department may not work or yield the same results in the next, because of the complex nature of the transfer process. It is important to realise that the players are not the same and that the playground is different. In this case, the culture of the next department may hinder the successful flow. The individuals involved may also play a great role in the success of the transfer process and there is no uniform approach to the transfer of knowledge, as implied by the mechanical process.

5.12. Knowledge Transfer: implication for theory

In Chapter 4 it was noted that the view of KT as a mechanical process has its roots in Taylorism, developed in the industrial revolution during which the use of machines was a major contributory factor in the success of organisations. This perception filtered through management theories to knowledge management and now impacts upon the process of KT. The perception, as indicated above, constrains the implementation of KT and therefore requires a paradigm shift from a mechanical view to a more holistic view that incorporates environmental factors and drivers of change. Taylorism laid a good foundation for the understanding of the concept of KT, which must be used to inform the study and research of the concept. Taylorism must be used as a springboard for a deeper analysis and comprehension of the concept of KT.

The use of IT in the transfer of knowledge is one factor that requires more clarification through research. As noted by Ngoc, the role of IT in knowledge management has caused considerable controversy in the literature. On one side, it is recognised as a key for knowledge management, and a critical resource for supporting KM. On the other side, it is considered a peripheral issue compared with the fundamental problems of knowledge

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[235] Davenport H.T. Prusak L. 1998. Working Knowledge: How Organisations Manage What They Know

management.[236] From the quotation above this debate on the role of information in KT has also affected the notion of KT. Scholars are divided on what information technologies could do for KT, for example, Alavi et al. believe that IT will enhance the process of KT tremendously.[237] Prusak, on the other hand, writes about an over-focus on the role of information technology in KT.[238]

This controversial situation calls for further research on the relationship of KT and information technology and clarification on what is required. It has created a missing link in the research which has had a negative impact on organisations that have invested in information technology hoping to achieve good results for KT. Many organisations that fell in this trap have been disappointed and lost faith in the concept of knowledge management as a whole.

Scholars must help organisations to discern and understand that the process of KT is not entirely mechanical. It is a complex process that demands a different environment if it is to yield results. A good environment is one that strikes a balance between institutional capacities such as culture, human resources, organisational structure, strategy, IT and available types of knowledge. Without a balanced environment organisations are likely to be frustrated and in the process lose faith in the potential of knowledge management.

KT is linked to the success of the organisation, as argued by Argote and Ingram, and may enable firms to capitalise on best practices to create advantages such as strengthening of the organisational knowledge base and better flexibility in responding to the firm's environment.[239] It is the responsibility of the scholarly community to educate organisations as to what benefits KT could bring. One important factor to note here is that KT is a means to an end and not an end in itself. The end part that must be further studied is how we know if knowledge has been successfully transferred. The results of knowledge could be seen on innovation, and also different responses to similar situations that have been experienced before. Closely related to this issue is how to realise or relate the benefits of KT to a monetary value.

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[236] Ngoc T B N. 2008. Intra-Organizational Knowledge Transfer Process In Vietnam's Information Technology Companies

[237] Alavi M, Leidner D. 2001. Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, 107-136

[238] Prusak L. 2001.Where did knowledge management come from, 1002-1007

[239] Argote L, Ingram P. Knowledge Transfer. 2000. A Basis for Competitive Advantage in Firm, 150–169

Finally, scholars should revisit the concept of KT and try to establish if it is yielding the expected results or is it time for a revolutionary move to other notions such as organisational learning and the learning organisation. More radical research aimed at dissecting the notion of KT is required.

5.13. Knowledge Transfer: implication for organisations

Knowledge itself or holding knowledge does not necessarily lead to a competitive advantage. Only effective use of the knowledge, for example, efficient integration of knowledge or combining new and existing knowledge may lead to a best practice.[240] This is one important role of KT in organisation, making sure that knowledge flows from one point to the next, enabling organisations to gain competitive advantage.

Organisations are encouraged to foster environments that help to inculcate the spirit of knowledge sharing, for example to design and adopt organisational structures that are flexible and allow the movement of knowledge from one section of the organisation to the next. In Chapter 4, four types of structures were identified and under each type explanations of how they affect KT were provided. Organisations should familiarise themselves with such literature and learn to develop structures that will enhance KT.

Closely related to the structure issue is that of culture, which De Long and Fahey argue is particularly seen as a potential source of barriers for processes such as knowledge sharing and development.[241] From the literature, attention is given to the influencing relationship of culture and knowledge management. Culture influences knowledge sharing since it shapes assumptions about what knowledge is important. It determines the relationship between levels of knowledge, shapes the creation and adoption of new knowledge, and creates a context for social interaction.[242] Culture influences the way knowledge flows throughout an organisation via vertical, horizontal and lateral communications of individuals.[243] Given such a critical role that culture plays in the transfer of knowledge in organisations. It is imperative that organisations dedicate time and resources to developing flexible cultures. One scholar argues that organisations without a flexible culture, should work with what they have while also working at making it flexible.

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[240] Grant RM. 1996. Towards a knowledge-based theory of the firm. Strategic management Journal. 17, 109 – 122

[241] De Long DW, Fahey L. 2000. Diagnosing Cultural Barriers to Knowledge Management, 113-127

[242] De Long DW, Fahey L. 2000. Diagnosing Cultural Barriers to Knowledge Management, 113-127

[243] Nonaka and Toyama, 2002

Organisations are warned in the literature to pay attention to the investments they make in IT. As indicated above, investment in IT alone does not lead to a successful transfer of knowledge and therefore organisations must be wary of basing their success on this investment alone. High investments should be combined with factors such as a motivated human resource and flexible culture.

5.14. What happens after knowledge has been transferred?

This study identified a gap in the existing research studies regarding the future directions of KT and what happens after knowledge has been transferred. The articles that were analysed concentrated on the provision of making organisational knowledge available. From the literature, the main areas of concentration were the channels of communication (how knowledge is transferred) what is transferred (whether it is explicit or tacit knowledge), the agents involved (source and recipient), and the challenges encountered during the transfer (contextual factors). There is scant literature in this unit sample that addresses the question above. How do organisations know that knowledge has been transferred? If it has been, was it successful and what could possibly happen at the end of the transfer, if there is an end at all?

Another area of concern that arises is whether it is possible to have a successful transaction of KT whenever such efforts take place. According to Lakomski, KT, like organisational training, is expected to occur successfully between departments, teams and people doing different work in different parts of the organisation. It is an equally common observation that the wished-for transfer does not often seem to materialise[244] and the question is why this is so. Woodruff in 1992 observed that practitioners have also noted that transfer, to the extent that it happens at all, is difficult to achieve in corporate practice, as for example encountered in the difficulties of replicating or implementing advanced manufacturing technology.

There is an emerging realisation in the organisational and management literature that the transfer of knowledge is difficult because it involves many agents and can therefore be time-consuming and costly. It also involves resolving complex technical and political problems, usually in more than one site, and clearly chances of partial achievements are high.[245] This awareness manifests itself in the concept of stickiness discussed in Chapter 4, and it affects both knowledge itself and the situations in which it is transferred.

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[244] Lakomski G. 2005. Managing without Leadership towards a Theory of Organizational Functioning

[245] Levine. 2011. How KT Impacts Performance Organisation Science, Articles in Advance, 1–19

Given these difficulties, researchers are keen to find out why transfer apparently happens so rarely. The mystery that has to be unlocked through further research is to try and answer the question as to what constitutes a successful transaction of KT and how to realise or notice it.

In conclusion, this chapter analysed the data that was collected through the bibliometric method and content analysis. The chapter presented messages that were considered paramount in the literature under study. In brief the messages were:

1 There are four core elements that are central to any KT strategy within the larger context of innovation and change

2 KT is inseparable from organisational learning

3 KT plays a critical role in improving organisational performance

4 Contextual factors of KT are at the epicentre of the literature under review

5 Knowledge networks aid the transfer of knowledge especially personal knowledge

6 KT is more than a mechanical process

7 The theories of KT calls for a revision if the concept is to be more beneficial to organisations

8 Organisations need to consider their environments and what the concept of KT brings out for them

9 What happens after Knowledge has been transferred

5.15. Conclusion

In concluding this study, the author recalls that the main research question of the study was to ascertain how the concept of KT has been represented thematically in the three journals selected for this study namely, *MIS Quarterly, Organization Science,* and *Management Science*. From the three journals the researcher then searched for articles that listed the terms knowledge transfer, knowledge sharing and knowledge flow, either in the keyword or included in the abstract. The study also reviewed literature related to the subject of KT. A total of 146 articles were selected and the bibliometrics, together with content analysis research methods used to deduce the themes and emerging trends of KT.

To achieve this it was necessary to carry out a brief literature review of the broader field of knowledge management (KM). This exercise enabled the researcher to position KT as a process of knowledge management and one that is central to the successful implementation of KM efforts. This exercise also revealed that as with KM, KT spans across a broad spectrum of subjects such as management, psychology, education and information systems. Closely

related was the issue of terminology. KT is referred to differently in many articles, for example, knowledge utilisation, knowledge translation, and knowledge exchange and knowledge dissemination. The different terminology has led to slight differences in the definitions of KT, but the fundamentals of the process remain the same, for example, there is always a source and a receiver in the transfer process or in the knowledge exchange process.

The study also revealed that the concept of KT is a complex field shrouded by many different theories, some specific to certain subjects and not just on KT. The theories or frameworks that have been developed still require further testing that would lead to the subject having solid and concrete theories. Some theories also based on theories from other subject areas, for example, the Shannon and Weaver communication model which has been used to develop the sender receiver framework of KT. Similarly, Berger's theory of sociology has been used to develop a framework of KT known as the systems management framework. [246]The theories, like the definitions, are varied but share certain fundamentals. For example, there is a need to take care of the challenges that may be experienced or encountered during the transfer, as there is a channel through which knowledge has to be transferred. From the theories it is evident that there are those who align themselves to the claim that knowledge is inherently human and those who believe that IT is central to the transfer of knowledge. As a result, there are emerging theorists who believe in hybrid solutions, with which both the human factor and the technology factor can be combined to enhance the transfer process. Scholars are realising that the two schools of thought do not have to compete but rather be synthesised if organisations are to truly benefit from the KT process.

The study also revealed that KT has strong ties with subjects such as organisational learning, organisational performance, intellectual property, change and innovation, in particular organisational change. For all these subjects the literature showed that KT is at the epicentre of each and that the ultimate goal of transferring knowledge is to improve organisational performance.

Another area that the literature concentrated on was the issue of factors that could either enhance or hinder the transfer of KT. As noted in the previous chapter, most articles in this aspect concentrated on the identification of the factors and categorising them into groups such as organisational factors, cultural and personnel factors. This aspect of KT is slowly evolving, as evidenced by the increase of single factor studies, for example one based on the

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[246] Berger P L. 1966. The Social Construction of Reality: a Treatise in the Sociology of Knowledge

issue of trust and the other on the issue of culture. Scholars are also concerned about reducing the impact of these factors and as such a number of articles sought to provide solutions or means to capitalise on the factors, for example through motivation and rewarding efforts of KT. Closely linked to the issue of factors is the idea that there are certain methods or channels that could be utilised successfully for KT. The main issue here was to align a type of knowledge to a particular means of transfer. For example, personalised means such as face-to-face, socialisation, observation are strongly associated with tacit knowledge, while IT-based channels such as intranets, databases and information systems are aligned to explicit knowledge.

The study concludes that KT is still a subject under construction, despite the large volumes of literature that has already been published. There is a need to theorise and articulate what KT is and what it is not, how it occurs and how organisations can successfully transact in this area. This will go a long way in ensuring that efforts targeted at the concept of KT are not a waste, but are fruitful to the organisation.

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