Trends in the theoretical and research methodological approaches applied in doctoral studies in information and knowledge management: an exploration of ten years of research in South Africa

M.A. Mearns
Department of Information and Knowledge Management
University of Johannesburg, Johannesburg
South Africa
mearnsm@uj.ac.za

The past ten years have seen the field of information and knowledge management develop and implement new and improved technologies. Because of the ease with which information is exchanged the contribution to information overload has increased exponentially and the need for information and knowledge management is more real than ever before. Research in itself is a science of knowledge creation that continuously evolves in line with newly developed theories and research methodologies. An investigation of the theories and research methodologies that doctoral theses, completed in South Africa, ascribed to over the past ten years were conducted. Search strings containing 'information management', 'knowledge management' and 'information and knowledge management' were searched within citation, abstract and subject fields. A sample of 30 theses from a possible 47 in the relevant population was identified. Qualitative and mixed methods research design was favoured, making use of case studies and surveys, but paying little attention to theoretical approaches or paradigms. The boundaries between disciplines are continuously re-defined, new disciplines evolve and traditional disciplines suffer under the pressures of changing problems of the world. The importance of research in the field of information and knowledge management being grounded in the most recent scientific thought is emphasized.

Contents

---

1 Introduction

When throwing all retrieval principles to the wind and entering the phrase 'information overload' into a relevant electronic database or search engine, information overload is the result. Within the domain of information and knowledge management, research abounds on the fact that people are facing information overload on a daily basis in their personal as well as their corporate lives. Technological advances have kept up with the dilemma of information overload and the past ten years have seen the field of information and knowledge management develop and implement new and improved technologies ranging from push and pull technologies to the use of portals and blogs. Yet, because of the ease with which information is exchanged through technology, the contribution to information overload has increased exponentially and the need for information and knowledge management is more real than ever before. Catch phrases revolving around the concept that 'knowledge is power' translate into the common acceptance that information and knowledge are potentially valuable resources that require management, which in turn requires the domain to be researched.

Research in itself is a science of knowledge creation that continuously evolves in line with newly developed theories and research methodologies. Lazlo and Lazlo (2002:401) stress the importance of research in the field of information and knowledge management being grounded in the most recent scientific thought and mention specifically sciences of complexity such as systems theory, cybernetics, chaos theory, dynamical systems theory, non-linear thermodynamics and autopoietic theory. Laszlo and Laszlo (2002:405) further point out that social and human science research tends to move away from quantitative research and that researchers rather apply qualitative research in the form of dialogue-based and action-oriented forms of investigation.

Schultze and Leidner (2002) report on an investigation of knowledge management in information systems research and provide a taxonomy of published knowledge management research from 1990 to 2000 based on a theoretical framework developed by Deetz in 1996, which structures the research into four discourses, namely normative, interpretive, critical and dialogic. Similar to Schultze and Leidner's (2002) investigation, Vorakulpipat and Rezgui (2008) provide a review of knowledge management literature in terms of McElroy's knowledge management generations model. Both sets of research investigate research papers published in academic journals. The research by Schultze and Leidner (2002) concludes that most knowledge management articles are classified in the normative discourse owing to the focus on providing systems to facilitate the storing and transfer of knowledge. They further conclude that some articles are classified in the interpretative discourse with a focus on coordinating collective action in systems of distributed knowledge. With very few articles resorting in the critical (exposing and challenging of theories) and dialogic (reclaiming conflict) discourses, Schultze and Leidner (2002:231) challenge researchers to broaden their range of inquiry and investigate perspectives beyond their comfort zone into the

contradictory and double-edged nature of knowledge.

Research methodology approaches are developed, applied and researched within various sciences and disciplines. Owing to the interdisciplinary nature of information and knowledge management research, various disciplines play host to the research within this mentioned field. Keeping the reality of information overload and the evolution of research methodological approaches from an interdisciplinary perspective in mind, the following question begs a solution:

> What are the current trends in the theoretical and research methodological approaches as applied in research in the field of information and knowledge management in South Africa?

It is the purpose of this article to report on an investigation of the theories and research methodologies that completed doctoral theses in the fields of information and knowledge management ascribed to over the past ten years in South Africa. It is not the intent of this article to differentiate between information management and knowledge management as separate discourses in the disciplines, but to elucidate the trends over the past ten years in the research methodological approaches in information and knowledge management.

2 Research methodology

The selection of completed doctoral theses was motivated by the depth of scholarship that was required by the qualification, the fact that the degree required new knowledge to be contributed to the body of knowledge, which was grounded in specific theories and made a unique contribution to the scholarship within the domain of information and knowledge management. The Nexus database containing completed and current masters and doctoral research in South Africa, as well as the WorldCatDissertations database from the Online Catalogue of the Library of Congress was searched. Search strings containing 'information management', 'knowledge management' and 'information and knowledge management' were searched within citation, abstract and subject fields of doctoral theses for the period 1998 to 2008. The results were scrutinized by comparing key words that were used to index the theses with the abstract and titles of the theses. The institutions where the research was conducted had to be a South African university. A total of 47 South African theses that were relevant to the search string, with abstracts and titles that matched the field of information or knowledge management, were identified. The total population of the research was therefore 47 theses. In view of the logistical aspects involved in sourcing the relevant theses, it was decided to include only theses that were available electronically via the universities' libraries. Of the 47 South African theses, 22 were available electronically. Since the sample was smaller than half of the population, it was decided to source a further eight theses via interlibrary loan. The delivery via interlibrary loan posed further challenges owing to overdue theses not being returned, theses being in use with extended return dates or even theses being lost. In three of these cases the supervisor(s) of the theses were contacted and their copies of the theses were borrowed to conclude the investigation. When the analysis stage of the investigation was reached, 30 theses (Appendix A) that were intended to be included in the purposive sample were analysed.

Therefore, in the research, the theoretical framework and research methodology were investigated of a total of 30 theses from a possible 47 in the relevant population for South African theses completed between 1998 and 2008. This sample size constituted a 63.8% representation of the population. A data collection form was designed in which the research design, research design type, theoretical positions or paradigm types and the research

methodology were marked for each of the theses included in the sample. The results of the investigation identified some trends for the field of information and knowledge management research in South Africa.

3 Perspectives on information and knowledge management

Because of the requirement of each thesis to adhere to key words or the subject fields of information and/or knowledge management, it will be noted that the theses that were included in the investigation do not necessarily belong to a specific subject discipline, but rather that the domain of information and knowledge management is the focus. The boundaries between disciplines are continuously re-defined, new disciplines evolve and traditional disciplines suffer under the pressures of changing problems of the world. Bourner (1998:12) points out the traditional pathway of knowledge generation from research that generates new knowledge, which becomes integrated into academic disciplines where these are taught and applied to the problems of the world. He indicates the dilemma that this process is slow and that the solutions to the problems that have been researched become obsolete in the face of the rate and magnitude of change that is taking place. Botha, Kourie and Snyman (2008:1) quote Cordell saying that the extent to which one views the world from a perspective of an earlier vanishing age will result in misunderstanding of developments in an information society. Furthermore, humankind will not realize the full economic and social potential of technology and probably make serious mistakes owing to the fact that reality and theories, which are used to interpret it, continue to diverge.

The purpose of doctoral research is to find out what is not yet programmed into the existing body of knowledge of a discipline. With this extending of the boundaries of a subject, in an endeavour to move towards the leading edge of the discipline, one finds that a holistic approach to problem solving tends to blur strict boundaries between disciplines. It only takes a few moments in faculty research committee meetings where research proposals are vetted to notice the overlap and blurring of boundaries when academics defend titles that they believe require co-supervision from another discipline. For example, does e-learning belong with education or information technology and how can agricultural extension claim ownership to this topic? Does indigenous knowledge research at cultural villages require co-supervision from a tourism perspective? Where does information and knowledge management then belong?

Owen (1999) clarifies the differences between information management and knowledge management to a large extent in terms of the disciplines to which the terms belong. He places information management within the realm of both the management of Information Technology (IT) sources and the management of information sources. Traditionally these managerial tasks of information management belonged respectively to disciplines called Information and Communication Technology (ICT) or just IT, as well as traditional Library and Information Sciences (LIS). Owen (1999:9) points out that the domain of knowledge management is claimed by several disciplines from two different approaches. Disciplines that lay claim to knowledge management from a functional approach include Human Resource Management, LIS as well as Marketing and Sales. The second approach to knowledge management is supported by people working in the administrative systems, network services, as well as knowledge and expert systems. This serves as proof that both the fields of information and knowledge management are leaning towards inter-disciplinary research and tuition.

The results of the research into the 30 theses that have been completed in the past ten years in the fields of information and knowledge management corroborate this trend. Of the 30

theses a total of 20 were completed as either D.Litt.et Phil. (Information Science)/ (Information and Knowledge Management) or D.Phil.(Information Science)/(Information and Library Studies)/(Information Systems) qualifications. The remaining ten theses were completed as D.Phil. or D.Com. qualifications in the subjects Public Management Planning, Business Management, Industrial Psychology, Leadership in Performance, Communication Management, Public Administration and Human Resource Management.

A large numbers of theses completed in the Information Sciences are related to the historical changes that have taken place within this discipline over the past few years. Ocholla and Bothma (2007) provide a comprehensive overview of LIS Schools in Eastern and Southern Africa. Of specific interest to this article are the trends that characterize the rise and fall of periods of change within South African LIS training and education. The evolution within LIS in South African institutions of higher education is marked by departmental name changes, movement between host faculties and schools, re-focusing of curriculum, amalgamation and re-orientation. To keep abreast of information and knowledge requirements of an increasingly technologically driven world, the focus of training, education and research have moved towards the management of information and knowledge, with the emphasis on management where the main feature is the ability to work with people (Gorman and Corbitt 2002; Jefferson 2006; Materska 2004; Thorton and McCracken 2005). Gorman and Corbitt (2002) identify the core competencies in LIS, which differ from core competencies in information systems and yet again differ from core competencies in information management. However, the management of information and knowledge requires both managerial skills and the associated technology that supports the management.

Madden (2003:12) discusses information in relation to evolution in terms of the biological discipline. The metaphor is used of an organism that has an impregnable boundary, which prevents any exchanges, rendering it incapable of making metabolic changes with its environment. The metaphor is used to point out the necessity of an organism being able to regulate exchanges that are beneficial and not detrimental to explain the need for information. Although Madden (2003) uses the metaphor to emphasize the need for information, the metaphor can just as easily be applied to the regulation of discipline boundaries in terms of interdisciplinary research. In 1995, Gingrich wrote a foreword (Toffler and Toffler 1995) indicating that the development and distribution of information has become the central productivity and power activity of the human race. Human beings are holistic beings and draw on their entire life experience to survive each day. Gummesson (2003:485) points out that research is a dynamic process that should be perceived as an upward spiral in which researchers interpret and re-interpret data in a never-ending process of trial-and-error in terms of theory generation and testing. The research process in itself is a process of information and knowledge generation, where the information and knowledge are not only the resources but also the result.

Information management has grown from different cultural and philosophical approaches, which include professional backgrounds such as business studies, management and organizational theory, librarianship, data processing and computer studies (Powell 2003:47). Botha *et al.* (2008:8) place knowledge management in context by very broadly indicating that it is a contemporary response to the challenges of the economy in the new millennium. It is within this perspective that the results of the investigation into theories and research methodologies in information and knowledge management are reported.

4 Results

The trends in research design, research design type, theoretical positions or paradigms, as

well as the research methodology in terms of the sampling techniques and the data collection and analysis types, are discussed.

4.1 Trends in research design

The statement by Lazlo and Laszlo (2002) that social and human science research tends to move away from quantitative research and that researchers rather apply qualitative research in the form of dialogue-based and action-oriented forms of investigation appears to be true of information and knowledge management research in South Africa as well. Of the 30 theses, only one is designed as quantitative research. Even though this thesis claims a quantitative research design, the design type that it identified is a case study, which is generally accepted as a qualitative research design type, although recently the trend has been towards using a case study approach that combines both qualitative and quantitative methods (Rubin and Babbie 1993:392). This specific thesis also uses questionnaires that measure attitudes and perceptions, generally associated with qualitative descriptive research. Nevertheless, the results of this thesis were quantified and described in terms of the statistical findings. A further 13 theses specified the research design as qualitative and the remaining 16 describes the research design as mixed methods, also known as a hybrid research design. Fidel (2008:268) discusses the trend of using mixed methods in LIS. In this investigation it was pointed out that the term 'mixed methods' are seldom specified and that authors would rather indicate that they have applied a combination of qualitative and quantitative research. This trend was also found to be true for the 16 theses that applied a combination of qualitative and quantitative research design. The literature is furthermore not clear on what mixed methods research design truly entails. For this investigation, the definition by Tashakkori and Creswell (2007:4) was supported, namely that mixed methods research is 'research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry'.

De Vos (2002:364) criticizes the fact that many authors pay lip service to the mixed methods research design and merely point out the differences between the design approaches. She argues that, on a practical note, a combination of the methods extends postgraduate studies beyond the normal limits of size and scope, but then also points out that some researchers often have little choice but to apply both quantitative and qualitative approaches in the form of a hybrid or mixed methods research design. Creswell (2003:208) dedicates a chapter to mixed methods procedures in response to a growing need to clarify the mixing of qualitative and quantitative data in a single study. He proposes a checklist that researchers should use to determine whether the research strategy requires the use of mixed methods research. Grossman (2006:245) refers to mixed methods as the blended approach and indicates that the complex factors of knowledge management lend themselves to a blended approach. The trend to make use of mixed methods design becomes further embedded as an acceptable design approach when the combination of qualitative and quantitative methods is imperative in research design types such as programme evaluation, intervention research and participatory action research (De Vos 2002:365).

4.2 Trends in research design type

Mouton (2001:57) suggests that research design types are divided between empirical studies and non-empirical studies. Research design types that are regarded as non-empirical include philosophical analysis, conceptual analysis, theory building and literature review. Empirical research design types refer to surveys, experiments, case studies, programme evaluation, ethnographic studies, discourse analysis, content analysis, textual criticism, historical studies, secondary data analysis and statistical modelling. Admittedly this list is not complete and types in addition to these are also applied in research.

Some authors of the 30 theses that were investigated indicated more than one research design type and in some cases a combination of three research design types were specified for one research topic. This is once more evident of the mixed methods approach that has become the trend to use in the discipline of information and knowledge management and it is generally accepted that a triangulated approach enriches a study and improves validity. Thirteen theses made use of case studies as a research design type. Four theses specified surveys as the design type although, in one of these, the thesis seems to be another case study research design type rather than a survey. Four specified triangulation, four made use of action research and two specified grounded theory as the research design type. The remaining theses described the research design types as pre-test/post-test, ethnography, model building study, literature review, content analysis and descriptive research.

4.3 Trends in theoretical positions/paradigms

The theories that research usually ascribes to are inconsistently termed by research methodology authors and include terminology such as theoretical positions or paradigms or research philosophies. According to Mouton's (2001:138) Three Worlds Framework, theories, models and typologies exist within the body of knowledge in the World Two realm of science. Paradigms, such as positivism and realism, are placed as part of the meta-science in World Three.

Figure 1 Basic framework: the three worlds (Mouton 2001:139)

World 3: Meta-Science
(Critical interest)

Philosophy of science
Research methodology

Research ethics
Sociology and history of
science

World 2: Science
(Epistemic interest)

Scientific knowledge
Scientific disciplines

Scientific research

World 1: Everyday life
(Pragmatic interest)

Social and physical reality
Multiple worlds

Lay knowledge
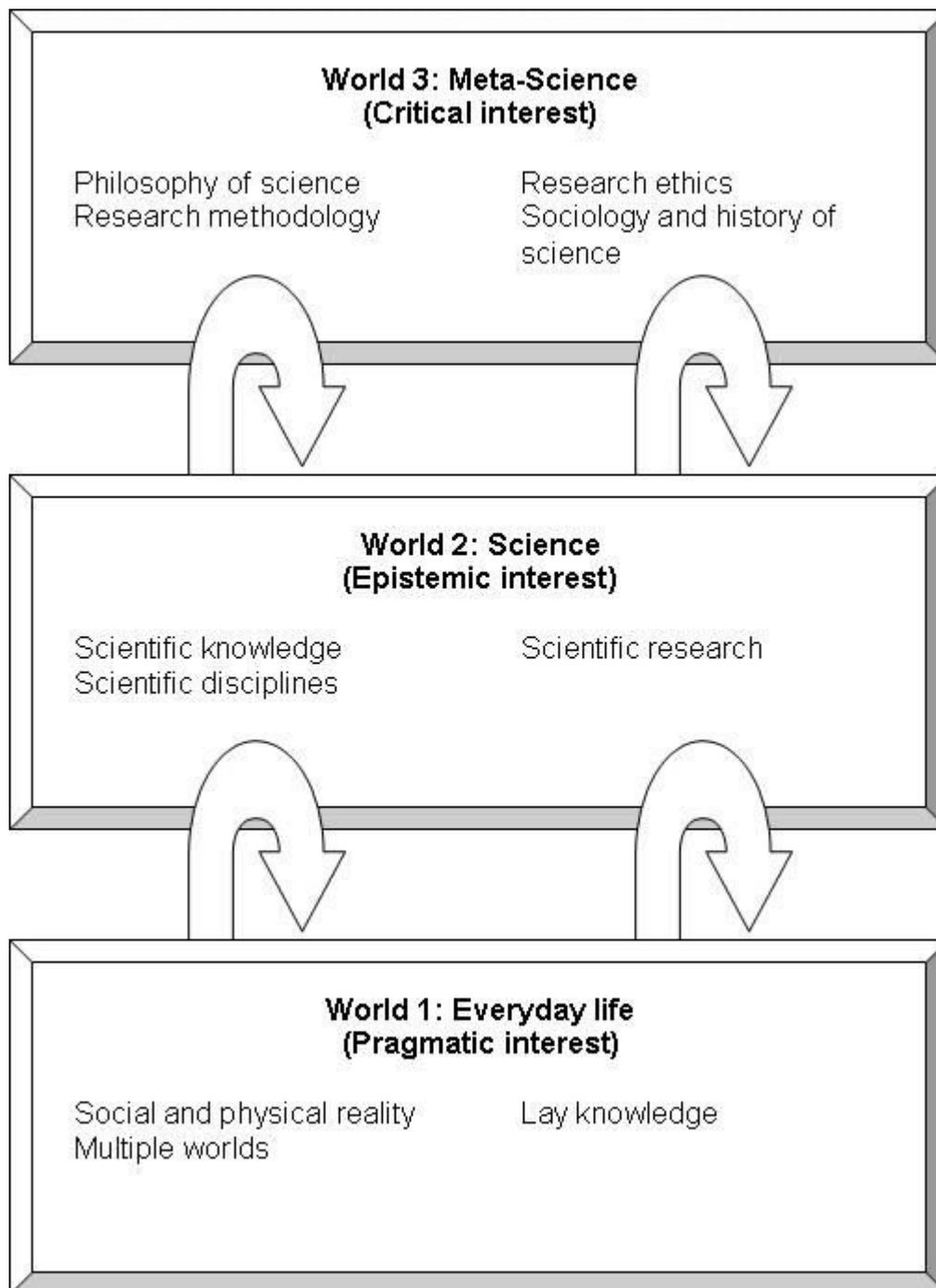
The theses under investigation refer inconsistently to the theoretical paradigms they ascribe to. In this part of the discussion of results, both theories and paradigms are collectively discussed in order to indicate the trends in information and knowledge management research.

Nineteen theses did not stipulate a theoretical paradigm for the research topic under investigation. Some of the 19 theses omitted this without any mention of theories or paradigms, while others indicated the lack of acceptable theories in the young disciplines of information and/or knowledge management. Some authors of the theses specified that empirical research is seen as research derived from or relating to experimentation and observation rather than theory. The argument was furthered that empirical research does not gather data to prove or disprove something, but is used to observe or explore and no theories were therefore stipulated. Four of the 19 theses that did not ascribe their research to a specific theory, mentioned or discussed a number of theories, which included configuration theory, resource-based view theory, theory of transaction cost, management theory, critical

inter-subjectivity, dynamic theory of organizational knowledge creation, social theory, social systems theory and critical social theory. These theories were to a large extent developed and associated with disciplines other than information and knowledge management and had been borrowed from disciplines belonging to management sciences, as well as human and social sciences. Two of the 19 authors that did not base their research on theories or paradigms proposed a number of models as analysis and comparison that had been derived from theories as the basis of their research approach.

Eleven theses in the research sample ascribed their research to one or more of the following theories or paradigms:

- Human development approach
- General systems theory
- Information theory
- Resource-based theory
- Dynamic capabilities school on strategy
- Intellectual capital systems
- Anomalous state of knowledge theory
- Personal construct theory
- Symbolic interactionism
- Stress coping theory
- Systems theory
- Information gap
- Phenomenology
- Open systems theory
- Structuration theory
- Speech act theory
- Theory of human interaction
- Theory of human action.

Only phenomenology and variations of the systems theory were discussed by more than one author. It still appears that within the domain of information and knowledge management there seems to be little agreement on the theories that underpin research in the field. Consensus does exist that theory development for information and knowledge management research is necessary. De Hoog, Van Heijst, Van der Spek, Edwards, Mallis, Van der Meij and Taylor (1999:10−12) suggest the development of knowledge management into a discipline by coining its own methodology and theoretical framework to prevent it from being a mere management and IT fad. Only one thesis author suggested a new theory, namely grounded theory of knowledge management, as a combination of information theory and theory of knowledge. De Hoog *et al* (1999:10−15) suggest that theories that are developed for the discipline cover aspects contained in the worldview, theories, methods, tools and use for knowledge management. Although De Hoog *et al* (1999:10−16) admit that 'bits and pieces' of worldview, theories, methods, tools and use exist, they still need to be 'fleshed out' for knowledge management. They provide a coherent underlying framework on which the 'fleshing out' should take place. Lehaney, Clarke, Coakes and Jack (2004:76−118) seem to agree with the authors of the theses that discussed variations of systems theory to underpin their research. Lehaney *et al* (2004) place the theoretical grounding for knowledge management in the philosophy and theory of Kant and Habermas, specifically social theory and more specifically critical social theory, as well as theories of communicative action. De Vos (2002:28) points out a paucity of scientific theory in caring professions such as nursing and social work, disciplines that are much older than knowledge management. She attributes this paucity to a lack of understanding of the nature and role of scientific theory. From this discussion it seems as if World Three, namely the meta-science (Mouton 2001:140) of information and knowledge management, remains largely unexplored and requires very

specific attention to ensure that knowledge management specifically moves from fad to discipline status by acquiring associated methodologies, frameworks and theories.

Regardless of the lack of theoretical paradigms in many disciplines, the concept of sampling is one of the most important in the research process (De Vos 2002:197).

4.4 Trends in sampling types

The theses reported their sample type chosen for the research design erratically. Seven theses specifically stated purposive sampling as the sample type. Sixteen theses did not stipulate the sample type and assumptions were made based on the methodology and result discussion as to which sample types were used. Of the 16 theses that did not stipulate the sample type, ten appeared to be purposive. Four theses conducted a census of their populations, and four theses that did not stipulate a specific sampling type appeared to have conducted censuses as well, resulting in eight censuses in total. Two stipulated convenience samples and, in another four, apparently non-stipulated convenience samples were found. One cluster sample was indicated and another sample that was not stipulated appeared to be a target sampling technique. Two theses did not apply a sampling technique, as the researchers made use of an analysis of secondary sources to do their investigations. This author acknowledges that the research topic, design and methodologies of any research will determine the sampling types that a researcher decides upon. This discussion merely points to the current trend as applied by the authors of the theses included in this investigation. The same applies to the data collection and data analysis techniques.

4.5 Trends in data collection and analysis

Considering that most theses applied qualitative and mixed methods research design, which often required more than one or two data collection techniques, questionnaires (both semi-structured and structured) and interviews proved to be the preferred data collection technique, with questionnaires being used 14 times and interviews 13 times. Electronic questionnaires were specifically mentioned three times in addition to the 14 questionnaires mentioned above. Secondary data analysis was differentiated from general literature reviews that was used in all theses and was used 11 times. Focus group discussions were used five times, observations twice, artefact collection twice, pre-test/post-test once and an information audit once.
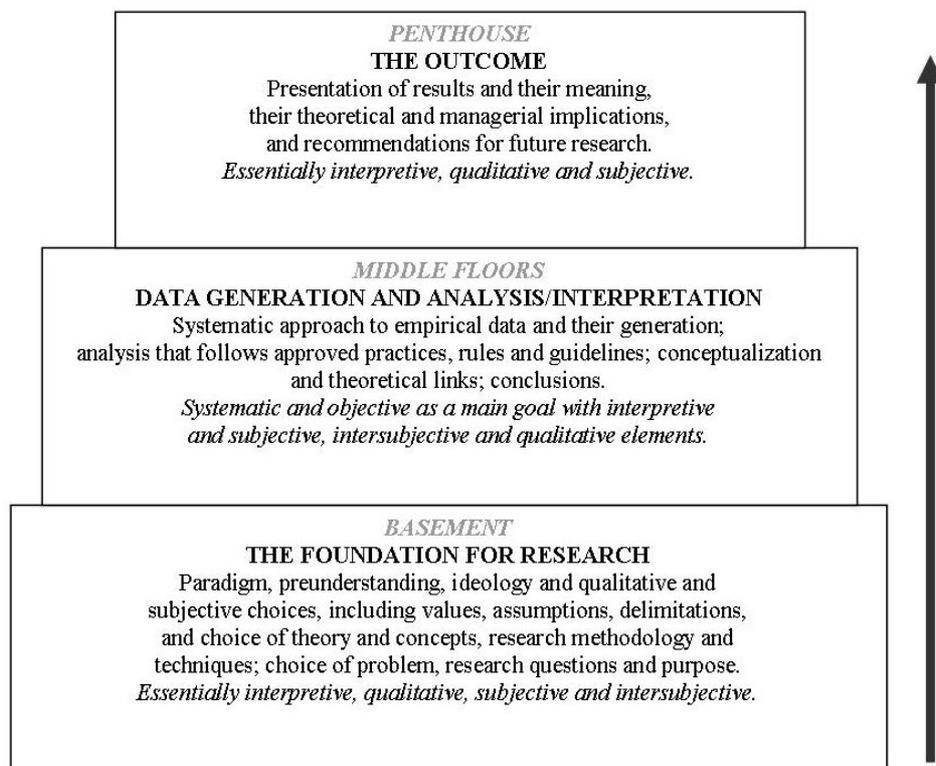
Very few theses specified the data analysis techniques that were applied and this section was therefore classed according to the author's interpretation of the theses results discussion section. A qualitative descriptive analysis was conducted by 12 theses and a combination of a qualitative descriptive and statistical analysis was done by five theses. Three theses claimed to have done a statistical analysis only. In the light of only one thesis reporting a quantitative approach, a potential contradiction exists in the claim of three theses reporting a statistical analysis only. However, a research design is made up of several research methodological elements and, although a research analysis could have been statistical only, therefore strictly a quantitative analysis, the research contained elements of qualitative approaches such as focus groups and semi-structured questionnaires that would result in the theses being classified as mixed methods or hybrids. The following analyses were reported by the remaining ten theses:

- Statistical regression and model design
- Deductive reasoning and model building
- Deductive logic
- Inductive and deductive logical principles
- Heuristic evaluation

- Hermeneutical analysis
- Cross-organizational and longitudinal comparisons of findings
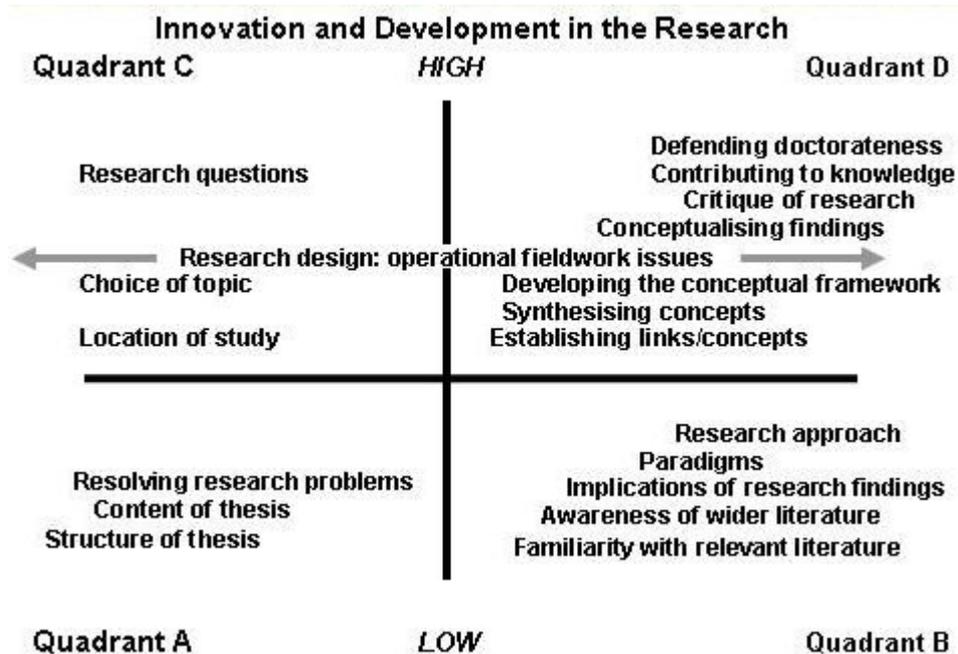- Validation against models and model design
- Information flow analysis.

In the view of Gummeson (2003:486), this article tries to shed light on the current trends that take place in the 'basement' and to a lesser extent the 'middle floors' of the research edifice (Figure 2), as being applied in the research endeavours within the field of information and knowledge management in South Africa. The methodologies, paradigms and techniques form the foundation of how researchers generate results to analyse and interpret reality in an attempt to find answers to the problems of the world.

Figure 2 Research edifice (Gummesson 2003:486)

PENTHOUSE
THE OUTCOME
Presentation of results and their meaning,
their theoretical and managerial implications,
and recommendations for future research.
Essentially interpretive, qualitative and subjective.

MIDDLE FLOORS
DATA GENERATION AND ANALYSIS/INTERPRETATION
Systematic approach to empirical data and their generation;
analysis that follows approved practices, rules and guidelines; conceptualization
and theoretical links; conclusions.
*Systematic and objective as a main goal with interpretive
and subjective, intersubjective and qualitative elements.*

BASEMENT
THE FOUNDATION FOR RESEARCH
Paradigm, preunderstanding, ideology and qualitative and
subjective choices, including values, assumptions, delimitations,
and choice of theory and concepts, research methodology and
techniques; choice of problem, research questions and purpose.
Essentially interpretive, qualitative, subjective and intersubjective.

The focus of this article is on completed theses and therefore obviously theses that were successfully examined. Evident from the title pages of the majority of the theses, the actual document called the thesis was submitted in partial fulfilment of the particular qualifications. A doctoral *viva voce* (viva) and/or scholarly journal publication usually forms another part of the completion of the qualification. Trafford (2003) conducted research on the content of doctoral vivas and developed a graphical representation of the relative location and significance of questions in the doctoral viva (Figure 3). He then analysed 25 doctoral vivas and found that an overwhelming percentage distribution of questions posed to the doctoral candidates fell within the QD and QC quadrants. This points to the much greater emphasis placed on research design and defence of doctorateness rather than the content and familiarity of the literature in the theses.

Figure 3 Relative location and significance of questions in the doctoral *viva voce* (Trafford 2003:116)

Innovation and Development in the Research

Quadrant C	*HIGH*	**Quadrant D**

Research questions

Defending doctorateness
Contributing to knowledge
Critique of research
Conceptualising findings

← Research design: operational fieldwork issues →

Choice of topic

Developing the conceptual framework
Synthesising concepts
Establishing links/concepts

Location of study

Resolving research problems
Content of thesis
Structure of thesis

Research approach
Paradigms
Implications of research findings
Awareness of wider literature
Familiarity with relevant literature

Quadrant A	*LOW*	**Quadrant B**

Grossman (2006:242) is of the opinion that the acceptance of standardized knowledge management approaches has lagged and concludes his overview of knowledge management assessment approaches by saying that it is crucial to have adequate assessment metrics and the right mix of approaches best suited to the particular environment. The discussion in this article has isolated the appropriate mixes of approaches from each other as well as from the particular environment in which they were applied solely to provide an overview of the trends.

5 Conclusion

The trends in the research approach of information and knowledge management in South Africa indicates that most research in these fields took place in the information sciences and related disciplines that are historically a part of LIS. Qualitative and mixed or hybrid methods were the preferred research design and case studies outnumbered all other research design types. Theoretical positions or paradigms were poorly ascribed to and those that did underpin their research with paradigms or theories discussed a variety of theories, often those developed within other disciplines and sciences. Purposive sampling appears to have been the leading sampling techniques applied, followed by censuses. Questionnaires, interviews and secondary data analysis were the preferred data collection techniques. Qualitative descriptive analysis and a combination of qualitative descriptive analysis and statistical analysis were preferred, in line with the large support for qualitative and mixed methods research.

This isolated discussion of the approaches to information and knowledge management research have provided a snapshot of the past ten years of research in these fields in South Africa and gives the reader an overview of the current position and trends.

An international comparison of these results would be beneficial and necessary to position South African research in the international arena. Consensus on the need for the development of theories and paradigms for these fields are overwhelming in the literature and were also reported in the theses under investigation. The domain of information and knowledge management could benefit from agreement on the theories and research methodologies that

underpin research in the field. Owing to the unexplored nature of the meta-science of information and knowledge management as a discipline, specific attention is required to anchor information and knowledge management as a discipline with associated methodologies, frameworks and theories.

The doctoral theses that were investigated serve as proof to the respective tertiary institutions that they have achieved depth in scholarship, achieved research specialization to the point of contributing to the existing body of knowledge and have made a unique contribution to the scholarship of the domain(s). It is with excitement and anticipation that the author awaits the ensuing endeavours of researchers meeting and surpassing the challenges posed in and by the literature in the fields of information and knowledge management.

6 Acknowledgement

7 References

Botha, A., Kourie, D. and Snyman, R. 2008. *Coping with continuous change in the business environment: knowledge management and knowledge management technology.* Oxford: Chandos.

Bourner, T. 1998. More knowledge, new knowledge: the impact on education and training. *Education and Training* 40(1):11-14.

Creswell, J.W. 2003. *Research design: qualitative, quantitative and mixed methods approaches.* (2nd ed). London: SAGE.

De Vos, A.S. 2002. Combined qualitative and quantitative approach. In De Vos, A.S., Strydom, H., Fouche, C.B. and Delport, C.S.L. 2002. *Research at grass roots: for the social sciences and human service professions.* Pretoria: Van Schaik.

De Hoog, R., Van Heijst, G., Van der Spek, R., Edwards, J.S., Mallis, R., Van der Meij, B. and Taylor, R.M. 1999. Investigating a theoretical framework for knowledge management: a gaming approach. In Liebowitz, J. 1999. *Knowledge management handbook.* London: CRC.

Fidel, R. 2008. Are we there yet? Mixed methods research in library and information science. *Library and Information Science Research* 30(2008):265-272.

Gorman, G.E. and Corbitt, B.J. 2002. Core competencies in information management education. *New Library World* 103(1182/1183):436-445.

Grossman, M. 2006. An overview of knowledge management assessment approaches. *The Journal of American Academy of Business* 8(2):242-247.

Gummesson, E. 2003. All research is interpretive! *Journal of Business and Industrial Marketing* 18(6/7):482-492.

Jefferson, T.L. 2006. Taking it personally: personal knowledge management. *The Journal of*

Information and Knowledge Management Systems 36(1):35-37.

Madden, A.D. 2004. Evolution and information. *Journal of Documentation* 60(1):9-23.

Materska, K. 2004. Librarians in the knowledge age. *New Library World* 105 (1198/1199):142-148.

Mouton, J. 2001. *How to succees in your master's and doctoral studies: a South African guide and resource book.* Pretoria: Van Schaik.

Laszlo, K.C. and Laszlo, A. 2002. Evolving knowledge for development: the role of knowledge management in a changing world. *Journal of Knowledge Management* 6(4):400-412.

Lehaney, B., Clarke, S., Coakes, E. and Jack, G. 2004. *Beyond knowledge management*. London: Idea Group Publishing.

Ocholla, D. and Bothma, T. 2007. Trends, challenges and opportunities for LIS education and training in Eastern and Southern Africa. *New Library World* 108(1/2):55-78.

Owen, J.M. 1999. Knowledge management and the information professional. *Information Services and Use* 19(1999):7-16.

Powell, M. 2003. *Information management for development organisations*. (2nd ed). Oxford: Oxfam.

Rubin, A. and Babbie, E.R. 1993. *Research methods for social work*. (2nd ed). Pacific Grove, CA: SAGE.

Schultze, U. and Leidner, D.E. 2002. Studying knowledge management in information systems research: discourses and theoretical assumptions. *MIS quarterly* 26(3):213-242.

Tashakkori, A. and Creswell, J.W. 2007. Editorial: the new era of mixed methods. *Journal of Mixed Methods Research* 1:3-7.

Thorton, S. and McCracken, C. 2005. Putting the human touch into knowledge management. *The Journal of Information and Knowledge Management Systems* 35(3):149-155.

Toffler, A and Toffler, H. 1995. *Creating a new civilisation: the politics of the third wave.* Atlanta: Turner.

Trafford, V. 2003. Questions in doctoral vivas: views from the inside. *Quality Assurance in Education* 11(2):114-122.

Vorakulpipat, C. and Rezgui, Y. 2008. An evolution and interpretive perspective to knowledge management. *Journal of Knowledge Management* 12(3):17-34.

APPENDIX A

Sample of South African theses from 1998 to 2008 in information and knowledge management
Adeogun, MO. 2004. Managing resource sharing in selected Seventh-day Adventist tertiary institutions in Sub-Saharan Africa: problems and pitfalls. Unpublished thesis. University of

South Africa.

Barnard, Z. 2007. Online community portals for enhanced alumni networking. Unpublished thesis. University of Johannesburg.

Britz, J.J. 2006. A critical analysis of information poverty from a social justice perspective. Unpublished thesis. University of Pretoria.

Campbell, H.M. 2004. A study of knowledge management strategies as enabled by the support of synchronous groupware systems. Unpublished thesis. University of South Africa.

Chisenga, J. 2004. Application possibilities of agricultural information portals. Unpublished thesis: University of Johannesburg.

Chiwara, E.R.T. 2008. Business information needs, seeking patterns and information services in the small medium and micro enterprise sector (SMME) in Namibia. Unpublished thesis. University of Pretoria.

Clarke, D.G. 2007. Impact of map literacy on development planning in South Africa. Unpublished thesis. University of Stellenbosch.

De Beer, M.J. 2002. The assessment of intellectual capital (IC) in the South African context. Unpublished thesis. University of Johannesburg.

Du Plessis, M. 2002. The role of knowledge management in eBusiness and customer relationship management. Unpublished thesis. University of Pretoria.

Du Plessis, T. 2004. Information and knowledge management in support of legal research in a digital information environment. Unpublished thesis. University of Johannesburg.

Janse van Vuuren, P. 2002. Environmental scanning – a South African corporate communication perspective with special emphasis on the tertiary sector. Unpublished thesis. University of Pretoria.

Kok, J.A. 2005. Intellectual capital management at Universities. Unpublished thesis. University of Johannesburg.

Korsten, H. 2002. An evaluation of and a model for South African government websites. Unpublished thesis. University of Pretoria.

Letshela, P.Z. 1999. Rendering information services to rural communities through web technology. Unpublished thesis. University of Johannesburg.

Magara, E. 2006. A framework for an integrated student information system for higher education in Uganda. Unpublished thesis. University of South Africa.

Makhura, M. 2005. The contribution of records management towards an organisation's competitive performance. Unpublished thesis. University of Johannesburg.

Mansfield, G.M. 2006. A strategic architecture and its role in enhancing the performance of commercial web-enabled enterprises. Unpublished thesis. University of Stellenbosch.

Mbambo, B. 2002. The internet as an information conduit in developing countries: an

investigation of WWW usability among small and medium textile enterprises in Botswana. Unpublished thesis. University of Pretoria.

Mearns, M.A. 2006. Conservation of indigenous knowledge. Unpublished thesis. University of Johannesburg.

Meyer, J.A. 2003. Information management and technology in public policy making and implementation in South Africa. Unpublished thesis. University of Pretoria.

Myers, G.A. 2002. Evidence-based medicine as a web-based information seeking model for health care practitioners. Unpublished thesis. University of Johannesburg.

Ng'Ambi, D. 2004. Towards a knowledge sharing framework based on student questions: the case for a dynamic FAQ environment. Unpublished thesis. University of Cape Town.

Ondari-Okemwa, E.M. 2007. An investigation into the practices, procedures and challenges of knowledge management in government-owned organisations in Kenya. Unpublished thesis. University of Cape Town.

Smith, A.H. 2004. The interface between knowledge management and human resources: a qualitative study. Unpublished thesis. University of Johannesburg.

Smith, J.G. 2006. A longitudinal study of the information communication process among a defined group of basic and applied scientists in South Africa. Unpublished thesis. University of Cape Town.

Steyn, P.D. 2007. The development of a just-in-time (JIT) knowledge management model for an enterprise. Unpublished thesis. University of Johannesburg.

Tobin, P.K.J. 2006. The use of stories and storytelling as knowledge sharing practice: a case study in the South African mining industry. Unpublished thesis. University of Pretoria.

Van der Walt, P.W. 2006. Developing a scalable information architecture for an enterprise wide consolidated information management platform. Unpublished thesis. University of Johannesburg.

Van Zijl, C.W. 2005. Developing and managing information collections for academics and researchers at a university of technology: a case study.

Unpublished thesis. University of South Africa.

Ungerer, M. 2004. Developing core capabilities in a financial services firm: an intellectual capital perspective. Unpublished thesis. University of Johannesburg.