CHAPTER 1

GENERAL INTRODUCTION

"The creativity necessary for innovation derives not only from obvious and visible expertise, but from invisible reservoirs of experience."

1.1 Introduction

With the advent of knowledge era, many organizations have come to know the value of knowledge. There is a significant change in the way organizations view knowledge and therefore it is important for researches to signify the role of knowledge for the growth of the organization in a big way. With these said, ways are to be developed to utilize the knowledge that exist both as procedural and declarative. Providing frameworks to accumulate, store and reuse knowledge has been the primary task of this research.

Tacit and explicit knowledge are the two major types of knowledge. The explicit knowledge is easier to manage, because it is already in the form of documents and literatures, than the tacit knowledge which resides internally within the expert. Therefore any model or framework that exist or proposed for knowledge management should provide features for the acquisition of both types of knowledge. We cannot ignore one for want of the other.

There exist some methods through which tacit knowledge can be utilized and these methods do not withstand the test of time. Careful examination of the literature about tacit knowledge acquisition reveals the fact that experts are not willing to disclose
or impart their knowledge for various reasons voluntarily. Thus the task of acquiring tacit knowledge or converting the tacit knowledge to explicit knowledge becomes a tougher task. Forcing the experts to explicate their knowledge (tacit) becomes futile, because of the aforesaid reasons. These are discussed in detail in chapter two.

Utilization of knowledge be it tacit or explicit means that the knowledge has to be properly managed. Thus knowledge management becomes an important part of any organization. Knowledge has to be acquired, stored and reused (Figure 1.1). These three major processes involve a lot of technical issues. With the growth of Information technology, the task of managing knowledge has been made less complex and therefore adapting the knowledge management stream into IT fits more appropriately than in the management stream.

Using the IT as its core functionality, many researchers have proposed different frameworks and models and these frameworks and models are discussed in chapter four of this thesis. These KM models and frameworks so far have been sparingly used.
because of its complex nature and cost. A lot of money is used as funding for these researches and yet a proper model or framework has not been formalized.

Much of human experience is below-view, unattended to as we operate in the world, but integral to our performance as social creatures. The tacit aspect of our praxis allows us the experiential agility to be at once efficient and creative, to assimilate the novel and the familiar: in essence, to develop expertise. The possessors of skilful practice, the artisan, the witchdoctor or the physician, have occupied a position of both importance and mystery in most cultures since ancient times. Our interest over the ages in such hidden knowledge has caused us to mythologise expertise, placing it beyond the common by constructing it as unspeakable. Thus, in contemporary times it is not surprising that the dominant research perspective on the embedded components of expertise maintains that they are unspeakable and cannot be understood by looking at what and how people communicate verbally.

Moreover today's knowledge centric organizations have started to concentrate on their own model and thus far had some relevance to their profit share. The intended research has found that lack of management of knowledge had serious effects on the cost of setup of KM packages in the organization and this has led to inefficient management of knowledge.

As information technologies have begun to alter the way in which we think about our interpersonal processes, while allowing us ways to automate our practices, we have been compelled to consider how the experience of the artisan can engage with the constraints of the computational world. Within the field of Information Systems, early
attempts to negotiate this relation involved the construction of expert systems in a domain known as ‘knowledge engineering’. These were systems that were supposed to mimic the performance of a human expert by following rules. However, it was quickly discovered that significant components of that human performance resisted quantification into rules or maxims, as the human subject was not aware of many aspects of what they were doing as an expert. A similar barrier confronted organizations seeking to capitalize on documenting the expertise of their employees to use for competitive advantage. These organizations sought to measure the skill of their employees and often to transform it into a codified form for reuse. In both contexts it was discovered that there was something that remained below-view.

Also the literature survey leads to a finding that there wasn't a common framework existing. Every organization used their own model or framework and this has made the work of the CKO tougher. Thus this research is the possible solution to the problem of non-common framework. The major aim of this research is to bring into place a common framework which can be used by any organization who wants to manage knowledge and this framework will provide emphasis on the importance of converting tacit knowledge to explicit knowledge through the implied knowledge therein.

1.2 Background to the Research

It becomes confusing when knowledge typologies are introduced. These typologies include the differentiation between tacit, implicit, and explicit knowledge [1]; a divide into human, social, and structured knowledge [2]; and partitioning knowledge into declarative, procedural, and strategic knowledge [1]. Two other typologies separate
knowledge into the 'know what', the 'know how', the 'know why', the 'know who', the 'know where', and the 'know when' [3]; [4], and 'embrained', 'embodied', 'encultured', 'embedded' and 'encoded' [5].

From this uncertain foundation various knowledge management models, such as Nonaka and Takeuchi's 'SECI Knowledge Spiral' [6], and Firestone and McElroy's 'Knowledge Life Cycle' [7], have been touted in the marketplace as the solution to an organization's problems. Each of these models has a different approach and begins with a differing set of assumptions. For example Nonaka and Takeuchi's 'SECI Knowledge Spiral' has a justified true belief premise, while Firestone and McElroy's 'Knowledge Life Cycle' uses a Popperian framework.

Further there appears to be no models published in the literature that provide complete real-world examples that first illustrate the 'knowledge process' from end to end, and then explain, rather than describe, how it works. This makes it difficult to evaluate the models, let alone decide their utility in the enterprise world. In addition, where examples are provided most models focus on commercial enterprises rather than on organisations. In truth, most of the models in the literature are actually 'models of knowledge' rather than 'knowledge management models', which explains why they are so difficult to operationalise. Also, a critical examination of the literature reveals that much of it is theoretical and relies on an expert to justify its contention.

How then does one engage in making knowledge practical and evaluate the utility of the various knowledge management models, given the proviso there is no agreed implication of knowledge? Plainly there is a need to return to first principles and
work out what knowledge truly is for an organization, and what it really means to manage knowledge. Recently this has been recognized to some extent with pleas for research that provides an empirical basis for the argument [8]; [9]; [10].

1.3 Research Problem

The central idea underlying this research is that knowledge itself cannot be managed, but if organizations unite their holons\(^1\) [11] with a common purpose and focus on individual and organizational productivity, knowledge is enabled. Therefore the motivation for this research is to provide an empirical basis from which a model of converting the tacit to explicit using the implicit domain can be developed. The expected outcome is to produce a model of knowledge conversion that can be applied with little modification anywhere.

This research has documented how using implied knowledge, the tacit knowledge can be converted to explicit knowledge. For this very purpose, a framework and a model of knowledge acquisition has been put forth. The specific problem addressed here is ‘How will implied knowledge help in converting the tacit to the explicit? This transformation of tacit to explicit is aided by the implied knowledge that is available and so for not been utilized to a possible extent.

Literature from the disciplines of epistemology, management theory, systems engineering, chaos theory, network theory, change management, project management,

\(^1\) Koestler is usually credited with the idea of the holon. A holon is an identifiable part of a system, or a system in its own right, which has a unique identity yet is made up of subordinate parts and in turn is part of a larger whole. A holon exhibits both autonomous and cooperative behaviour, and can combine to form another holon, thus forming a hierarchy called a holarchy.
and of course knowledge management, has been examined. A literature review is presented in the next couple of chapters.

1.4 Justification for the Research

This research has two primary justifications. First, corporations and organizations are spending millions of dollars on knowledge management initiatives\(^2\) (Durant Law) many of which fail. Indeed Storey and Barnett [12] claim that as many as 84% of knowledge management initiatives have failed and Chua & Lam [13] say that knowledge management ‘project failure is a reality that both practitioners and researchers have to reckon with’. Further Davenport and Prusak [14] make the point that:

> 'Confusion about what data, information, and knowledge are – how they differ, what the words mean – has resulted in enormous expenditures on technology initiatives that rarely deliver what the firms spending the money needed or thought they were getting.'

This research will provide an empirical basis to assist organizations to determine what data, information and knowledge actually means for them, and in so doing should allow them to select an appropriate management intervention. In so doing it will fill a significant gap in the literature, and brings with it the promise of more efficient use of tacit knowledge.

\(^2\) Durant Law is directly involved in the design and implementation of the Australian Defence Force’s TARDIS knowledge management system. This system has cost in excess of $1.2 million to date, and a further $2.5 million over two years has recently been authorised.
Secondly, whilst management theory is developing quickly, knowledge acquisition theory is still in its infancy, with little empirical research available on the application of theory to the workplace [15]. Indeed Cecez-Kecmanovic [16] says that:

'... practitioners do not find many applicable or useful concepts, frameworks and models. Finding a reasonably grounded and practically applicable theoretical foundation for developing, exploring, and evaluating knowledge management processes, IT applications, and KMS persists as a challenging task.'

This research will take a small step towards correcting that anomaly by providing an empirical study that assists in the development of a model of knowledge acquisition, rather than a model of knowledge. The model of knowledge acquisition will include implementation, maintenance and sustainment components. Further this research will contribute to the knowledge management discipline by providing a complete end to end example of a knowledge acquisition, as well as providing a basis for any organization to evaluate their existing knowledge management solutions. Finally, the research outcomes will provide a theoretical construct that will allow knowledge practitioners to practice with confidence [17].

1.5 Chapter Organization

Chapter 2 presents the literature review that promptly explores the parent theories of knowledge. This chapter captures the importance of knowledge, types of knowledge and the various sources through which knowledge can be obtained. To elicit knowledge we are supposed to define and explore the various sources of knowledge. For this initially we try to explore the philosophical and epistemological foundations. Slowly we
move towards the exploration of the knowledge typologies. The foundations and
typologies help us better understand knowledge, because understanding knowledge
better is the first phase and most important phase of this research.

Chapter 3 presents an overview of the conceptual framework that formed the
foundation for this research. It provides the various definitions of knowledge
management that are prevailing in the present scenario. This is vital in terms of
understanding better what knowledge management is and also throws light on the
various processes involved in the management of knowledge. Managing knowledge is
not an easy task for it takes many experts' contribution towards the system and therefore
it involves the expertise.

This chapter also presents the various models and frameworks of both knowledge
management and knowledge acquisition. Even though acquisition is a part of knowledge
management, we try to concentrate more on both. Therefore a thorough study of
knowledge management in general and knowledge acquisition in particular provides an
insight into the management aspect. Inner processes are required to identify, extract and
codify tacit or explicit knowledge within the knowledge acquisition. This chapter
clearly provides a perceptive understanding of both knowledge management and
knowledge acquisition.

The organization of the work is discussed in chapter 4. It clearly defines the
research approach, which basically is the methodology that is applied in the research, the
justification for the paradigm and methodology and the research procedures. Also
defined are the tools and techniques which are adopted for this work.
Chapter 5 presents the newly developed framework for eliciting knowledge. Elicitation of knowledge from various sources, extraction, purification and storage are the important phases of this framework. The framework also includes a retrieval mechanism which is based on the SOA. Chapter 5 gets into the details of the proposed framework with its various parts that are involved in the process of elicitation of knowledge.

Also, based on the framework a theoretical model was built and was implemented in the same chapter. This model adopted the methodologies defined in the framework and provided a better approach to acquiring explicit knowledge from the tacit knowledge. The model utilized the implied knowledge that was existing in the transformation and gave a gamut of approaches towards the conversion.

Chapter 6 describes the implications of the framework. The implications are split into two major categories namely, the implications of theory and the implications of practice. The theoretical implications provide us with the analysis and retrospection and the implications of practice provide the implementation factors of the framework.

Chapter 7 concludes the thesis by summarizing the contributions and findings of the work conducted, presents the recommendation based on the work. It also specifies the limitations of the present work and points out the directions for future works.
1.6 Conclusion

In this chapter, an overview of the study is presented. It has explained in brief the characteristics and benefits of knowledge management, various processes and sub-systems involved in managing knowledge and the differences existing in the knowledge management models. The meaning of knowledge management was also discussed. The chapter also discussed the background for the research, research problem and a justification to carrying out this research. The objectives of the present study are clearly stated. Finally, the organization of the chapter in the thesis is presented.