CHANGE READINESS INFLUENCES ON KNOWLEDGE MANAGEMENT PROCESSES: A CASE OF THREE PROFESSIONAL SERVICE FIRMS

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ABSTRACT

Introduction: The current dynamic market is characterised by stiff competition and ever-changing clients' demand for better and innovative products and services. In this challenging environment, the need for developing and managing knowledge transcends the importance of accumulating physical capital. With an increasing awareness of the potential of knowledge as a competitive source for firms' survival, there is an increased knowledge management initiatives and investments by firms. Nevertheless, literature highlights increasing failures of knowledge management initiatives, with reasons for the failure yet to be established conclusively.

On the basis of the premise that implementation of the knowledge management process could induce changes in firms' practices and culture, and employees' beliefs and cognitive structure, the current thesis addresses the issue from the change management perspective. The main idea that drives the research evolves from the understanding that failure in knowledge management initiatives could be rooted in the lack of readiness to change.

Objective: The primary objective of this thesis is to understand how the change readiness construct shapes the various processes for managing knowledge in professional service firms. Change readiness in this thesis was conceptualised as a multidimensional and multilevel construct. This thesis contributes to the body of knowledge by explicating the way these change readiness elements shape knowledge management processes. The study setting within the professional service industry offers unique insights, which is less explored in the extant KM literature.

Method: The study was conducted within the professional service firms' context, on the basis that knowledge represents the main source for survival and competitiveness in this knowledge-intensive industry. This research is grounded in the interpretive paradigm and is studied from the constructivist epistemological lens. This qualitative research employed multiple case study design in three New Zealand professional service firms. Two firms are accounting establishments and one represents an engineering maintenance firm. Sixteen semi-structured interviews, conducted over the period of two months, involved the managerial and

operational professionals in these participating firms. Data were analysed following the grounded theory analysis and findings presented using cross-cases analysis.

Results: This thesis contributes to the body of knowledge in the field of knowledge management (KM) by revealing the distinctive influences of multidimensional elements of the change readiness construct on the knowledge acquisition, knowledge application and knowledge sharing processes in the firms studied.

The thesis proposes three dimensions of the change readiness construct, which are categorised as KM change understanding, KM change context and individual differences. The dimension of KM change understanding consists of change goal, change benefit, need for knowledge, perceived management support and collective commitment. The KM change context is comprised of learning, participation, communication and management support. Individual expertise and adaptability represent the individual differences dimension of the change readiness construct.

Specifically, findings show that:

1) Readiness for the knowledge acquisition process is largely shaped by the individual's change readiness elements, including the understanding of the need for knowledge and perceived management support, and the individual's capability of expertise and adaptability. Learning and communication provides the essential contexts that shape the firm's readiness for the knowledge acquisition process.

2) Readiness for the knowledge application process is largely shaped by the individual's change readiness elements, including the understanding of change goal, change benefit and perceived management support, and the individual's capability of expertise and adaptability. Collective commitment shapes professionals' understanding of knowledge application at the firm level. Learning and management support provides the essential contexts that shape the firm's readiness for the knowledge application process.

3) Readiness for the knowledge sharing process is largely shaped by the firm's change readiness elements, consisting of professionals'

understanding of collective commitment, and the essential contexts of communication, participation and learning. Understanding of the need for knowledge and change benefit, as well as the professional's expertise, shapes the individual's readiness for the knowledge sharing process.

4) The way these change readiness elements shapes the distinctive KM processes in the professional service firms studied vary due to the effects of firm archetypes, inter-profession differences, change nature, knowledge nature and the demographic characteristic. These factors moderates the interrelationships described in in 1), 2), and 3).

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1.0 INTRODUCTION AND OVERVIEW OF THE THESIS

This chapter introduces the thesis, which is presented in a hybrid format of three conventional chapters (introduction, methodology and conclusion) and a series of published and publishable journal manuscripts (a literature chapter and three distinctive findings and discussions chapters). This chapter first discusses the background and rationales for the thesis. The chapter then provides introduction to key constructs of the study and finally presents an overview of the research design and outline of the thesis.

1.1 Background and Rationale of Thesis

Organisations operating in the current ever changing environment need to survive the effects of a challenging economic recession, globalisation, technological advancement and customer orientation, which in turn result in environmental and marketplace complexity (Clarke & Clegg, 2000; Rafferty, Jimmieson & Armenakis, 2013; Walczak, 2005; Wang & Ahmed, 2003). Economic recession increases the possibility of losing businesses and expertise, while the effect of globalisation intensifies competitive pressure in the marketplace. Additionally, technological advancement and customer orientation are forcing the on-going development of human resource capabilities in order to meet the market expectations. In order to deal with the above-mentioned challenges, there is a need for firms to rapidly change themselves and shift the focus of their core competency towards a knowledge-based core competency (Bhasin, 2006).

The current knowledge-based business landscape demands firms to strengthen its intellectual and knowledge base since knowledge represents the critical source for survival and competitiveness (Fong & Choi, 2009; Janes, Patrick & Dotsika, 2014; Sigala & Chalkiti, 2007). Aligned with this idea, strategies to increase firms' long term competitiveness should focus on the direction for enhancing human expertise and intellectual capital development. The development of this intangible asset can be achieved through effective processes for managing knowledge in the organisations (Holsapple & Joshi, 2000; Lee & Choi, 2003; Wong & Aspinwall, 2004; Xu, Houssin, Caillaud & Gardoni, 2010).

An increasing number of knowledge management (KM) initiatives and investments among firms are apparent; reflecting the growing recognition of KM as a crucial corporate agenda for firms' survival and competitiveness (Jasimuddin, 2012; McKenzie, Truc & vanWinkelen, 2001). Similar to other planned activities in the organisation, a KM process implementation requires the design of strategies to achieve its intended purpose (Holsapple, 2000; Yeh, Lai & Ho, 2006). Nevertheless, despite many promising benefits of KM, a high failure rate of KM initiatives is reported (Chua, 2009; Lucier & Torsilieri, 1997; Mehta, 2008; Storey & Barnett, 2000). The discouraging outcomes of such initiatives requires more studies to be carried out in order to understand its' underlying reasons.

This thesis embraces the view that embarking on the knowledge processes induces changes in the existing organisation's procedures and workflows. Changes in thinking and the extant norms, procedures and practices are inevitable in KM processes implementation (Chen, 2008; Davenport & Prusak, 1998; Holt, Bartczak, Clark & Trent, 2007; Wiig, 1993). For example, these changes could result from double loop learning that occurs during new knowledge implementations (Sun & Scott, 2003). Additionally, acquiring new knowledge infuses changes and expands individuals' knowledge bases (Hoe & McShane, 2010). The effectiveness of this process is affected by changes in individuals' and firms' absorptive capacity (Matusik & Heeley, 2005; Thuc Anh, Baughn, Minh Hang & Neupert, 2006). For these reasons, preparing for KM implementation in the organisation reflects the need to move out of the comfort zone and be adaptable to the altered knowledge culture (Laycock, 2005; Walzack, 2005). In conjunction with that, literature indicates that employees' willingness to commit and contribute represents an essential aspect for the KM success (Lin, 2011; Wasko & Faraj, 2005). Unpreparedness among employees towards KM processes implementation could instigate resistance towards the KM initiatives, which is often observed as a challenge in KM implementation (Jasimuddin, 2012).

In relation to that, this thesis argues that one crucial aspect that is largely ignored, yet negatively affects the KM initiatives, is the inadequate assessment of employees' change readiness to embark on changes underlying the KM processes implementation. Nevertheless, a recent study indicates that change management, as one of the KM capabilities, has received the least attention from KM implementers (O'Dell & Hubert, 2011). Underestimating the importance of

change management leads to disappointments and struggles in KM processes implementation (Laycock, 2005). Thus, literature suggests that an effective approach of change management is seen essential to minimise problems in KM processes implementation (Bhatt, 2001; Damodaran & Olphert, 2000; Holsapple & Joshi, 2000; Sunassee & Sewry, 2002).

The idea of KM assessment from a change lens represents a contemporary area of study in KM field. Literature shows that the integration of change readiness in KM studies has only started gaining attention in recent years. Among seminal works proposing the conceptual integration of change readiness assessment in KM research include e.g. Baskerville and Dulipovici (2006), Holt et al. (2007), Holt, Armenakis, Field and Harris (2007) and Holt, Helfrich, Hall and Weiner (2009). Besides the increasing interest in the area, (e.g. Lam & Lambermont-Ford, 2010; Small & Sage, 2006; Wang & Noe, 2010), review of literature reveals that the empirical studies that integrate the assessment of KM and change management are relatively scarce.

Further, there are several limitations underlying the prevailing studies in the area. Most studies focus on the quantitative measurement of change readiness (e.g., Mohammadi, Khanlari & Sohrabi, 2009; Mohanavel & Ravindran, 2012; Shirazi, Mortazavi & Azad, 2011). These studies also largely adopt the KM critical success factors to represent KM readiness with minimal consideration of other readiness elements and dimensions as proposed in the organisational change literature. KM readiness is represented mainly by organisational elements (Chen, 2008; Siemieniuch & Sinclair, 2004), although the organisational change literature emphasises the complexity of change readiness as a multidimensional and multilevel construct. KM processes implementation involves human-related elements (Chen & Mohamed, 2007), yet assessment of employees' readiness for KM processes is largely ignored.

Additionally, empirical studies that interrogate change readiness impacts on specific KM process are lacking (Holt et al., 2007). While those existing studies offer preliminary understandings of KM readiness, some other important readiness elements and their influences on distinctive KM processes are yet to be explored. Consequently, there is limited understanding on the ways change readiness exerts influences on and contributes to the KM processes

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implementation. For these reasons, the current thesis is designed to address the above problem and limitations in the current KM literature.

The main problem statement of this thesis is:

> *What are the dimensional elements of change readiness and how change readiness shapes KM processes implementation?*

In conjunction with that, this thesis focuses on addressing the problem of change readiness assessment in KM processes implementation to better understand the ways this construct shapes KM processes. In doing so, the main aim of this thesis is:

> *To discover the complexity of change readiness as a construct and to assess its influences in shaping various KM processes.*

In order to provide a better picture of the story, the assessment of change readiness influences on KM processes was carried out within the context of professional service firms (PSFs). The selection of this context is primarily because of the crucial role of knowledge in PSFs' operations. Thus, effective ways for managing knowledge could be considered as a backbone in these types of firms' operations (Andreeva & Kianto, 2011; Chen, Hwang & Raghu, 2010; Kang & Kim, 2010). For this reason, processes for managing knowledge is crucial for PSFs and failures in their KM process may inhibit the PSFs' competitiveness and survival in the current knowledge-intensive market (Fong & Choi, 2009). Although knowledge and processes for managing it is critical in PSFs' operations, literature indicates that promoting effective KM is still challenging for PSFs (Witherspoon, Bergner, Cockrell & Stone, 2013).

Findings from this thesis could address limitations in the extant KM literature with regards to change readiness influences in shaping KM processes. Findings could also provide insights on mitigating problems of KM failures that is rooted in the lack of change readiness for KM implementation. This thesis proposes a broad and holistic conceptualisation of change readiness and offers theoretical understandings of change readiness influences in shaping the various KM processes.

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1.2 Introduction to key constructs

Knowledge Management

Knowledge management (KM), although yet to be recognised as a mature discipline, is progressing significantly, however, with influences from various disciplines including organisational culture, organisational behaviour, strategic management, information economics and information systems. This variation with a mixture of different ontological and epistemological understanding of knowledge and the processes related to it have revealed the importance of KM transcending any single discipline (Baskerville & Dulipovici, 2006; Jasimuddin, 2012; Nonaka & Peltokorpi, 2006).

There are two major perspectives influencing KM scholars' views on the importance of knowledge for a firm: the resource-based view (RBV) and the knowledge-based view (KBV). This study positions itself in the KBV perspective. Knowledge, from KBV's perspective, can be replicated and transferred to receivers, with no causes of loss on the contributor's side (Grant, 1996).

Knowledge Management Process

Many scholars have concentrated on the technical development of knowledge taxonomies such as knowledge definition and classification; the current study positions itself with other scholarly efforts that empirically assess KM from a process perspective (Gold, Malhotra & Segars, 2001; Lee & Choi, 2003; Mehta, 2008). There are two critical objectives for managing knowledge from a process perspective, according to O'Dell and Hubert (2011). Primarily, KM reflects the management of knowledge through a structured process to ensure effective knowledge delivery. Further to that, through streamlining of the processes, people could access, gain, share and act on the information to produce knowledge and make an informed decision, which consequently enhances firms' performance. For this reason, firms' participation in the processes for managing knowledge is crucial; it enhances the creation and sustainability of firms' competitive advantage in the post-industrial era (Andreeva, 2009; Heisig, 2009; Supyuenyong, Islam, & Kulkarni, 2009).

KM, from a process perspective, emphasises the understanding of knowledge flows through different ways and across different levels in the organisation (Mehta, 2008; Nonaka, 1995). The process entails various activities, components and sub-phases that should be performed in a way that is aligned with organisation goals (Heisig, 2009). Moreover, scholars have also asserted that the KM process represents a dynamic set of activities that improve knowledge flow, enabling changes in an organisation (Gold et al., 2001; Mehta, 2008).

Despite the plethora of studies on KM, very few of the empirical studies adopt a process-oriented perspective of organisational knowledge (Lee & Choi, 2003). KM scholars also asserted those firms isolating knowledge processes from their business processes face the risk of losing their long term benefits (Choi & Lee, 2002; Lee & Choi, 2003). Nevertheless, assessment on the processes for managing knowledge play a crucial role in understanding various ways knowledge is acquired, created, organised, disseminated and applied in the firms.

Knowledge Intensive Firms and the Professional Service Context

Professional service firms (PSFs) are generally characterized by their professional identity and knowledge-driven nature; knowledge is crucial to their success in the competitive and dynamic business environment (Fong & Choi, 2009). Some scholars regard PSFs as knowledge-intensive firms (KIFs) because of the composition of experts in the firms' operations (Jensen, Poulfelt, & Kraus, 2010). From another perspective, PSFs are classified as a subset of knowledge intensive firms (Alvesson, 2000; Lowendahl, 1997). Although professionalization is regarded as part of KIFs' characteristics, acknowledging all KIFs as professional service firms could be misleading.

Despite commonality in terms of hiring specialised expertise in both KIFs and PSFs, not all experts belongs to recognised professions (Starbuck, 1992). With interest in classifying PSFs based on the characteristics of the staff members, in order to be regarded as a profession, the staff members' job nature should demonstrate at least five qualities: expertise, an ethical code, cohesion, collegial enforcement of standards, and autonomy (Starbuck, 1992). In a similar way, Alvesson (2000) differentiated PSFs from KIFs by proposing that KIFs represent

a wider concept, whereby its characteristics attributed to a particular profession such as codes of ethical conduct, a strong professional association and domination of certain markets through market entry regulation, could be disregarded.

Further, the extant literature highlights other characteristics for firms to be recognised as a professional service provider. For instance, Lowendahl (1997) provides a prominent classification of PSFs by focusing on services delivered by KIFs, rather than the sole assessment of individuals' characteristics. In particular, the delivery of services by KIFs is accomplished by the professionals within the boundary of professional rules of conduct. Following this classification, PSFs are considered as a group of genuine KIFs; in which knowledge of the experts represent the foremost important source for provision of value added services. The key characteristics for PSFs from this perspective include:

> It is highly knowledge intensive, delivered by people with higher education, and frequently closely linked to scientific knowledge development within the relevant area of expertise; involve a high degree of customisation; involve a high degree of discretionary effort and personal judgement by the expert(s) delivering the service; typically require substantial interaction with the client firm representatives involved and delivered within the constraints of professional norms of conduct, including setting client needs higher than the profits and respecting the limits of professional expertise (Lowendahl, 1997, p.20).

Moreover, in an endeavor towards theoretical development of PSFs, von Nordenflycht, (2010) elaborates taxonomy for PSFs from 3 dimensions: degrees of knowledge intensity, capital intensity and professional workforce. In terms of knowledge intensity, output from PSFs' operations relies on embodiment of complex knowledge among the experts and unique skills of the individuals. Heavy reliance on individuals as source of knowledge also implies greater autonomy for employees, but at the same time increases employee mobility. This is a challenge for firms to retain the staff members, except in the situation where the key experts represent partners of the firm. Likewise, since staff members' knowledge represents the main focus of firms' operations, the need for human capital exceeds the necessity of non-human capital such as machinery and equipment. In the

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context of PSFs, jobs are accomplished by the professionals themselves with greater emphasis on expertise and intellectuality. The less investment needed in terms of physical capital explains the insignificance of external capital or investment for KIFs operations. Additionally, professional workforce implies that the experts accomplish their jobs according to a set of norms and rules of conduct enforced by professional bodies governing PSFs operations. Since PSFs commonly provide services to other businesses rather than end users, protection of conflict of interests and adherence to standardised rules are crucial.

On the basis of the definition provided by Lowendahl (1997), accounting/auditing, engineering consultants and law firms represent PSFs. Despite ambiguity in defining PSFs, accounting and engineering firms are consistently classified as provider of professional services (Bryson & Daniels, 2007; Fong & Choi, 2009; Greenwood, Deephouse & Li, 2007; Jensen et al., 2010; Malhotra & Morris, 2009; von Nordenflycht, 2010). Although there are various approaches and views in defining PSFs, the similarity of these classification lies on the criticality of knowledge as the primary engine that drives the operation of PSFs. The fact that the quality of services provided by this knowledge intensive sector is highly reliant on employees' intellectual capability and their vast experience implies the importance of processes for managing knowledge in PSFs (Gibbins & Wright, 1999; Magnier-Watanabe & Senoo, 2008; Makani & Marche, 2010). In conjunction with that, processes for managing knowledge among PSFs including engineering, consultancy and accountancy are undoubtedly important.

Nevertheless, despite the importance of knowledge and KM in PSFs' operations, motivating professionals to contribute in KM processes is still a challenge for most firms (Wang & Noe, 2010; Witherspoon et. al, 2013). For these reasons, assessment of elements that could foster positive movements towards KM processes in PSFs is crucial. This thesis proposes that KM processes implementation infuses changes in the prevailing practices and procedures of PSFs. Hence, the enhancing of professionals' contributions in KM processes is better studied from a change management lens.

Change Readiness

Preparing people for change has long been recognised as crucial in the organisational change literature (Abdinnour-Helm, Lengnick-Hall, & Lengnick-Hall, 2003; Bouckenooghe, 2010). For instance, scholars emphasised that employees' attitude and readiness towards change is a critical element in determining the success or failure of an organisation's change initiative (Bernerth, 2004; Rafferty et al, 2013). However, further theoretically grounded enquiries, based on empirical evidence, are needed in the area (Weiner, 2009).

In positioning readiness within the organisational change cycle, Armenakis and Harris (2002) and Holt, Armenakis, Feild, and Harris (2007) proposed a three-stage process of organisational change: readiness, adoption, and institutionalisation of change. This positioning implies readiness should exist at the initial stage of change, in order to prepare the affected staff members coping and embracing the change. However, recent development in the area suggests that due to the dynamic environment underlying the current business landscape, instilling readiness only at the initial state of change is inadequate. Fostering readiness for change in organisations requires an on-going effort, which is aligned with the need to adapt with constant changes in the firm's practices (Bernerth, 2004; Stevens, 2013).

Holt, Armenakis, Harris, and Feild (2007) and Bernerth (2004) mentioned that *readiness* was first proposed by Jacobson in 1957. His opinion was formed as a result of reflection from Coch and French (1948)'s case on organisational intervention in mitigating the effect of change resistance. Nevertheless, interest in progressing this construct in the organisational change literature only appeared in early 1990s.

Armenakis and Bedeian (1999), Armenakis and Harris (2002) and Armenakis, Harris and Mossholder (1993) offer seminal works that initiated the development of a well-accepted definition for change readiness. Armenakis defines readiness for change as an individual's "beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organisation's capacity to successfully undertake those changes" (1993, p. 681). The definition implies the importance of

creating beliefs about the proposed change that affects the individual's reaction to change. This definition anchored the development of the construct, primarily due to claim that this conceptualisation of readiness considers both individual and organisational elements (Bernerth, 2004; Rafferty et al., 2013).

While the previous definition of change readiness stems from beliefs, with less attention to the acceptance or resistance to changes, the subsequent study by Holt, Armenakis, Feild and Harris indicates the existence of positive attitudes in the change readiness definition (Bernerth, 2004). In a similar direction, Rafferty et al. (2013) asserted that change readiness appeared to be consistently applied in the organisational change literature to represent indicator of positive attitudes for change. Change readiness is defined as "the extent to which an individual or individuals are cognitively and emotionally inclined to accept, embrace, and adopt a particular plan to purposefully alter the status quo" (Holt et al., 2007, p. 235). Additionally, extended classification of change readiness dimension was proposed with the inclusion of change readiness creation through the change recipients' evaluation/understanding of *what* kind of and *how* change is undertaken. The outcome of evaluation could differ depending on the change recipients' attributes.

Further, Weiner, Amick, and Lee (2008) explicate transformation of beliefs into practice/action in defining readiness for change. They state that "the extent to which organizational members are psychologically and behaviourally prepared to implement organizational change" (Weiner et al., 2008, p. 381), is imporant for change readiness. From this definition, apart from triggering internal precursor that cognitively instils a positive mind-set, creation of readiness also brings about positive momentum in embracing the proposed change effort (Bernerth, 2004). Consequently, it is expected that with the positive mind-set, individuals are more prepared and motivated to embark on the changes; hence minimising likelihood of resistance.

Further, as claimed by Amis and Aï¨ssaoui (2013) and Bernerth (2004), the readiness of an individual could be influenced by their peers' beliefs on the change outcome. Hence, at a higher level, individuals' beliefs are compounded to create collective beliefs; creation of readiness should transcend an individual's

consideration, and account for alteration/coordination of collective change recipients' mind-set (Armenakis et al., 1993; Weiner et al., 2008).

In this regard, Weiner (2009), Holt et al. (2009) and Rafferty et al. (2013) extended the importance to incorporate organisational level analysis in the readiness assessment. The assessment of the collective cognition is known as supra-individual readiness from Weiner's point of view. Still representing a psychological state of change recipients, Weiner (2009) emphasised that collective actions shape employees' confidence and effort in undertaking the change.

At this point of development, conceptualisation of readiness still focuses on the cognitive aspect, although been lifted to incorporate shared beliefs that reflect the organisational level of readiness. Additionally, the firm's condition or context poses indirect effects on its change readiness. Further works, however, indicate that scholars began to acknowledge the firm's and individuals' conditions to embark on change as an emerging dimension of change readiness (Holt et al., 2009; Holt & Vardaman, 2013). This dimension is regarded as a structural dimension of change readiness, representing "circumstances under which change is occurring and the extent to which these circumstances enhance or inhibit the implementation of a change" (Holt et al., 2009, p.S51). This notion indicates that beliefs alone could be inadequate to make people ready for changes if firms' structure is not supportive of change, and if staff members are ill-equipped with necessary capabilities to implement changes that affect the prevailing workflows, processes and procedures. Structural factors at the individual level include individual's skills and knowledge relevant to the changes, while at the organisational level, structural factors include its support climate, facilitation mechanisms and discrepancies in the existing system. In summary, Holt et al. (2009) addressed three broad areas for a comprehensive assessment of readiness for change: psychological factors, structural factors, and level of analysis.

This conceptualisation regards readiness for change as a multidimensional construct that requires assessment at multilevel analysis. On the basis of this development, a more practical definition of readiness is offered. Hence, change readiness is then defined by Holt & Vardaman (2013) as "the degree to which

those involved are individually and collectively primed, motivated, and technically capable of executing the change" (p.9). This definition implies that creating readiness means motivating staff members by providing rationales to their action and simultaneously preparing them to act in favour of the change by recognising the firms' and individuals' capabilities. In a more recent development, scholars however, argued that the absence of change nature and institutional context consideration in the assessment of change readiness limits the understanding of the construct (Holt & Vardaman , 2013).

Looking at the development of conceptual definition for change readiness, the term readiness evolved from crafting an individual's cognitive perception or beliefs on the suitability for carrying out change, to the creation of a positive mind-set towards change, and finally to the expression/translation of "prone-to-change" mind-set into a set of behaviour/attitude to embark on and uphold the proposed changes. Further to that, besides the psychological aspect that increases confidence and encourages commitment to change, conditions/circumstances of the firm and capabilities of staff members affected by changes are also crucial in shaping readiness for the proposed change. Hence structural dimension is incorporated. Moreover, implementation of successful change at the organisational level also requires cooperation from the affected change recipients, if not all organisational members. Therefore, instilling change readiness in the organisation means creating collective understandings and beliefs that could be translated into mutual actions among the affected members. In short, the definition of change readiness, on the basis of previous studies, highlight that readiness is not only about beliefs, yet it also represents the translation of beliefs into positive action for proposed/anticipated changes, within prevailing conditions and capabilities.

On the basis of the above discussion, change readiness in this thesis refers to the beliefs and intentions that cognitively shape the positive mind, which is translated into the inclination of behaviour and attitude towards changes in the implementation of KM processes, along with the consideration of firms' circumstances and staff members' capabilities. In line with the assumptions that readiness is a multifaceted and multilevel construct, assessment of change readiness requires analysis at micro (individual) and macro (firm) levels. This

conceptualisation is holistic as it captures readiness from a wider perspective (Holt et al., 2009).

Moreover, implementing KM processes in organisations will affect not only individual employees, but it also affect the existing workflow and procedures, implying the impact on teams or firms as a whole. Thus, successful implementation demands for collaboration among the staff members (Holt et al., 2009; Holt & Vardaman, 2013; Rafferty et al., 2013). Therefore, there is a basis to suggest that an in depth understanding of change readiness effects on KM processes involves multilevel assessments, comprising of individual and organisational levels of analysis.

1.3 Brief Overview of Methods

The research was developed using an interpretive research paradigm. Initially, review of literature was conducted to gain a preliminary understanding of the research problems. During this stage, change readiness was conceptualised as a multidimensional construct. This conceptualisation was performed deductively from KM critical success factors and organisational change literature. Conceptualisation of the construct was integrated with KM processes and outcomes, which produces the initial conceptual model for the study.

Nevertheless, change readiness studies in the KM field are evolving and not much study has been done to understand the phenomenon. Therefore, a qualitative study from the interpretive perspective was decided as appropriate to explore and understand how the multidimensional elements of change readiness affect distinctive processes for managing knowledge in firms. In conjunction with that, a multiple case study, which involves three New Zealand professional service firms, was selected as the research design for the study.

Data gathered from this qualitative study was analysed using grounded theory analysis. Adoption of this analysis led to the identification of concepts, categories and core categories from the emerging data, which underlies the phenomenon of change readiness in KM processes implementation. Findings from this qualitative research offer in-depth understanding of the phenomenon within the context of professional service industry. Finally, the relationships/linkages among

multidimensional change readiness elements and the distinctive KM processes implemented in these firms were proposed as theoretical models for the study.

1.4 Outline of Thesis

The thesis is divided into several chapters, which intended to answer the research questions and objectives of the study. This thesis represents a hybrid structure: a combination of conventional thesis chapters and a series of publications. There are eight chapters: Introduction, Literature Review, Research Questions, Research Methodology and Design, Findings and Discussions 1, 2 and 3, and the Conclusion.

This first chapter contains the introduction to the research including the background and justification for the study, and the introduction to key constructs discussed in this thesis. It also introduces the research methodology and design for the study.

Chapter 2 presents a manuscript that has been published in the *Journal of Knowledge Management*, *Volume 16, No.2, pp. 329-355*. The chapter contains a comprehensive review of three streams of literature: knowledge management, professional service firms and organisational change literature, which formed the basis for the development of the initial conceptual framework of the study. The chapter also provides the context and gaps for the research that corresponds with the research problem that is presented in Chapter 1, which leads to the formulation of research questions as presented in Chapter 3.

Chapter 3 presents research questions of the thesis. This chapter includes changes and modifications made in the proposed research questions, which portrayed the evolving nature of a qualitative study.

Chapter 4 presents the research design for the current study. Prior to the discussion of the study design, the chapter outlines knowledge perspective that is adopted in accomplishing the thesis. Then, the chapter presents discussion of the philosophical stance of this study that is narrowed down to the chosen paradigm, methodology and design for the current research. Finally, this chapter discloses ethical consideration and the issue of the qualitative research quality at the end of the discussion.

Chapter 5, 6 and 7 comprise the analysis and discussion of findings of the current study. Three theoretical frameworks of change readiness influences on distinctive KM processes were developed and included in these chapters. Due to the qualitative nature of the study, there are some modifications with regards to change readiness dimensions and elements, in comparison to the initial frameworks. In these three chapters, findings and discussion for the thesis are presented in the form of three published/publishable manuscripts. For these reasons, all manuscripts were prepared in accordance to the format and structure outlined by the respective journal. Due to the fact that these results chapters are structured as journal manuscripts, there are some redundancies and similarities with regard to introductions, literatures, methods, and references sections.

Chapter 5 presents findings and discussions of change readiness influences on the knowledge acquisition process. This manuscript has been submitted to the *Knowledge Management Research and Practice* and is currently being revised for resubmission (first round of revise and resubmit).

Chapter 6 presents findings of change readiness influences on the knowledge application process. This manuscript will be submitted to the *Journal of Management Information Systems* for publication consideration.

Chapter 7 presents findings and discussions of change readiness influences on the knowledge sharing process. This manuscript has been accepted for publication in the *Journal of Knowledge Management*.

Chapter 8 concludes and declares limitations of the thesis. Also, this chapter highlights the thesis implications to research and practice, and offers fruitful areas for future research.

1.5 References

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2.0 LITERATURE REVIEW

The purpose of conducting the literature review is to identify the current development of knowledge management (KM) research particularly from a change management lens. Specifically, the focus is given on processes for managing knowledge in knowledge-based professional service firms.

This thesis was designed on the basis of three broad literature streams. The first stream relates to the understanding of change management, specifically change readiness. Since the implementation of KM involves organisational change approaches, understanding the importance of change readiness in shaping those processes for managing knowledge in organisations seems vital. The second stream of literature focuses on understanding KM and its' influencing factors. Discussion was made with reference to vast amount of KM frameworks and concepts for developing KM processes. Another significant literature area for the study concerns with the professional service sector, which represents the subset of knowledge intensive organisations.

Critical analysis of these three literature streams highlights the gaps for studying and understanding change readiness influences on processes for managing knowledge within the professional service context. Discussion and integration of these literature streams contributed to the development of initial frameworks for the thesis. They are presented in the following manuscript, which was published in the *Journal of Knowledge Management*.

2.1 Manuscript Status

Title: *Positioning Change Readiness in Knowledge Management Research*

Publication Status:

Rusly, F. H., Corner, J. L., & Sun, P. (2012). Positioning change readiness in knowledge management research. *Journal of Knowledge Management*, *16*(2), 329-355.

Declaration: I developed the proposed theoretical model for the study. I wrote the first draft of the paper while my co-authors assisted in reviewing and editing the

flow of writings. The co-authors also contributed in the improvement of the theoretical model by providing insights and expertise in the area of study. Overall, the theoretical contributions are largely derived from analysis and synthesis of literature performed (see Appendix 5 for the Co-Authorship consent).

Additionally, the literature review was updated and enhanced as the study progressed. These changes in the literature reflect findings that emerged during data collection and analysis; a fluid nature of a qualitative study. Integration of new literature is particularly important in Chapter 5, 6 and 7, which offers theoretical bases and arguments to support findings of this thesis.

2.2 Abstract

Article Title - Positioning Change Readiness in Knowledge Management Research

Purpose - This article proposes a conceptual model for understanding the influence of change readiness on knowledge management processes and knowledge management effectiveness. It is suggested that change readiness should be assessed as a multidimensional construct consisting of psychological and structural facets. Furthermore, as the process of managing organisational knowledge requires interaction among members of the organisation, a holistic view of readiness at individual and organisational levels is presented.

Design/methodology/approach - A comprehensive literature review results in the development of the conceptual model that depicts potential relationships between change readiness and knowledge management processes. It also postulates the effects of different knowledge management processes on effective knowledge management implementation.

Findings - Potential implications of change readiness from both psychological and structural dimensions for knowledge acquisition, creation and sharing processes are put forward. Further, it offers possible fruitful areas for continuous research of knowledge management effectiveness from a change perspective.

Research limitations/implications - This article puts forward a number of potential relationships among the construct that are empirically testable to further

understanding of multidimensional change readiness influences on the various types of knowledge management processes and its effective implementation.

Practical Implications - Through a conceptualisation of the relationships between change readiness, knowledge management processes and knowledge management effectiveness, this paper offers a number of practical guidelines for the development of KM policy and a road map from a change management perspective.

Originality and Value - Previous literature on knowledge management focuses on understanding organisational readiness to promote successful knowledge management implementation in terms of the structural dimension. This paper proposes understanding of change readiness from a more comprehensive perspective comprising both psychological and structural readiness and its influences on knowledge management processes, which could affect overall effectiveness of KM implementation.

Keywords - Knowledge Management, Change management, Change readiness, Knowledge management effectiveness, Knowledge management processes.

Article Type - Research paper

2.3 Introduction

Although many organisations have taken steps to invest in knowledge management (KM) initiatives, an increasing rate of KM failures are reported (Chua, 2009; Lucier and Torsilieri, 1997; Storey and Barnett, 2000). Substantial investment in technology and infrastructure does not always guarantee successful KM; rather, it is claimed that the main pillar of achievement rests on employees' willingness and commitment to participate in the initiatives (Lin, 2011; Wasko and Faraj, 2005).

Knowledge can be defined as justified true beliefs (Nonaka, 1994), and can reside in individuals as well as collectively in the organisation. During the process of implementing new knowledge, individuals' and the organisation's beliefs systems would undergo some changes that require shifts in individuals' thinking and behaviour. The process could involve double loop learning where employees might query and change the underlying organisational norms and assumptions

(Sun and Scott, 2003). Often this results in significant changes in organisational procedures, responsibilities and norms (Chen, 2008; Davenport and Prusak, 1998; Holt *et al.,* 2007; Wiig, 1993). For double-loop change to be successful the consideration of change management is required (Bhatt, 2001; Damodaran and Olphert, 2000; Holsapple and Joshi, 2000; Sunassee and Sewry, 2002).

Oakland and Tanner (2007) propose two important change cycles in the Organisational Change Framework: change readiness and change implementation. While many studies focus on change implementation in KM, this paper proposes that assessing change readiness is also crucial to ensure that employees are prepared for changes during KM implementation. Nevertheless, the change readiness construct has been neglected in previous KM studies. A thorough assessment of the contribution made by change readiness towards effective KM could provide further explanation of the underlying reasons for KM failures.

First, a comprehensive concept of change readiness as a multidimensional and multilevel construct is introduced. Second, a conceptual model depicting the linkages between change readiness, knowledge management processes and knowledge management effectiveness, is proposed. The paper then provides further elaboration on the multidimensional and multilevel characteristics of change readiness and knowledge management processes. This is followed by discussions of the implications of change readiness for distinctive processes of acquiring, creating and sharing knowledge. The paper then concludes by suggesting possible implications of change readiness for KM and describing potential future research in the area.

2.4 Understanding the Change Readiness Concept

Change processes involve three phases: preparation for change, adoption of change and institutionalisation of change by embedding new modifications into the organisational norms (Armenakis and Bedeian, 1999; Lewin, 1947). In order to enhance employees' acceptance of change, readiness must be created from the initial preparation stage. According to Dalton and Gottlieb (2003), readiness consists of both state and process. The readiness state is influenced by the beliefs that proposed change is needed, significant and sufficiently supported by the environment in which it will take place. As a process, readiness involves

recognising a need for change, comparing the costs and benefits of change and planning for the change.

Although there is considerable research on change readiness, there is little consistency in defining and conceptualising the term. This is largely due to its abstract nature, which has resulted in various definitions (Fowler, 1998; Walinga, 2008; Weiner *et al.,* 2008). In addition, little empirical research has focused on this construct to better understand its influence on successful organisational change.

The literature indicates that readiness for change in organisations occurs at two distinctive levels: the personal and the organisational. Personal change readiness elements encompass motivation, competence and personality attributes (Armenakis and Harris, 2002; Armenakis *et al*., 2007; Holt *et al*., 2007; Holt *et al*., 2009; Kwahk and Lee, 2008; Lehman *et al.,* 2002; Oliver and Demiris, 2004; Weiner, 2009). On the other hand, organisational-based elements include institutional resources, culture, climate, financial resources and technology utilisation (Chwelos *et al*., 2001; Guha *et al.,* 1997; Holt *et al.,* 2007; Holt *et al.*, 2009; Lehman *et al*., 2001; Siemieniuch and Sinclair, 2004; Taylor and Wright, 2004; Weeks *et al*., 2004; Wu, 2004; Weiner, 2009).

As a multilevel construct, the comprehensive assessment of change readiness should incorporate analysis at both the individual and the organisational levels (Weiner, 2009). At the individual level, personal beliefs and behaviours play a vital role in organisational change, thus requiring an understanding of the cognitive and emotional processes that occur during the change (Moffett *et al.,* 2002; Walinga, 2008). These individual beliefs and behaviours must also be effectively aligned to, and supported by, organisational structure, climate and culture to enable successful change implementation (Armenakis *et al.,* 2007; Luo *et al.,* 2006). For this reason, readiness is created through nurturing the willingness and ability of individuals in the organisation to move into a new state resulting from the change event, and is supported by the appropriate conditions in the organisation to enhance readiness for the change.

Further, extending its complexity as a multilevel construct, readiness for change is also a multidimensional construct. An individual's willingness to change could result from his or her cognition about the need, appropriateness and benefits of

change that mould the beliefs for the change (Armenakis *et al*., 1993; Eby *et al.,* 2000, Jones *et al.,* 2005; Rafferty and Simons, 2006; Weeks *et al.,* 2004). As these beliefs grow in an individual, whose effort might be dependent on others, the willingness to change could also be influenced by co-workers' actions. Hence, besides evolving at the individual level, the beliefs about change should also be seen as collective attitudes or intentions of the organisation's members. Moreover, capability to change depends on the individuals', as well as the organisations', ability to carry out the changes. This capability includes sufficient financial, human and information resources to craft members' readiness for pursuing new ideas or programs. It also represents the conditions within the organisation and its members as they embark on the change.

Unfortunately, previous literature tends to discuss only a fraction of these change readiness aspects and fails to provide a comprehensive representation of the construct. Holt *et al.* (2009) proposes a heuristic classification for the construct. Accordingly, the willingness aspect, representing the state of members' attitudes, beliefs and intentions for the proposed change is classified as the *psychological* dimension of change readiness (Holt *et al.,* 2009; Weiner, 2009). Moreover, Holt *et al.* (2009) and Weiner (2009) propose a second dimension of change readiness: a *structural* dimension. This dimension represents "the circumstances under which the change is occurring and the extent to which these circumstances enhance or inhibit the implementation of change" (Holt *et al.*, 2009, p. 51). Some proposed elements of the structural dimension include individual knowledge, skills and abilities, as well as the tangible and intangible support climate and facilitation strategies. This paper discusses the multidimensional characteristics of change readiness construct, as suggested by Holt *et al.* (2009), and proposes a conceptual model for understanding change readiness and its impact on KM processes and effectiveness.

2.5 Conceptual model for examining change readiness, knowledge management processes and knowledge management effectiveness.
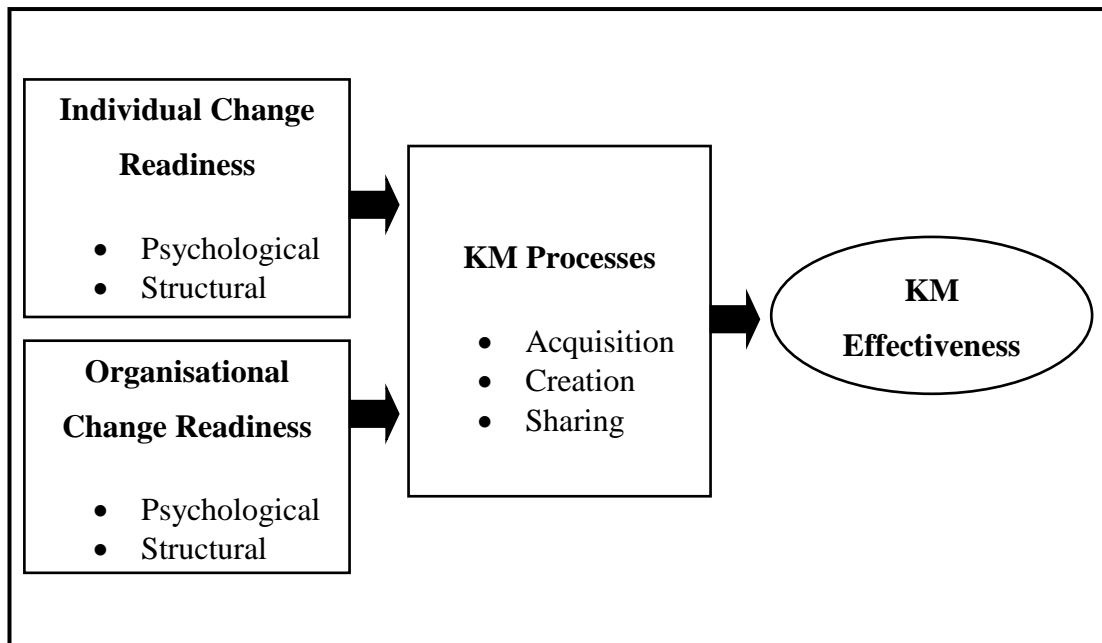
Figure I: Conceptual Model of Change Readiness, Knowledge Management Processes and Knowledge Management Effectiveness

Figure I depicts the conceptual model developed here to analyse the effects of change readiness on knowledge management processes and effectiveness. Organisational change and knowledge management literature form the basis for the development of this model. From a social psychology perspective, field theory by Lewin (1951) addresses personal beliefs about the changes and individual's field perception, which is the function of the social environment including the fact that the group to which the person belongs shapes the individual's reaction towards the proposed changes. Consistent with Cunnigham *et al.* (2002) and Lehman *et al.* (2002), readiness for change construct could be best predicted through a comprehensive assessment of its multidimensional and multilevel characteristics.

The construct consists of psychological and structural dimensions that have complementary roles in the creation of change readiness. Accordingly, the model proposes multidimensional analysis of the construct, encompassing cognitive elements of the psychological dimension and conditions of the structural dimension. Concurrently, the model also suggests multilevel analysis of the

change readiness construct at individual and organisational levels in the context of KM implementation.

Holt *et al.* (2007) define the psychological dimension of change readiness as beliefs about the need for change, reason for change and benefits of change initiatives that shape individuals' insights regarding the changes. Further, as mentioned earlier, the values that exist in the organisation such as peer influence could also affect the individual beliefs. Many authors (e.g. Armenakis and Harris, 2002; Armenakis *et al.,* 2007; Holt *et al.,* 2009; Oakland and Tanner, 2007) have examined the importance of psychological readiness for change implementation, and the results have shown that psychological readiness has a significant influence in determining change success.

Further to that, the structural dimension of change readiness represents the condition and context in which change is occurring. Again, since change readiness is a multilevel construct, the model proposes that the assessment of change readiness from the structural perspective should incorporate both aspects of the individual's ability to cope with changes and organisational capacity to provide supporting context for changes to occur (Holt *et al.,* 2009). Moreover, from the social psychology perspective, Mansfield (1984) asserts that structure potentially acts as an essential factor that produces the psychological environment, which inevitably affects individuals' and groups' actions and attitudes in any organisation. This conceptual model highlights the notion that both psychological and structural elements of change readiness are crucial for KM implementation.

As shown in Figure I, the model posits that the psychological and structural dimensions of change readiness affect knowledge management processes. Previous studies have argued that KM implementation requires changes in organisational philosophy as it forces an organisation to redefine its beliefs system, conventional work flow, power structures and technology utilisation (Bhatt, 2001; Glazer, 1998; McKenzie *et al.,* 2001). In conjunction with that indication, the implementation of knowledge management processes could alter the existing systems and procedures that apply in the organisation. Alterations to these procedures could affect the employees psychologically and behaviourally, particularly in the situation where employees are contented with the existing system. Consequently, it is essential for management to ensure employees are

ready to accept the changes by assessing employees' beliefs on the importance of carrying out change initiatives in KM processes and providing necessary conditions to support KM implementation.

Moreover, the model also depicts the linkages between KM processes and KM effectiveness. Knowledge–based theory of the firm views an organisation as a knowledge-creating entity with knowledge representing the main source for the organisation's survival. Therefore, from this perspective, the ability to manage knowledge effectively through the processes of creating and utilising (Nonaka et al., 2000) as well as gathering, storing and disseminating it (Bhasin, 2006) is vital to sustain the organisation's competitive edge. Consistent with Darroch (2005) and Nelson and Winter (1982), the extent to which these processes are implemented in the form of organisational routines and coordinating mechanisms will determine the organisation's long term survival.

Previous studies which adopted an organisational capability perspective emphasise that knowledge process capability represents one of the fundamental aspects that contribute towards organisational KM effectiveness (Aujirapongpan *et al.,* 2010; Gosh and Scott, 2007; Liao and Wu, 2010; Lindsey, 2002; Zaim *et al.,* 2007). In other words, the insight suggests that the ability to manage knowledge processes for the creation of new knowledge and dissemination of existing knowledge for instance, will determine KM effectiveness (Eftekharzadeh and Tobin, 2008). Nevertheless, implementing KM processes does not always result in effective KM; instead, as proposed by Becerra-Fernandez and Sabherwal (2010), effectiveness in the KM context depicts the implementation of the most appropriate processes and the formulation of the best possible decisions with regards to the process of managing knowledge. Therefore, these decisions and the scope to which KM processes are implemented and integrated in organisational routines represent KM effectiveness in this study context.

The above discussion links change readiness and knowledge management processes, and the three manifestations of knowledge processes with knowledge management effectiveness. Implicitly, the discussion also proposes that change readiness impacts knowledge management effectiveness through its effects on various knowledge management processes.

2.6 Multidimensional Characteristics of Change Readiness

Psychological Dimension of Change Readiness

Armenakis and Harris (2002) and Armenakis *et al.,* (2007), by integrating innovation diffusion and organisational change argued the importance of individual beliefs in successful organisational change. According to them, change implementation involving organisational strategy, structure or system, is similar to the adoption of managerial or technological innovation, which requires the shift in behaviours of the change recipients.

In their study, Armenakis and Harris (2002) introduce five change message components representing the psychological dimension of change readiness at the individual level. These five message components are: discrepancy, change appropriateness, change efficacy, principal support, and change valence. Two prominent studies that formed the basis for the development of these change message components were done by Ryan and Gross (1943) and Coch and French (1948). Ryan and Gross (1943) study of hybrid seed corn innovation diffusion among farmers found that principal support, efficacy and valence shaped the beliefs in diffusing the innovation. Further, Coch and French's (1948) study from the organisational change literature strengthens Ryan and Gross' (1943) findings and proposes additional elements of beliefs, consisting of discrepancy and appropriateness underlying readiness for organisational change.

The above mentioned   change message components are considered salient elements that trigger the creation of the individual's precursor, which potentially influence the decision and reaction towards the proposed change (Armenakis *et al.,* 2007). The conveyance of these change message components to the change recipients represents one of the strategies to promote assenting reactions and behaviours in embracing the changes. These five components are elaborated below:

Discrepancy highlights the gap between current organisational performance or goals and the desired performance (Armenakis and Harris, 2002; Pettigrew, 1987; Walinga, 2008). As employees become aware of the organisational discrepancy, their beliefs about the necessary changes for improvement might grow, thus resulting in a higher tendency to carry out the changes.

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The discrepancy must be addressed through the identification of necessary and feasible actions to overcome the existing weaknesses. It is important for organisations to propose a convincing change action that is able to eliminate the discrepancy and enhance the employees' beliefs to act upon the suggested change. The beliefs that a proposed changed is essential for implementation in order to overcome the discrepancy is identified by Armenakis *et al.* (2007) as *change appropriateness*.

Also, employees' beliefs in their ability to cope with and participate in a particular change initiative are important. This capability of handling changing circumstances is known as *change efficacy*. Previous studies have shown that employees are more receptive to change if they are confident in their capability to manage diverse outcomes from the changes (Armenakis *et al.,* 2007; Bandura, 1986; Wanberg and Banas, 2000).

Likewise, employees' beliefs about the presence of adequate support from superiors and peers (i.e., *principal support*) represent another crucial consideration for creating readiness towards change. The positive relationships between readiness and peer support, as well as leaders' commitment and individuals' readiness to cope with the changes, support the notion that principal support at the workplace could psychologically influence readiness to embark on the proposed change (Abdolvand *et al.,* 2008; Holt *et al.*, 2007; Shaw *et al.*, 1993; Wanberg and Banas, 2000).

Moreover, employees' understanding of the potential valences from the changes (i.e., *change valence*) could stimulate their readiness for change (Armenakis *et al.,* 2007; Holt *et al.,* 2007; Jones *et al.*, 2005; Malhotra and Galletta, 2003; Miller *et al.,* 1994). The assessment of change valence should be broad enough to encompass intrinsic and extrinsic valences. This is necessary to convince employees about the positive implications of the change outcomes in the long run. Extrinsic valence consists of incentives for participating in change initiatives, while intrinsic valence includes satisfaction and autonomy in making decisions (Armenakis *et al.,* 2007). Although extrinsic valence, such as monetary incentives, has received more attention in previous studies, there is less attention in the literature on implicit valence such as the impact of management and peer recognition on the individuals' readiness for change.

At the organisational level, the psychological dimension of change readiness is based on the shared beliefs and feelings among organisational members. For instance, Eby *et al*. (2000) propose that the ability of co-workers to advocate change initiatives influences the creation of readiness among employees. Literature suggests two important elements underlying change readiness at the organisational level: collective commitment and collective efficacy (Holt *et al.,* 2009). The existence of these elements is crucial to enhance employees' confidence for undertaking change initiatives.

Collective commitment refers to the organisational members' shared determination to implement change initiatives (Holt *et al.,* 2009; Weiner, 2009). This commitment entails employees' feeling about group capabilities to perform new or revised processes and tasks. It has a similar role as a group norm for explaining the relationship between intentions and change behaviour, whereby individuals' change behaviour could be influenced by their observations of the group members' behaviour. Consequently, individuals commonly seek to act in a manner similar to the group members as they consider change initiatives (Herscovitch and Meyer, 2002; Holt *et al.,* 2007; Jimmieson *et al.,* 2008).

Collective efficacy reflects the extent to which organisational members are confident that they could perform well, based on their shared capabilities, despite the proposed change (Holt *et al.,* 2009; Weiner, 2009). Challenges arising from the changing conditions in organisations affect not only individual employees but also team effort. In order to overcome the challenges, shared and sustainable effort among the organisation's members is essential to produce a positive change outcome. This reflects the concept of collective efficacy as shared beliefs of mutual ability among the teams to cope with obstacles in achieving a common goal (Bandura, 1986). In relation to that, previous studies claimed that the existence of a shared sense of confidence among co-workers leads to higher change efficacy and motivates employees to sustain their efforts towards achieving change objectives (Bandura, 1986; Jung and Sosik, 2002; Weiner, 2009).

In conclusion, the creation of beliefs for change from the psychological dimension is crucial to trigger the individual's desire for supporting change. This is also shaped by the collective beliefs among the organisation's members.

Structural Dimension of Change Readiness

At the individual level, the structural dimension of change readiness refers to the capability of the organisation's members to cope with changes arising from the implementation of new or modified practices (Lehman *et al.,* 2002; Holt *et al.,* 2009). Employees' characteristics need to be accounted for in assessing change readiness in order to ensure employees are receptive to change. Diverse employee qualities and characteristics that shape competency to cope with the changes are discussed in the literature (Eby *et al*., 2000; Wanberg and Banas, 2000).

Innovativeness and adaptability are also included at the individual level. Individuals' *innovativeness* portrays the extent of employees' creativity for dealing with organisational challenges arising from the change (Holt *et al.,* 2007; Hurt *et al.,* 1977). Innovative employees are regarded as being more receptive to new ideas, and are therefore expected to demonstrate higher readiness to cooperate in change initiatives. The same expectation is also placed on any individual who is more *adaptable* to change. An individual with the ability to cope with changing conditions is believed to be more receptive to trying new ideas and learning new procedures (Lehman *et al.,* 2002).

Furthermore, the ability to *influence* co-workers in buying into the idea of change is another change readiness indicator at the individual level. This attribute, commonly held by opinion leaders or change agents (Lehman *et al.,* 2002), could make the person more interested in change, thus possessing higher willingness to participate in the change initiatives.

Additionally, *professional growth* measures the extent to which an individual values and perceives opportunity for professional development. Lehman *et al.,* (2002) asserted that limited opportunities for professional growth are likely to be associated with less readiness for change. This assumes that change initiatives that are perceived to contribute positively to employees' professional growth would create higher readiness among employees to participate in the initiative.

Apart from individual capabilities, a successful change initiative also relies on organisational conditions that provide the context for change processes to be implemented successfully (Armenakis *et al.,* 2007). Previous literature reveals a large number of organisational factors that facilitate the creation of change

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readiness, such as organisational climate and strategies (Eby *et al.,* 2000; Holt *et al.,* 2009; Lehman *et al.,* 2002). Based on the review of the organisational change and knowledge management literature, the paper proposes four structural indicators of change readiness that are relevant for the study.

Firstly, communication is widely recognised as an important mechanism for change readiness (Abdolvand *et al*., 2008; Guha *et al*., 1997). Moreover, communication is an essential element that influences individuals in making decisions regarding the implementation of new idea (Rogers, 2003). *Communication* reflects the extent to which employees feel that management is receptive to employees' ideas and to which employees receive necessary information regarding the change initiatives (Helfrich *et al.,* 2009; Lehman *et al.,* 2002; Holt *et al.,* 2007). This notion suggests that clear articulation of change ideas could increase employees' understanding, thus motivating them to be more ready for change.

Secondly, *participation* refers to the extent to which employees are given opportunity to contribute to the change initiative (Holt *et al.,* 2007; Wanberg and Banas, 2000). Employees might perceive that they are important to the organisation if they are involved in decisions related to the changing of procedures or processes that will affect their jobs. Hence, the opportunity to clarify the purposes and reasons for change would make them more convinced about the changes, and thus they would be expected to be more ready to accept them.

Next, *learning* created through various forms of training and development is expected to trigger higher change readiness. An organisational climate that is supportive of learning enables proliferation of new knowledge in the organisation (Lee and Choi, 2003). Thus, consistent with Huber (1991), it is proposed that employees develop understanding about the changes through learning, which could then result in behavioural changes among the organisation's members.

Moreover, *clarity of vision* is another element that could stimulate employees' readiness for change. Clearly linking the change initiative to the vision could enhance employees' involvement in and contribution to the implementation of change initiatives (Davenport *et al.,* 1996; Gold *et al.,* 2001; Nonaka and Takeuchi, 1995). In contrast, scholars assert that a lack of goal clarity, which fails

to address compelling reasons and rationales for change initiatives, results in a low readiness for change (Kotter, 1996; Lehman *et al.,* 2002).

Hence, change readiness from the psychological dimension represents the individual's willingness to embark on organisational change initiatives, triggered by the beliefs that the proposed change is necessary to overcome the identified discrepancy; is suitable and sensible to be implemented with essential support and capability to embrace the changes. On the other hand, the structural dimension focuses mainly on the organisation's capability to provide necessary resources and the availability of employees with characteristics that are competent to support the accomplishment of change initiatives.

While many studies have examined organisational readiness, little emphasis has been placed on the assessment of employees' change readiness. Additionally, there is a dearth of empirical research that examines the influence of readiness from a psychological perspective (Konrad, 2008). In this paper, the authors place change readiness as the extent to which the organisation and its members are prepared, based on psychological and structural influences, to embrace changes resulting from the implementation of KM initiatives. Due to the complexity of the KM processes, there is a need to comprehensively assess the influence of change readiness on the various processes of managing organisational knowledge from both the psychological and the structural dimensions.

2.7 Knowledge Management Processes

Penrose (1959) asserted that while knowledge could be viewed as an organisational resource based on employees' skills and experiences, the way it is managed and used will determine its advantages to the organisation. Further, Choo and Neto (2010) claim that KM is particularly concerned with the process of managing the context and providing the conditions under which knowledge could be created, shared, and utilised for the attainment of organisational goals. Since the main aim of KM is to ensure that existing and new knowledge is handled systematically through structured processes or activities, organisations practicing KM need to participate in the process of managing knowledge (Heiseg, 2009; Supyuenyong *et al.,* 2009).

Diverse processes or activities for managing knowledge have been widely discussed in the literature. For instance, in the analysis of 117 KM frameworks, Heiseg (2009) found that 166 different terms are used to describe KM activities and processes. Nevertheless, based on further classification, five central activities for managing knowledge can be identified: identification, creation, sharing, utilisation and storage.

This article focuses on the examination of change readiness in influencing the ways knowledge is generated, made available, and applied in the organisation. The identification of new knowledge is part of an acquisition process that involves the recognition of valuable knowledge for organisations. In addition, Sun (2010) suggests that knowledge utilisation and sharing could be combined since the value of knowledge utilised by individuals will enhance only if it is being shared as part of organisational justified beliefs. Therefore, KM processes in this study refer to the three prominent activities of knowledge acquisition, knowledge creation and knowledge sharing, as discussed next. These processes are conceptualised in terms of KM behaviours and practices embedded in organisational routines and operations.

Process of Knowledge Acquisition

Knowledge acquisition involves the process of identification, discovery and accumulation of knowledge in order to obtain new knowledge and recognise existing knowledge (Darroch, 2003, 2005; Gold *et al.,* 2001; Liao *et al.,* 2010; Lindsey, 2002). With the aim to capture knowledge from internal and external sources, an acquisition process is commonly performed through searching and learning mechanisms. Searching includes formal and informal interactions among employees, monitoring of best practices in the industry as well as observing competitors' approaches; while learning consists of employee training and continuous education, imitation of best practices or self-directed learning through lessons learned (Jantunen, 2005; Liu and Liu, 2008; Reio and Wiswell, 2000). Through these mechanisms, an organisation is able to identify means to improve the use of existing knowledge and exploit newly acquired knowledge, hence continuously developing its robust knowledge base for competitive benefits.

Process of Knowledge Creation

Takeuchi and Nonaka (2004) defined knowledge creation as "a process that organisationally amplifies the knowledge created by individuals and crystallises it as part of the organisation knowledge network" (p. 51). In other words, it represents a process of transforming an individual's justified beliefs to a higher level to form an organisation's beliefs system, which enhances the value of the individual- possessed knowledge (Sun, 2010).

According to the Theory of Organisational Knowledge Creation (Nonaka and Takeuchi, 1995), the process of managing knowledge is based on epistemological and ontological dimensions. Epistemologically, knowledge is classified as tacit and explicit knowledge. The ontological dimension is concerned with the levels of entity creating the knowledge, known as knowledge units. These units include the individual, group, organisation and inter-organisation.

New knowledge is claimed to emerge during the interaction among the knowledge units through four processes: socialisation, externalisation, combination and internalisation (Nonaka and Konno, 1998; Nonaka and Takeuchi, 1995). Socialisation is the process by which one's tacit knowledge becomes the tacit knowledge of another person. Since tacit knowledge is hard to articulate, it is commonly passed on through on-the-job training, observing, imitating and experiencing similar situations or actions. Externalisation refers to the process of converting tacit knowledge into an explicit concept, which enhances the understanding of ambiguous personal and professional knowledge. During externalisation, abstract knowledge is conceptualised into an explicit form using modelling, analogy, posited relationship or even action to increase the knowledge learner's understanding. Combination represents the process of coalescing explicit knowledge from the different sources using information and communication tools with the aim of creating a greater explicit knowledge pool. Finally, internalisation embodies the process of absorbing knowledge that has been made explicit during externalisation. The process resembles learning by doing, by which the learner is able to make tacit the newly acquired explicit knowledge (Hussi, 2004).

From the authors' point of view, socialisation involves the activities of obtaining new tacit knowledge from the knowledge possessor, which has similarities to acquisition. Likewise, combination relates to the mechanisms of sharing

knowledge. Therefore, attention is drawn to two vital creation processes that produce new knowledge or modify existing knowledge: externalisation and internalisation.

As a final point, the knowledge creation process is also context-specific and dynamic. The individual creates knowledge and the organisation provides the context for the process (Choo and Neto, 2010; Liu and Liu, 2008). For this reason, the process of creating knowledge requires both individual and organisational considerations.

Process of Knowledge Sharing

In order to realise the value of knowledge, knowledge that is acquired and created by organisations needs to be continuously and effectively applied, utilised and disseminated throughout the organisation. Dissemination involves the behaviour of the learner sharing acquired knowledge, expertise and skills with other members of the organisation, which occurs in interactions at individual, group and organisational levels (Bock *et al.,* 2005; Liao *et al.,* 2010; Lin and Lee, 2006; Ryu *et al.,* 2003; Yi, 2009). The utilisation of shared knowledge is necessary to support decisions, actions and problem solving, which in turn improves organisational efficiency and the firm's innovation performance (Gold *et al.,* 2001; Goldoni and Oliviera, 2006; Lin, 2007).

In conclusion, KM encompasses the different activities of acquisition, creation and utilisation of appropriate knowledge for organisational benefits. Further, effective implementation of these KM processes often requires changes in procedures and routines in the organisation, and hence could be influenced by diverse change-related factors.

2.8 Implications of Change Readiness for Knowledge Management Processes

Readiness has been studied previously to understand its influence on different stages of change implementation such as intention, acceptance and adoption of new information systems such as internet, web services, electronic resource planning (ERP), electronic commerce and electronic data interchange (EDI) systems (Abdinnour-Helm *et al.*, 2003; Chan and Ngai, 2007; Chwelos *et al.,* 2001; Kwahk and Lee, 2008; Wu, 2004; Luo *et al.,* 2006). The construct has also

been studied in relation to mergers, business process change, technology transfer and KM commitment (Guha *et al.,* 1997; Holt *et al.,* 2007; Lehman *et al.,* 2002). In most studies, readiness has a positive effect and significant influence on change success.

Although some studies in KM assess organisational readiness in relation to KM implementation, there is a lack of studies examining the elements of individual readiness. For instance, Siemieniuch and Sinclair (2004) developed a framework to address organisational readiness in knowledge lifecycle implementation. In another study, Chen (2008) found that organisational readiness, assessed based on attitudes toward change, is positively correlated to the process of knowledge creation, expansion and storage. These studies, however, do not address readiness among individuals or the psychological dimension.

Holt *et al.* (2007) developed a model that identifies four important constructs of readiness for KM. They encompass individual determinants, change context, change content and change process in the assessment of KM attitudes. The results show that individual and change context constructs are important in predicting attitude towards KM. The study serves as a start for the assessment of change readiness in the context of KM. Nevertheless, further insights regarding underlying influences of change readiness on the various KM processes are essential (Holt *et al.*, 2007). Consequently, in-depth assessment of change readiness at individual and organisational levels, from both the psychological and the structural dimensions, could provide a holistic understanding of change readiness interrelationships with each KM process and its overall impact on KM effectiveness.

Implications of Change Readiness in Knowledge Acquisition

Knowledge acquisition involves a capability to recognise and acquire information from different sources. This occurs at both individual and group levels. Further, according to Sun and Anderson (2010) "acquisition is created by socio-psychological process of individuals' intuition and interpretation" (p. 142). This implies the importance of beliefs created psychologically at the individual level for accomplishing the acquisition process.

Moreover, knowledge could be acquired from internal and external sources. Internally captured knowledge is highly reliant on the organisation members' intellectual capability (Darroch, 2003). In conjunction with that, knowledge self-efficacy representing employees' capabilities to provide valuable knowledge could influence employees' readiness to participate in the acquisition process. For instance, it is asserted that employees who are more competent will be highly confident in contributing and collecting knowledge (Lin, 2007; 2011). Additionally, acquisition involves the observation and examination of best practices, which requires employee expertise to identify relevant knowledge for the organisation. Thus, it is expected that employees with high change efficacy would be more ready to participate in the knowledge acquisition process.

Also, a need for new knowledge could arise when existing knowledge is no longer adequate to support the organisation's needs. As a consequence, the acquisition process could be motivated from the discrepancy that exists in the current organisation's knowledge bases. Discrepancy, thus, triggers beliefs and need for improvement (Armenakis and Harris, 2002; Oakland and Tanner, 2007; Pettigrew, 1987; Walinga, 2008). According to institutionalisation and rationale theories, from an organizational change perspective, knowledge activities are commonly implemented in order to overcome disparity in the existing knowledge base (Chen, 2008). For instance, according to institutionalisation theory, knowledge diffusion and duplication are driven by the need to comply with the institutional environment. Likewise, rationale responses to environmental changes, threats and opportunities elicit knowledge activities via learning. Hence, reconciling discrepancy is an important reason for the knowledge acquisition process. Nevertheless, the extent to which discrepancy forces knowledge acquisition implementation is subject to future empirical assessment.

With respect to the structural dimension, learning provides a foundation for the acquisition process. For instance, Miller (1996) mentions learning involves the acquisition of new knowledge and the ability to use that knowledge in making decisions and to influence the decision makers. In addition, the emphasis on learning provides a context and encourages employees to play active roles in the KM processes (Lee and Choi, 2003). Therefore, it is postulated that the extent to which learning is instilled in the organisation's environment represents an

influential structural readiness indicator for the execution of the acquisition process.

In addition, interactions among employees represent an essential mechanism for knowledge acquisition (Darroch, 2003; Liu and Liu, 2008). Open communication that allows for the free flow of ideas in the organisation could facilitate the interaction process in the organisation. Hence, it is proposed that the process of identifying and collecting knowledge could be enhanced through clear communication.

Additionally, the establishment of a clear vision could also influence the knowledge acquisition process. Kim and Lee (2010) discovered a positive correlation between a clearly stated organisational vision and levels of knowledge acquisition in both public and private organisations. Further, the establishment of shared vision and strategy provides guidance and role clarity for knowledge searching, although the impacts might depend on the type of acquisition process (Hoe and McShane, 2010; Sun, 2010). This, in turn, could motivate employees to be engaged in acquiring knowledge.

Therefore, readiness to participate in the knowledge acquisition process could be encouraged through the creation of beliefs at the individual level and is enhanced by the presence of the structural elements for translation of acquired knowledge at the organisational level. However, the extent to which change efficacy, discrepancy, learning, communication and clarity of vision influence knowledge acquisition process requires further empirical examination. The possible relations between change readiness indicators and knowledge acquisition processes, as discussed above, are depicted in Figure II.
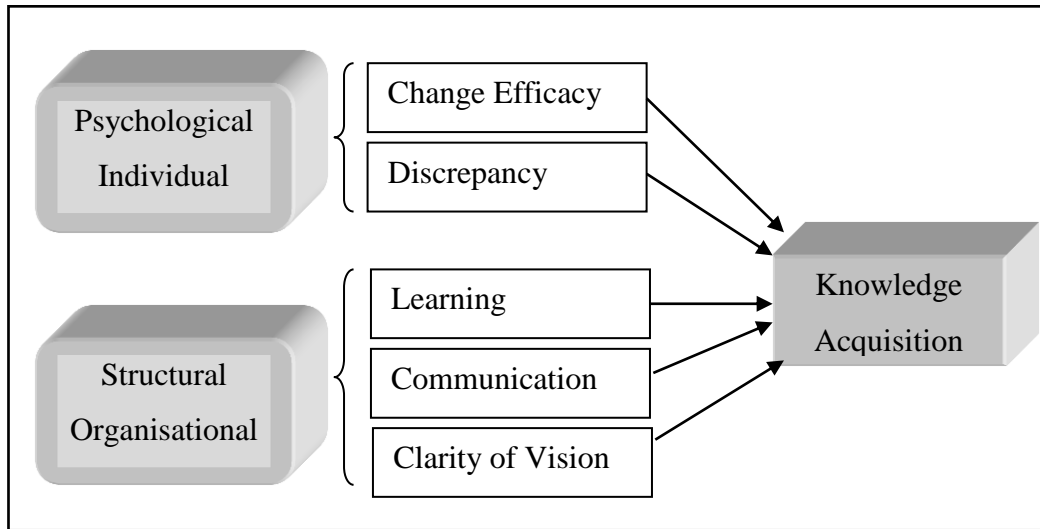
Figure II: Change Readiness and Knowledge Acquisition

Implications of Change Readiness in Knowledge Creation

The essence of knowledge creation lies in the dynamic interactions between tacit and explicit knowledge, and the transformation of personal knowledge into an organisational context that enhances the value of knowledge created (Choo and Neto, 2010; Hussi, 2004; Sun, 2010). The effect of the process is also dynamic, as new knowledge is created and existing knowledge is redefined during the interactions. Externalisation for instance, results in the generation of new explicit knowledge which is derived from existing tacit knowledge. If this knowledge is not externalised, it could be difficult for others to gain and understand the same unique knowledge. Further, an individual could modify his or her existing knowledge foundation by absorbing new explicit ideas during internalisation.

Further to that, Nonaka *et al.* (2000) affirm that knowledge creation is a context-specific process that is composed of behaviours of both individual and group. The diverse background of people with various perspectives and experiences contribute to the creation of new or modified knowledge. Externalisation is widely viewed as a team activity, while internalisation represents an individual process of new knowledge embodiment (Holsapple and Joshi, 2000; Nonaka and Konno, 1998; Sabherwal and Becerra-Fernandez, 2003; Von Krogh and Roos, 1995). For that reason, the discussion of change readiness for knowledge creation should encompass both individual and organisational levels.

Previous literature has discussed many factors influencing knowledge creation, most importantly in providing *ba.'* According to Nonaka and Toyama (2002), a *ba* is a space or context in which the knowledge creation process takes place. The context is referred to by Von Krogh *et al.* (2000) as a knowledge space, consisting of mental, physical and virtual elements. There are four types of *ba'* introduced by Nonaka and Toyama: originating, interacting, cyber and exercising *ba'*. In relation to the knowledge creation process, interacting *ba'* provides a shared space for peer-to-peer reflections and dialogues that represents the main mechanism for the externalisation process. In addition, exercising *ba'* is a space that facilitates the internalisation process through learning, action and active participation.

Based on a comprehensive analysis of knowledge creation studies, Choo and Neto (2010) introduced a framework outlining four sets of the enabling conditions for knowledge creation. These conditions are classified as social, cognitive, information systems and strategy. The social condition refers to the need for encouraging interactions, such as norms and values among the people. The cognitive condition is the need for the existence of some degree of shared beliefs and ideas, in order to embrace differing ideas and experiences among people from different backgrounds. Information systems and strategy conditions relate to the appropriate use of technology and the establishment of knowledge activity direction. Further analysis of these conditions suggests that both the psychological and structural dimensions of change readiness could influence the implementation of knowledge creation activities.

At the individual level, three elements of the psychological dimension seem important to create readiness for knowledge creation. Externalisation of tacit knowledge could depend on the individual's judgement of whether the knowledge should be made explicit to the team members. Tacit knowledge is commonly hidden until there is a need to utilise or declare that knowledge to others. The judgement could involve the evaluation as to whether there is any deficiency in the tacit knowledge of others, and thus the individual's tacit knowledge should be realised in order to overcome the deficiency. Apparently, the psychological dimension of change discrepancy and change appropriateness could influence the decision to externalise personal tacit knowledge. Moreover, Hendriks (1999) suggests that challenge of work and sense of achievement are considered as high motivators for the internalisation process in knowledge application and

development. It is expected that an individual is ready to learn and internalise new knowledge if the effort is seen to be beneficial and contribute to a higher self-fulfillment. Hence, change valence could be an important reason to stimulate readiness for knowledge creation.

In addition to the psychological dimension, the structural dimension also has possible influences in creating readiness to participate in the knowledge creation process. For instance, internalisation provides the means for learning and continuing development of skills through reading documents and sharing of others' stories (Hussi, 2004). This process could contribute towards enhancing an individual's professional growth. Hence, the value and contribution of new knowledge that increases the individual's professional growth could influence the decision to internalise new knowledge. In addition, externalisation of an individual's knowledge leads to the availability and sometimes redundancy of knowledge, which is claimed as a prerequisite for innovation (Nonaka and Takeuchi, 1995). Innovativeness could help the individual conceptualise tacit knowledge and transform it to the organisational context. Moreover, Lehman *et al.* (2002) and Yahya and Goh (2002) assert that innovation capability stimulates people's willingness to apply new ideas and explore new possibilities. This assertion implies that innovative characteristics could also enhance the individual's capability to internalise new knowledge through practices and actions. For this reason, it is posited that individuals who are innovative would be more ready for changes in the knowledge creation process.

At the organisational level, since knowledge creation involves the upgrading of individual beliefs into the organisational context, providing *ba'* or shared space for knowledge creation based on the structural dimension is crucial. Nevertheless, the psychological dimension of change readiness is also expected to contribute to a successful implementation of the knowledge creation process.

As asserted by Choo and Neto (2010), the cognitive element represents one of the conditions for knowledge creation. Consistent with the psychological dimension of change readiness, the cognitive condition places emphasis on shared beliefs and mental modes to create new knowledge. This process requires contributions from team members with different perspectives (Nonaka and Konno, 1998). Externalisation is commonly performed as a group effort (Hussi, 2004; Sthyre *et*

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al., 2002); thus, collective efficacy could be a necessary element of readiness for knowledge creation.

The knowledge creation process often requires group interactions and strong relationships among members in order to generate a positive atmosphere for effective idea generation (Nonaka and Toyama, 2004; Nonaka *et al.,* 2006; Styhre *et al.,* 2002; Sun, 2010; Sun and Anderson, 2010). In a similar way, Dunin-Keplicz and Verbrugge (2003) claim that collective effort is one of the strongest motivational attitudes in teamwork, as it encourages teams to perform together and motivate each other. For this reason, collective commitment could be essential in encouraging individual contribution and team performance, hence influencing the organisation members to be ready for changes in the knowledge creation process.

In relation to the structural dimension, Choo and Neto (2010) suggest that management could support the flow of knowledge through the organisation's hierarchy, through the establishment of knowledge aims, and through the provision of physical space as well as the assignment of human resources for the accomplishment of the knowledge creation activities. The process of knowledge creation requires communication and sense-making capabilities among organisation's members to translate acquired knowledge that suits the organisation's context (Nonaka and Takeuchi, 1995; Sthyre *et al.,* 2002). Open communication, for example, enhances social interaction, encourages dialogue and permits the flow of knowledge at different levels of the organisation. Therefore, it is proposed that communication which provides a necessary platform for the employees' interaction could affect readiness for the changes in the process of knowledge creation.

The process of creating knowledge is often accomplished by several teams in the organisation. In conjunction with that, a clear knowledge vision that connects teams' knowledge creation goals with the organisation's overall vision is necessary to provide direction for the creation process (Nonaka *et al.,* 2006). Accordingly, it is anticipated that the establishment of a clear vision will provide insight into the creation of new ideas and knowledge. Besides, Sun (2010) asserts that knowledge creation involves transformation of newly acquired knowledge and the development of routines that are suitable for the organisational state of

affairs. The development of these routines reflects a learning process, which requires the ability to develop useful ideas and to integrate the outcomes from knowledge acquisition with the organisation's existing knowledge bases and practices. Likewise, learning represents the main mechanism of the internalisation process. As a consequence, a learning structure is expected to be essential in preparing the members to institutionalise changes in the knowledge creation process.

While acquisition is initiated from individual intuition, creation perhaps depicts a more complex process involving changes and adjustments of personal beliefs to a higher level. Thus, it is stipulated that readiness for knowledge creation is characterised by the various change readiness indicators at the individual and the organisational level as depicted in Figure III. Future research should assess the different effects of individual and organisational change readiness, in order to provide empirical evidence as to whether readiness at individual or organisational levels is crucial for knowledge creation implementation.

Change Discrepancy

Change Appropriateness

Change Valence

Psychological Individual

Professional Growth

Innovativeness

Structural Individual

Collective Efficacy

Collective Commitment

Psychological Organisational

Communication

Clarity of Vision

Learning

Structural Organisational

Knowledge Creation
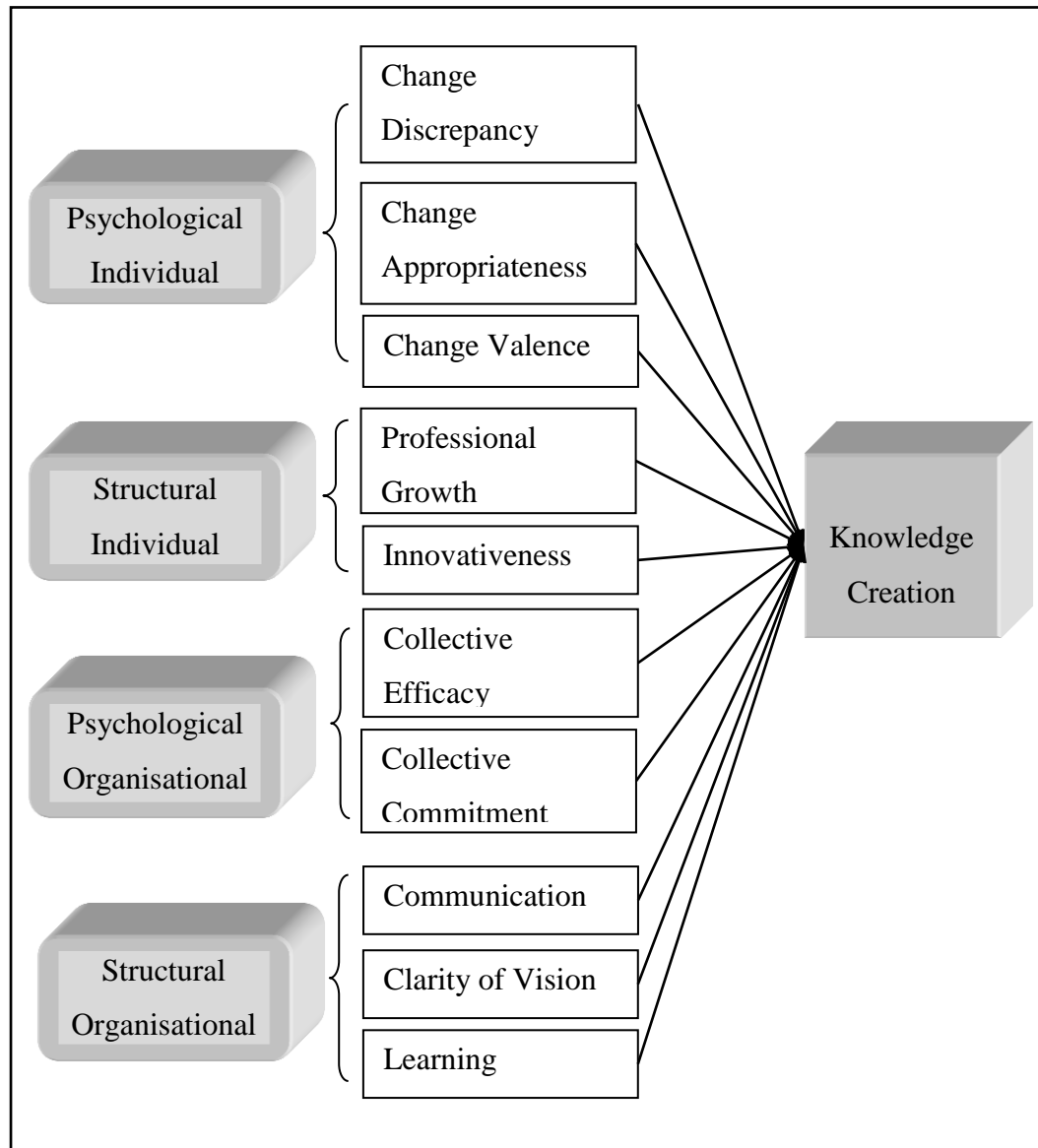
Figure III: Change Readiness and Knowledge Creation

Implications of Change Readiness in Knowledge Sharing

The knowledge sharing process comprises attitude, ability and action of sharing, transferring, disseminating and utilising of shared knowledge to support organisational operations (Davenport and Klahr, 1998; Lin, 2007; Sun, 2010; Yi, 2009). Until recently, it has been argued that creating motivation for knowledge sharing remains a critical issue despite the growth in the KM field (Becerra-Fernandez and Sabherwal, 2010).

Knowledge initially resides in an individual. Thus, an individual's willingness to share his or her knowledge with others is necessary for knowledge sharing. The

willingness to share is reflected in individual knowledge sharing behaviour, which is influenced by personal motivations, beliefs, as well as contextual factors of institutional structure (Bock *et al.,* 2005; Lin, 2011; Moffett *et al.,* 2002; Yi, 2009). Hence, the analysis of readiness to participate in knowledge sharing requires the consideration of the psychological and structural dimensions at both individual and organisational levels.

At the individual level, employees require an intrinsic element, such as feelings of competence, to engage in knowledge sharing practices (Lin, 2011; Yi, 2009). For instance, employees with high knowledge self-efficacy demonstrate higher confidence to participate in knowledge sharing activities as they are able to recognize the value of new knowledge being shared (Lin, 2007; Lucas, 2010). In consequence, employees' evaluation of their own capability could shape their readiness to contribute in the sharing process and determine the extent of their participation.

Additionally, based on Social Exchange theory, Watson and Hewett (2006) claim that a general expectation for some future returns motivates employees' participation in sharing knowledge. In a similar way, Bock *et al.,* (2005) suggest that a sense of self-worth based on subjective norms could also encourage people to contribute knowledge. Although mixed findings are obtained in regard to the significance of the influence of extrinsic and intrinsic rewards on commitment in knowledge sharing, there is support for the suggestion that perceived expected change benefits or valence could stimulate the readiness among employees to take part in the sharing process.

However, the beliefs that knowledge is a source of power leads to the action of knowledge hoarding among some employees (Becerra-Fernandez and Sabherwal, 2010). These beliefs can hinder the practice of sharing and explain the reasons for the reluctance to share knowledge at group or organisational levels. However, this problem could be eliminated if employees are convinced that the knowledge they possess is valuable to the organisation and that the sharing process is vital (Ryu*, et al.,* 2003). Hence, providing the justification and rationale for the appropriateness of knowledge to be shared could influence the extent of knowledge sharing in the organisation.

Further to that, findings in the literature claim that principal support, particularly from organisation's leaders, encourages voluntary participation in developing and suggesting new ideas to the organisation (Lin, 2011; Lin and Lee, 2006; Takeuchi and Nonaka, 2004). In addition, support and cooperation from peers is important for sharing to occur at group and organisational levels. Therefore, principal support from superiors and co-workers could be considered important in determining the level of knowledge sharing in the organisation.

Also, the sharing process is often embedded within interactions between knowledge providers and receivers through the procedures in which knowledge is disseminated and utilised (Lin and Lee, 2006). In conjunction with that, significant changes in the existing practices or routines are required if new procedures are to be implemented. According to Lehman *et al.,* (2002), employees who are adaptable to changes tend to exhibit more receptive behaviour towards learning of new procedures. Therefore, it is predicted that adaptability of employees to cope with the changes is necessary to facilitate sharing.

Besides, the sharing process is sometimes carried out in non-routine, informal interactions among people with a common interest and a shared passion on specific problems or ideas (Yi, 2009). This practice is closely tied to the perception of value and reciprocity, in which participants are expected to share their knowledge to realise its potential value. For instance, the sharing of knowledge with others from the same profession will clarify any disputes and allow benchmarking for best practices, thus enhancing the value of the expertise. As a result, it implies that the pursuance of professional growth could trigger higher readiness to contribute to the knowledge sharing process.

As mentioned earlier, individuals' motivation to perform sharing behaviour is also affected by organisational conditions (Ryu *et al.,* 2003). For this reason, the assessment of the organisation context in which sharing takes place is essential to understand the influence of organisational readiness on knowledge sharing implementation. Overall, communication is thought to play a significant role in knowledge sharing. For instance, communication channels, openness of communication and effective dialogue during formal meetings and social interactions are claimed to positively influence employees' willingness to share and disseminate knowledge (Cockrell and Stone, 2010; Lin, 2011; Moffett *et al.,*

2002; Yi, 2009). This is apparent since communication structure could shape interactions among employees, thus providing a crucial platform for sharing to occur.

Finally, the sharing process requires contribution from both the knowledge provider and the receiver. It is expected that greater participation by employees leads to increased sharing. For instance, strategic engagement through participation is found to influence the knowledge sharing process (Sun, 2010). Undoubtedly, employees' involvement is considered a critical driver for knowledge sharing (Bock and Kim, 2002; Lin and Lee, 2006). Hence, it is suggested that the extent of knowledge sharing implementation is influenced by the level of employees' participation during the change in the sharing process.

With reference to the above discussion, readiness for knowledge sharing, which is predominantly dependent on an individual's sharing behaviour, is perhaps mostly explained by the psychological indicators at the individual level. Nevertheless, organisational indicators that provide the structure and platform for the sharing process are also crucial and need to be examined. Therefore, future research should investigate the relationship between change readiness indicators and knowledge sharing process as presented in Figure IV. Potentially, the identification of influential psychological indicators of change readiness would guide better implementation of the knowledge sharing process, thus reducing the hurdles in achieving knowledge sharing objectives.
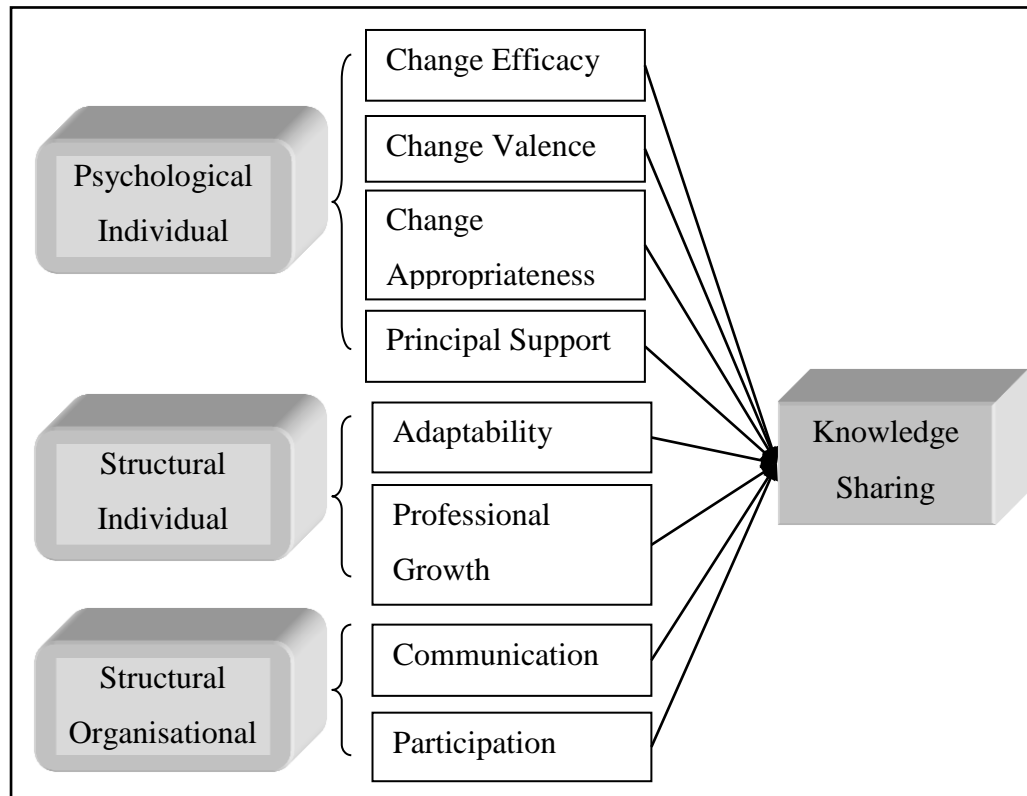
Figure IV: Change Readiness and Knowledge Sharing

To summarise, the complex nature of the change readiness construct deserves attention and should be examined further with regard to its influence on effective implementation of the various processes of managing organisational knowledge.

2.9 Knowledge Management Effectiveness

KM processes could impact different aspects of organisations including people, process, product and the overall organisational performance. Becerra-Fernandez and Sabherwal (2010) propose that KM enhances employees' learning and adaptability; improves the organisational process in terms of effectiveness, efficiency and innovation capability; and affects the management of value-added and knowledge-based products. On the whole, an effective process for managing knowledge would provide significant benefits to the organisation (Becerra-Fernandez and Sabherwal, 2010; Davenport and Prusak, 1998; Desouza and Evaristo, 2003; Nonaka and Takeuchi, 1995).

Further, the assessment of KM effectiveness is crucial to provide indications on whether the processes performed satisfied the objectives and justified the

investments for the implementation. Moreover, the continuous assessment could also ensure the sustainability and success of the processes over time (Zaim *et al.,* 2007). Nevertheless, a comprehensive measure for KM effectiveness has yet to be developed, due to its subjective nature. However, some proposed indicators could include satisfaction with knowledge availability, process and activities; understanding of knowledge needed and received; knowledge usability; knowledge quality; perceived usefulness of knowledge; and higher perceived service benefits (Branchos *et al.,* 2007; Chou *et al.,* 2005; Gosh and Scott, 2007; Lin, 2007; Sabherwal and Becerra-Fernandez, 2003; Wu and Tsai, 2005).

From the organisational capability perspective, the overall organisational KM capability (KMC) is assessed, based on the organisation's knowledge infrastructure capability (KIC) and knowledge process capability (KPC) (Aujirapongpan *et al.,* 2010; Gosh and Scott, 2007; Liao and Wu, 2010; Lindsey, 2002; Zaim *et al.,* 2007). While some studies found that KIC is more influential than KPC in defining KM performance (Gosh and Scott, 2007; Gold *et al.,* 2001; Zaim *et al.,* 2007), it is argued that the capability to perform the processes is necessary for defining overall KM effectiveness.

In addition, despite a limited number of studies considering the relationships between the various KM processes, these processes are claimed as interrelated (Darroch, 2005). In other words, KM should be viewed as a continuous process, whereby the accomplishment of one process could influence other processes. For example, an intensive knowledge acquisition process could lead to a greater access to a pool of knowledge. The availability of the robust knowledge bases would then influence the subsequent processes of knowledge creation and sharing (Darroch, 2005; Liao *et al.*, 2010).

Finally, the conceptualisation of the proposed relationships between the change readiness construct, knowledge management processes and knowledge management effectiveness, based on the aforementioned arguments, is depicted in Figure V.
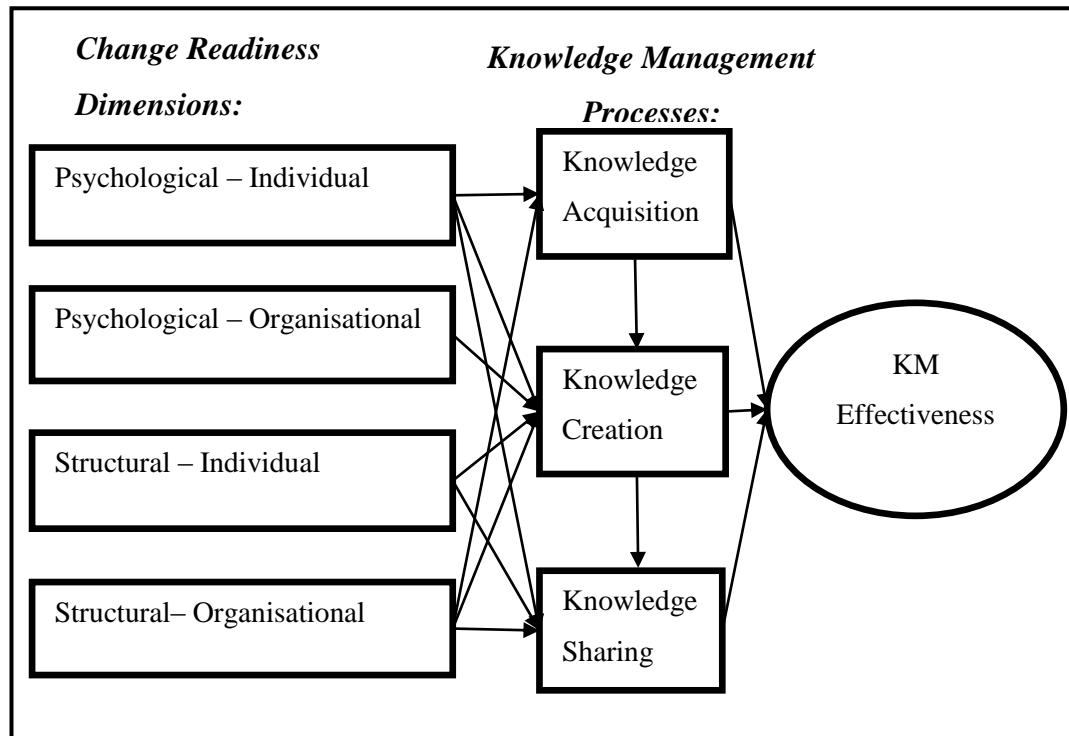
Figure V: Conceptual Model of the Relationships between Change Readiness, Knowledge Management Processes and Knowledge Management Effectiveness

2.10 Discussion and Conclusion

Scrutiny of the literature shows the importance of change readiness on the knowledge management processes. The paucity of empirical knowledge in this area is explained not only by a lack of KM studies from a change management perspective, but also by the oversimplified representation of the change readiness construct in the extant literature. This is inadequate to explain the influences of change readiness on the effective implementation of KM processes. This paper addresses the gap found in the literature on KM critical success factors by integrating change elements in the assessment of successful KM initiatives. The multidimensional and multilevel characteristics of change readiness have been discussed in order to provide a holistic analysis of the construct in the KM context.

The aim of this paper is to propose a conceptual model for integrating change readiness in knowledge management initiatives. Therefore, the discussions are devised on the basis of expected findings. Nevertheless, once accomplished this study should reveal the importance of change readiness for effective KM processes and initiatives.

On the basis of the proposed implications of change readiness for the three KM processes, various issues warrant further analysis. It is expected that the way change readiness impacts each knowledge management process is also dependent on the nature of the process itself. First, it is posited that readiness at the individual level is crucial for knowledge acquisition, since the process requires the establishment of beliefs to assure employees about the importance of acquiring new knowledge. Aligned with this suggestion, it is expected that a higher level of individual understanding about KM needs and requirements, guided by a clear KM vision with appropriate communication and learning environment, could enhance readiness to participate in the knowledge acquisition process.

Further, from the literature review, the knowledge creation process is expected to be the most demanding process. The process is complex since it requires willingness among individuals to externalise their tacit knowledge. This knowledge will then be internalised by others as new knowledge. Externalisation might only occur in the situation where there is a strong reason for an individual to believe that it is appropriate and useful to externalise their knowledge (valence).

Additionally, knowledge creation is also widely agreed upon as being a group effort. Therefore, collective efforts among employees to participate in the process rely on their mutual beliefs about the ability to commit to and survive the change process. It is expected that if employees have positive insights on their shared capability and group commitment, the process of knowledge creation could be accomplished successfully. Likewise, as knowledge creation is a group effort, structural elements such as communication, learning and vision are expected to affect the knowledge creation process, enabling a more streamlined process to be carried out by the different groups or departments in the organisation.

Moreover, while many studies promote the use of technology as a platform for knowledge sharing, analysis of the literature suggests that individual indicators could largely explain the readiness for knowledge sharing. In conjunction with this indication, higher readiness for embracing changes in the knowledge sharing processes could be achieved by creating positive insights among the employees about the appropriateness and value of the proposed change. Such merits include the opportunity for professional growth. If the employees perceive that they are capable of handling and adapting to the changes during the process, they are

expected to be more ready to share their knowledge with others. The individuals' willingness to commit to the knowledge sharing process is also predicted to be influenced by their views on the organisational support. Supporting factors, including effective communication and wide participation opportunities in the knowledge sharing initiative could facilitate knowledge dissemination within the organisation.

The conceptual model presented in this paper suggests that change readiness contributes to effective KM implementation. However, this relationship could be mediated by the effects of knowledge management processes.

Research implications

The conceptual model presented in this paper contributes to the knowledge management literature in several ways.

First, this paper addresses the gap in the literature and recommends the inclusion of change management in the assessment of KM failures and success factors. While many studies focus on assessing implementation success, this paper proposes attention should be given to the phases prior to the KM implementation stage. The assessment of beliefs about the proposed changes at the earlier stage enables consideration of various elements that will shape employees' behaviour and attitude towards the change implementation.

Second, many studies of knowledge management have considered the effects of structural elements as being critical to the success of KM implementation, particularly at the organisational level. However, many fail to fill the gap in understanding the psychological elements that potentially affect the individual's readiness to participate in the process of managing knowledge. This paper highlights the multidimensional characteristic of change readiness. Further, it proposes that the assessment of KM success and effectiveness should reflect both the structural elements underlying the process and employees' psychological beliefs about the changing nature of organisational KM processes.

The argument presented in this paper provides stimulus for further fruitful study in the area. On the basis of the discussion, it is anticipated that various aggregations of the change readiness indicators influence each KM process. Nevertheless, exactly how change readiness contributes to the different KM

processes remains unclear. An extensive empirical analysis of change readiness as a multidimensional and multilevel construct and its impact on KM processes is crucial. In order to gain a broader understanding of the phenomenon, the proposed relationships as depicted in the model illustrated require empirical assessment in different organisational settings.

The study of how change readiness affects KM processes carried out in organisations of diverse sizes, for instance, will shed light on the effects of change readiness on the processes. The psychological dimension of change readiness could be more significant for small and medium organisations, as they might perceive that willingness to change would help them to survive in a competitive market. However, their efforts could be hindered due to constraints related to resources and infrastructures.

On the other hand, large organisations often focus more on the structural dimension as the means to implement KM processes. Nevertheless, without appropriate consideration of a strategy to promote willingness to participate in the processes, the structural investment made to support KM implementation may not yield the desired outcomes. Hence, if findings from various studies highlight common elements of change readiness across different settings, it could be claimed that the assessment of change readiness is a crucial consideration in KM processes.

Further, analysis of the change readiness influences on KM processes among different industries might be worth studying. For example, new knowledge acquired and created in manufacturing organisations might be translated into a more tangible form such as the design and production of merchandise, thus making this knowledge more explicit in nature. In contrast, service organisations would primarily deal with the management of tacit knowledge in order to provide advice and consultation to clients. Consequently, different types of primary knowledge to be managed in different industries might reveal the moderating effects of knowledge type and industry type on the relationships between change readiness and knowledge management processes.

Moreover, the proposed model also suggests that interactions between knowledge management processes are crucial in deriving positive outcomes from KM implementation. This should be established and verified as it is essential for

developing a comprehensive understanding of the reciprocal influence of KM processes and their impact on overall KM effectiveness. Nevertheless, the assessment and measurement of KM effectiveness is still underdeveloped. Accordingly, the analysis of change readiness effects on effective KM through their influence on knowledge processes could further explain the potential predictors of effective KM. Subsequently, extended models of KM effectiveness that examine KM performance from the organisational change perspective can be theorised and validated.

Additionally, prominent theory such as Diffusion of Innovation (Rogers, 2003) could be applied to explain the impacts of change readiness, as part of the innovation decision process, on knowledge management effectiveness. Such study could enhance theoretical understanding when changes in KM processes are viewed from the innovation perspective. Also, the integration of the proposed change readiness model with the Information Systems Success Model introduced by DeLone and McLean (2003) might provide clarification regarding the impact of change readiness on successful KM system-based implementation. As a final point, the conceptual model presented in this paper provides a platform for further empirical analysis of the indirect and direct influences of change readiness on the effective processes for managing organisational knowledge.

Practical implications

Many KM efforts are reported as failures despite enormous investment in the development of infrastructure that supports KM processes (Chua, 2009; Lucier and Torsilieri, 1997; Storey and Barnett, 2000). From a practical perspective, the conceptual model proposed in this paper could be useful for management to realise that, apart from organisational readiness, people readiness for changes in KM processes is another crucial aspect to consider in the effort to achieve KM effectiveness.

The conceptual model highlights multidimensional elements of change readiness encompassing the psychological and structural elements that are present at both individual and organisational levels. Through a conceptualisation of the relationships between change readiness, knowledge management processes and knowledge management effectiveness, the study offers a number of practical

guidelines for the development of KM policy and a road map for a change management perspective.

The model proposes potential influences that the readiness elements exert on the different processes for managing organisational knowledge. These expected findings could provide an input for management in allocating organisational resources that aligned with the needs for a successful implementation of the distinctive KM process. For example, from the understanding of individual psychological and structural influences on the different KM processes, change readiness could be a critical factor to consider in the selection and training of individuals to be involved in each process. This input leads to the formation of an effective KM team consisting of individuals who possesses certain psychological and structural attributes. This is essential to ensure that team quality matches with each KM process.

Furthermore, promoting psychological readiness to embrace changes in the KM initiatives should focus on convincing employees about the needs, purposes and benefits of the proposed changes. Minimising the assumption that people's behaviour can be changed easily in KM implementation is essential for successful KM. Thus, management should develop a sufficient understanding among the employees regarding the importance of an improved KM processes for sustainable organisation competitiveness.

In addition, the level of structural readiness among the employees could be enhanced through motivational courses and training that encourage people's innovativeness and adaptability to cope with the changes. Appointing team members who can exert a positive influence on others could facilitate the change initiative. Further, an opportunity for professional growth through involvement in KM processes should be highlighted as part of employee career development, in order to promote continuous participation and commitment from the employees throughout the process of managing organisational knowledge.

At the organisational level, the psychological dimension highlights the importance of collective beliefs and confidence among the teams to collaborate in KM implementation. Therefore, designing a strategy that increases team expertise and commitment could minimise hassles that might result from the change initiatives. Strong inter-organisational relationships among teams and departments, for

instance, should be enhanced as they could provide a solid platform for an effective knowledge flow within the organisation.

Moreover, discussion on the organisation's structural dimension for KM readiness offers an insight regarding the importance of establishing an appropriate communication structure that expands the employees' opportunity to participate in KM change initiatives. The communication structure of the organisation should facilitate the exchange of ideas to improve KM effectiveness. Likewise, the contribution of ideas from different teams during the decision to implement changes in the KM processes could lead to better decisions when designing pertinent KM processes for departments or groups functions.

Strategy that encourages learning in KM processes is another imperative consideration for successful KM. A learning atmosphere that permits a considerable amount of mistakes for employees to learn during the process of acquiring, creating and sharing knowledge could increase the employees' readiness to accomplish new responsibilities and job requirements as changes are executed.

As a final point, strategies for the KM implementation must be designed with a clear vision so that all of the KM initiatives practised in the different departments or by the distinctive teams are perceived as focusing on one common goal. The alignment between KM strategy and business strategy must be established. A parallel integration of KM goals and business objectives will provide a strong indication that the implementation of KM processes in the organisation is crucial to achieve the business's overall goals.

A comprehensive analysis of change readiness influences could guide an organisation in developing a robust KM plan that addresses both psychological and structural issues. In conclusion, further analysis of the KM implementation from a change perspective could possibly offer new insights and explanations regarding the increasing number of KM initiatives failures.

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3.0 RESEARCH QUESTIONS

3.1 Introduction

This chapter presents research questions that are formulated for the thesis. Discussion in the manuscript presented in Chapter 2 led to development of initial research questions. Nevertheless, due to the fluid nature of the study, these research questions were revised and improved during the course of the study. The following section provides detail explanation of the revision.

3.2 Research Aims and Research Questions

This research aims to understand how change readiness shapes knowledge management processes in the context of the professional service industry. Despite greater effort among organisations to invest in knowledge management (KM) initiatives, the literature reveals an increasing rate of KM failures. A review of KM literature suggests that the lack of readiness to embark on changes underlying knowledge management processes could contribute to failures in the knowledge management initiative. Nevertheless, there is a little empirical assessment of change readiness in KM studies. Relatively a few KM readiness studies have been conducted that examine KM readiness by adopting knowledge management critical success factors to represent readiness elements. These studies are largely quantitative in nature, which limits the understanding of the contextual elements that may shape the phenomenon. Also, the extant studies focus on organisational knowledge management readiness while analysis of the change readiness literature highlights the equal importance of assessing the individual's readiness in the organisational change context. This implies there is less holistic consideration of the change readiness construct in the extant KM literature.

This research holds that change readiness for knowledge processes is a multidimensional phenomenon. Change readiness in the study is conceptualised as multidimensional, consisting of understandings and capabilities for engaging in knowledge-related processes. Apart from being multidimensional, change readiness is also a multilevel construct. With this in mind, the research focuses on enhancing understanding of how the multidimensional and multilevel characteristics of change readiness, as claimed in the literature, shape the diverse

processes for managing a firm's knowledge. It is intended that findings from this research could contribute to the knowledge management literature by offering understanding that a holistic change readiness assessment could mitigate the risk of knowledge management failures in firms' knowledge management process initiatives.

On the basis of a review of literature and identification of the research gaps, the main research question focuses on:

RQ: How do change readiness elements influence and shape the processes for managing knowledge within the professional service context?

Along with the main research question, there are sub-questions formulated to develop specific understanding of the phenomena within the context of the study on the basis of the preliminary review of the literature. These questions are:

RQ1. How does the multidimensional change readiness construct shape the knowledge acquisition process in the professional service context?

RQ2. How does the multidimensional change readiness construct shape the knowledge creation process in the professional service context?

RQ3. How does the multidimensional change readiness construct shape the knowledge sharing process in the professional service context?

However, on the basis of the findings, modification in RQ2 is required to reflect changes in the knowledge processes that emerged from the study.

Analysis of data revealed that in the context of professional firms, the knowledge application process is more apparent than the proposed knowledge creation process. Responses from the interview process indicated that professionals' job requirements emphasise application of knowledge in the provision of services. Application of that expert knowledge and experience must be, however, exercised within the stipulated code of practice. It implies that while professionals could apply their expertise and be creative in delivering professional services, these services must comply with the established job procedures and standards. Therefore, the emerging data from the interview process suggested that in contrast to knowledge creation, the main focus of PSFs' operations is the application of

knowledge in compliance to professional standards and practices issued by professional bodies governing the industry.

Therefore, due to a more significant appearance of the knowledge application process in comparison to the knowledge creation process, the new RQ2 was revised as follows:

RQ2$_{new}$. How does the multidimensional change readiness construct shape the knowledge application process in the professional service context?

Further, while the initial conceptual model presented in Chapter 2 proposes the influences of change readiness on KM processes and the overall KM effectiveness, possible outcomes of KM effectiveness are not discussed in the following chapters. This situation is explained by the need to concentrate on influences of change readiness in shaping the distinctive KM process. The multilevel and multifaceted characteristics of the change readiness construct require in-depth analysis and understanding of the phenomena. Therefore, upon the completion of data collection and analysis, this thesis is dedicated thoroughly to examining linkages among multidimensional change readiness elements, various KM processes, and potential moderating factors. Discussion and assessment of KM outcomes can be the subject for future studies.

4.0 RESEARCH METHODOLOGY AND DESIGN

4.1 Introduction

This chapter explains the fundamental aspects that serve as a basis for conducting this study. All research must be developed on the basis of some underlying philosophical assumptions regarding the means of valid research with appropriate research methods. This chapter discusses the different types of paradigmatic positions that focus on the ontological and epistemological aspects of scientific research. Further, the chapter provides the justification for the interpretive paradigm of the current study. This chapter includes explanation of the multiple case study design and methods adopted in accomplishing the current study. Finally, the chapter addresses the issue of ethics and trustworthiness underlying this qualitative study.

4.2 Knowledge claim

4.2.1 Knowledge Perspectives

The various schools of thought underlying the development of KM studies lead to the different approaches and perspectives of viewing and defining knowledge. A review of literature suggests that there are two main approaches for defining knowledge. The first approach focuses on classification of data, information, knowledge and wisdom, while the second approach considers knowledge from its philosophical perspective: ontological and epistemological points of view (Akbar, 2003).

In differentiating knowledge from information, scholars proposed knowledge originates from information that has been transformed by incorporating personal beliefs and values, and has been validated through personal experience and perspective (Bender & Fish, 2000; Song, Van Der Bij & Weggeman, 2005; Wiig, 1997). Interpretation of knowledge could depend on the context in which it is being formed (Bender & Fish, 2000). Knowledge as beliefs in individuals' minds guides an individual's actions and could potentially contribute to firm's benefit (Song et al., 2005). This definition indicates knowledge is abstract and intangible

(Hawryszkiewycz, 2010; Nonaka & Takeuchi, 1995), in which Polanyi (1967) and Polanyi (1997) considers as tacit knowledge. Nevertheless, scholars also proposed that, at a collective level, knowledge could become more apparent in the forms of organisational routines and practices (Davenport & Prusak, 1998).

The approach of defining knowledge from a philosophical perspective considers knowledge existence as objective to subjective. Studies of knowledge, thus, could be undertaken by through the adoption of positivist, interpretive or social constructivist lens (Nonaka & Peltokorpi, 2006).

Knowledge from an objectivist view is seen as a resource that could exist independent of the knower (Bacerra-Fernandez & Sabherwal, 2010). Knowledge could be in the forms of tacit and explicit (Nonaka & Peltokropi, 2006; Polanyi, 1967). From this perspective also, knowledge represents object that can be managed in various location (Bacerra-Fernandez & Sabherwal, 2010) or as enabler (Alavi & Leidner, 2002) and capability (Gold, Malhotra & Segars, 2001) that influences action and performance. KM studies from a research-based view (RBV) perspective tend to subscribe to this assumption. In terms of its epistemology, study of knowledge comes under empiricism perspective, which claims that knowledge is gained only through a sensory experience (Bosua & Scheepers, 2007; Nonaka & Takeuchi, 1995; Sigala & Chalkiti, 2007).

From an interpretive perspective, knowledge is considered as abstract in nature (Hawryszkiewycz, 2010) and is viewed as a state of individual's minds that underlies the individual's beliefs (Bacerra-Fernandez & Sabherwal, 2010). In line with the knowledge-based view, this study acknowledges that knowledge is subjective and direct measurement of knowledge could be challenging. It could however, be inferred through actions and is subjected to interpretation within context (Nonaka & Peltokorpi, 2006). Knowledge interpretation is also shaped by the extant beliefs, experiences and backgrounds. Rationalism represents the congruent epistemological perspective, which emphasises that knowledge represents a mental process for justifying individuals' beliefs (Bosua &Scheepers, 2007; Sigala & Chilkati, 2007).

The social constructionism promotes that knowledge does not possess any form and thus, is socially created from interactions in social networks (Xu, Houssin, Caillaud & Gardoni, 2010; Nonaka & Peltokorpi, 2006). Knowledge is thus, held

through a collective effort; hence, firms role is to facilitate integration of knowledge among the social actors.

The debate on knowledge definition is continuous due to the interdisciplinary of KM research. Koskinen (2003) proposed that while classification of knowledge in a specific form is difficult, knowledge can exists in both tacit and explicit form, depending on the context in which it is formed or found. Despite the on-going debate, Jasimuddin (2012) claims that scholars tend to acknowledge that "knowledge is multidimensional … typically characterised by trans-disciplinary, complexity and heterogeneity" (p. 331).

From the classification of knowledge and information, the current study supports Wiig (1995)'s approach of defining knowledge as an information that is shaped by beliefs, experience and values. Further, from a philosophical perspective, this study is in line with Nonaka's definition of knowledge, as a process for justifying true beliefs from the interpretive perspective. This study acknowledges that classification of knowledge is challenging, its existence requires interpretation in a specific context, and could be inferred through actions (Nonaka & Peltokorpi, 2006). However, knowledge existence at multiple levels implies that in certain context, for instance at the organisational level, knowledge could somewhat exists in an explicit form. Therefore, this study acknowledges both tacit and explicit nature of knowledge (Hawryszkiewycz, 2010; Nonaka, 1994) in the discussion of the knowledge sharing process.

For these reasons, the notion that knowledge initiates in individuals in a subjective form, which is influenced by experience, beliefs and values, and depends on individuals' interpretation in context; yet could exist in an explicit form at a higher level, represent the lens through which researcher views knowledge in this study context.

4.2.2 Knowledge Management Processes Perspectives

Various views on KM exist. KM has been viewed from capabilities perspective (Gold et al., 2001), technology perspective (Davenport & Prusak, 1998) and process perspective (Nonaka & Takeuchi, 1995; O'Dell & Hubert, 2011). These classifications are rooted from various KM schools of thought, which consist of core-competence, knowledge-based and knowledge creating schools of thought

(Song et al., 2005). The core competence school considers that knowledge provides capabilities that if managed can affect firms' performance. The knowledge-based school concerns the construction of physical knowledge base, using technology, for sharing and maintaining knowledge. The knowledge creating school, which is the focus in this study, promotes processes for elevating knowledge from individual to group and organisational levels that involves knowledge conversion between tacit and explicit forms.

Further, Hawryszkiewyzc (2010) highlights two main directions for the assessment of KM, which are considered as eastern and western directions. Eastern direction depicts knowledge in a more abstract form that is rooted from Nonaka's knowledge spiral process, which involves interpretations, interactions and social structures. Another approach considers knowledge in a more realistic form - as an object that could be managed in various locations with the use of technology. This approach appears in the work of Davenport & Prusak (1998).

The current study adopts the process perspective that emphasises diverse knowledge-related activities that form processes for managing knowledge (Goldoni & Oliviera, 2010; Jasimuddin, 2012; Xu, Houssin, Caillaud & Gardoni, 2010). According to Jasimudddin (2012), various phases involve in the process for managing knowledge, which could occur simultaneously, repetitively and are not necessarily in a sequence order. As a result, diverse understandings and approaches are adopted by scholars in conceptualising these processes in the KM literature.

In a similar way, other scholars support distinctive classifications of KM processes (Goldoni & Oliviera, 2010; Heiseg, 2009; Xu et al., 2010), which implies the inherent subjectivity in classifying those processes. In conjunction with that, scholars advocating the process perspective propose the classification of these knowledge-related activities into groups of KM processes. Three primary groups are concerned with processes for managing emerging knowledge, utilising knowledge and maintaining knowledge (Goldoni & Oliviera, 2010; Xu et al., 2010). From the knowledge-creating perspective, these processes could amplified individual held knowledge into higher levels for greater effects on individual's and firm's achievement.

4.3 Research Paradigm

The philosophical assumptions underlying scientific research are primarily concerned with ontological and epistemological aspects. Ontology refers to the nature of reality. There are two common perspectives for viewing social reality in social research: objectivist and subjectivist points of view (Guba & Lincoln, 1994). The subjectivist ontology assumes that there are multiple realities, as individuals could perceive reality differently (Sarantakos, 2005). Therefore, reality is viewed as subjective. In contrast, the objectivist ontology assumes that reality exists as single and concrete; it could exist independent of people's actions and activities (Burrell & Morgan, 1979).

Epistemology describes assumptions about the nature of knowledge and informs researchers about ways of obtaining knowledge from the social world (Burrell & Morgan, 1979; Myers, 1997). There are two main assumptions related to obtaining knowledge: positivism and interpretivism. The positivist epistemology views the social world as similar to natural science, where reality constitutes objective facts and observable materials; thus, it can be adequately/precisely measured (Neuman, 2012; Sarantakos, 2005). The interpretivist epistemology advocates that, due to the subjective nature of reality, the understanding of social realities requires interpretation of meanings from the viewpoint of individuals in setting (Burrell & Morgan, 1979).

In research, ontological (theory), epistemological (method) and methodological (analysis) assumptions collectively define a research paradigm, which guides the researcher to focus on a set of beliefs underlying a particular research undertaking (Burrell & Morgan, 1979; Denzin & Lincoln, 2013). Sarantakos (2005) defines a research paradigm as "a set of propositions that explain how the world is perceived, a way of breaking down the complexity of the real world, telling researchers and social scientists in general what is important, what is legitimate, what is reasonable" (p. 30). A paradigm reflects a researcher's worldview - the way that researcher views knowledge and reality (Guba & Lincoln, 1994).   The adoption of a particular research paradigm is crucial since it influences decisions about the important focus of the study, the way the study is conducted and the way results are interpreted (Bryman, 2012). Scholars suggest various, yet overlapping classification of research paradigms. Bryman (2012) emphasises

positivist and interpretive paradigms, while Denzin and Lincoln (2013) promotes classification of paradigm into four groups: positivist-post-positivist, constructivist-interpretive, critical and feminist-post-structural.

Positivist and Post-positivist Paradigm

The positivist paradigm considers that only a phenomenon that is observable and measurable could be regarded as knowledge (Bryman & Bell, 2007). As reality is seen as external, the researcher maintains an independent stance from the phenomenon being studied. Typically, knowledge is obtained through a deductive process that focuses on the cause-effect relationships. Studies conducted within the positive paradigm aim at the generalisation of findings, which leads to prediction and explanation of the phenomenon in a similar setting (Neuman, 2012). Further, the literature acknowledged a modified positivist paradigm that is known as a post-positivist paradigm (Guba & Lincoln, 1994). Post-positivist paradigm considers that an accurate measurement and explanation of reality is less possible since reality could be modified. However, the truth of reality could be approximated through triangulation by recognising that there are various/alternative ways for obtaining knowledge (Denzin & Lincoln, 2013; Guba & Lincoln, 1994).

Interpretivist Paradigm

On the basis of an interpretive paradigm, social reality is multiple and subjective; reality is fluid as it involves perceptions and beliefs (Burrell & Morgan, 1979; Neuman, 2012). The interpretivist paradigm suggests that knowledge is obtained and reality is understood from the experience of individuals working in it (Bryman & Bell, 2007). Therefore, to gain understanding of the phenomenon requires a researcher to minimise distance from the study and to interpret meanings based on inputs from those individuals (Sarantakos, 2005). Interpretive studies emphasise an inductive approach by which detailed empirical observations are used to develop deep understanding of the phenomenon. A greater consideration is given on the quality of the process than on the quantification of causal relationships. Neuman (2012) proposes that, from the interpretivist paradigm, knowledge is best obtained through understanding the subjectivity of people's perspectives by making an effort to "stand in another's shoes and understand how and why people see, feel, and act as they do" (p.49). In this

context, the researcher must involve in participative enquiry and the research beliefs will determine the facts.

Discussion of the above-mentioned ontological and epistemological aspects of social research leads to the adoption of the *interpretive paradigm* as the basis for positioning the current study.

4.3.1 Rationale for the Interpretive Paradigm

The decision for adopting the interpretive paradigm is due to several reasons. The researcher adheres to the assumption that there are multiple ways of viewing reality, thus obtaining understanding of the reality, or knowledge, requires interpretation of meanings given by the individuals who are involved in the social reality (Burrell & Morgan, 1979; Sarantakos, 2005).

As mentioned earlier, this thesis adopts definition of knowledge from the interpretive perspective; it subscribes to the process perspective of KM and hence, acknowledges subjectivity in classifying KM processes.

Also, the current study assesses the ways in which change readiness shapes KM processes in the firms studied. The multidimensionality of change readiness implies that this construct could be conceptualised from multiple perspectives, based on individuals' viewpoint about their readiness to engage in the processes for managing knowledge. The conceptualisation of change readiness as a construct involves understanding and beliefs, which could result in changing perceptions (Neuman, 2012). In order to discover how change readiness shapes processes for managing knowledge in firms, the researcher needs to elicit participants' views on elements that they perceived as crucial for enhancing their readiness to engage in knowledge-related activities. The understanding of this phenomenon is gained through interpretation of meanings from participants' inputs about knowledge existence, and as how knowledge-related processes are implemented in their firms and the various ways their readiness shaped those processes. Complex interactions among elements of change readiness and knowledge processes require detailed interpretations of the various participants' viewpoints that lead to the understanding of the phenomenon. The literature suggests that the understanding of a complex phenomenon is best acquired through direct interactions with participants to understand the phenomenon from

people in action /in the setting (Burrell & Morgan, 1979). Further, the aim of this research is to enhance understanding of the phenomenon and contribute to the theoretical development of change readiness in the KM field. The positivist paradigm, which aims at explaining causal relationships and focuses on theory testing (Bryman & Bell, 2007; Neuman, 2012), is considered less suitable to foster a holistic understanding of the phenomenon. For these reasons, the interpretive perspective/paradigm is assumed to be most suitable for understanding the phenomenon of interest.

Transition of Paradigm

The post-positivist paradigm could possibly have been adopted for the current study. Initially, the researcher considered that the phenomenon of interest could be approximately measured. Nevertheless, the extended review of the literature and the preliminary experience from the fieldwork indicate that knowledge and knowledge-related processes are viewed differently by participants on the basis of own perspectives. Further, the ways change readiness shapes KM processes could be affected by other elements, for instance, change nature and the institutional context (Holt & Vardaman, 2013). Therefore, recognising the existence of other contextual elements that shape readiness towards processes for managing knowledge is deemed crucial in order to gain a holistic understanding of the phenomenon. Further, knowledge-related processes could be occurring informally in firms, even in the absence of a formal process. In this situation, the conceptualisation of knowledge-related processes depends on the interpretation of meanings about knowledge-related activities as explained by individuals in action. Adoption of the positivist paradigm could eliminate the consideration of the diverse contextual elements, which in turn offering a limited understanding of the phenomenon of change readiness in KM processes. For these reasons, the shift from the post-positivist to the interpretivist paradigm has been experienced by the researcher during the accomplishment of this qualitative research.

Although Denzin and Lincoln (2013) claims less possibility to move between paradigms when adopting a particular beliefs indicating ontological, epistemological and methodological assumptions, "the researcher-as-bricoleur-theorist works between and within competing and overlapping perspectives and paradigms" (p. 11). Changes in a researcher's view of the theory are possible due

to several factors including the emergence of new theoretical ideas in the literature as well as relevancy of data collected with the preconceived theory or hypotheses (Bryman & Bell, 2007). Consequently, beliefs and assumptions underlying the research paradigm guide the decision regarding the appropriate methodology for undertaking the research (Sarantakos, 2005), as presented in the following section.

4.4 Research Methodology: Quantitative and Qualitative Research

Research methodology is defined as a scheme to conduct a specific study; it encompasses the strategy of inquiry and methods for undertaking social research (Creswell, 2007). According to Sarantakos (2005), "methodology is a research strategy that translates ontological and epistemological principles into guidelines that show how research is to be conducted" (p. 30). Two common research methodologies adopted by social scientists are quantitative and qualitative research. The fundamental differences between these two research methodologies are concerned with the research linkages to ontological, epistemological and methodological aspects (Bryman, 2012; Creswell, 2007; Denzin & Lincoln, 2013; Sarantakos, 2005).

Qualitative research intends to examine diverse, multiple realities that are assumed to be socially constructed. The subjectivity of reality that is experienced internally and viewed differently by individuals requires a researcher to be as close as possible to the research. This minimal distance between the researcher and the research permits rich understanding of the phenomenon through the interpretation of meanings given by those individuals (Denzin & Lincoln, 2013). Qualitative studies focus on interpreting and understanding the reasons for actions and behaviours, the construction of reality and the situational constraints underlying the phenomenon of interest (Sarantakos, 2005). Also, qualitative studies involve a research process that is characterised by the use of inductive logic, the emerging design, and the evolving data collection and analysis. For these reasons, the researcher is directly involved as the key instrument in the data collection process to better elicit individuals' viewpoints in a natural setting (Bryman, 2012; Creswell, 2007). Understanding of the socially constructed reality involves complex interpretations of soft data, including words and gestures. The inductive approach to theory implies that detailed inputs from the research lead to the development of an abstract picture of the phenomenon. Consequently, a

holistic description from qualitative findings offers deep understanding of the phenomenon within a particular context, which contributes to theory generation (Neuman, 2012). Nevertheless, due to the contextual basis of the studies, generalisation of findings to general population represents a major limitation of the qualitative study.

Quantitative research, on the other hand, is designed on the basis that reality is concrete and measurable; this is in line with the positivist approach. Quantitative studies focus on the measurement of relationships among variables in order to explain their cause-effect relationships (Sarantakos, 2005). A quantitative study depicts a deductive approach where specific relationships are posited from abstract theories. Those relationships are being empirically tested in various settings during the study. Quantification of these causal relationships commonly involves the analysis of hard, numerical data through sophisticated statistical analyses and precise measures (Neuman, 2012). While results from the quantitative study could be generalised to a wider population, these results marginalise the influences of the study context. Differences in quantitative and qualitative methodology are shown in Table 4.1.

Table 4.1: Qualitative and Quantitative Methodology.

Characteristics	Qualitative	Quantitative
Ontology **(nature of reality)**	Reality is multiple, diverse and socially constructed.	Reality is concrete and exists independent of actions.
Epistemology **(nature of knowledge)**	Subjective understanding of reality requires a close relationship between a researcher and the research to interpret meanings about the phenomenon.	Objective measurement of reality that exists external to the researcher.
	Inductive approach to theory.	Deductive approach to theory.
	Emphasis on quality of the process and interpretation of meanings in constructing reality within context (case-centred).	Emphasis on measurement and analysis of causal relationships between variables (variable-centred).
	Detailed description for rich and holistic understanding of phenomena in a natural setting.	
	Value laden research inquiry.	Value free research inquiry.
	Emergent, nonlinear research design and process.	Fixed, linear research design and process.
Common Paradigms	Interpretive, Constructionist, Critical, Post-positivist	Positivist, Post-positivist
Research Question	Combination of semi-focused and specific questions.	Focused, specific questions.
Data collection	Researcher-centred.	Instrument-centred.
Data analysis	Interpretation of meanings, analysing soft data e.g. words, impressions, symbols.	Quantification of causal relationships, analysing of hard data e.g. numbers.
Critiques/ Drawbacks	Findings lack representativeness and generalisation to wider population.	Arguments of objective reality; less contextual-based findings; bias in hypotheses formulation.

Adapted from the following sources: Denzin and Lincoln (2013), Creswell (2007), Neuman (2012) and Sarantakos (2005).

4.4.1 Rationales for the Qualitative Research Methodology

In general, this thesis was conducted on the basis of a qualitative methodology, adopting the interpretive paradigm. Denzin and Lincoln (2013) suggest that the constructivist-intrepretive paradigm is one of the major paradigms underlying qualitative research; other paradigms are positivist and post-positivist, and critical and post-modernist.

This thesis acknowledges subjectivity of knowledge that initiates in individuals; hence a context-based interpretation is crucial to understand processes for managing knowledge. Additionally, the thesis also accepts that at a higher level such as the organisational level, knowledge could sometimes appear in an objective form i.e. explicit knowledge. Although the theoretical view of knowledge in this study depicts movement between subjectivist and objectivist perspectives with regards to different processes for managing knowledge, the methodological view for studying the phenomenon of interest was developed on the basis of the interpretive paradigm.

The decision for adopting the qualitative methodology is due to several reasons. Scholars provide diverse classifications of KM in the literature. Apart from the interdisciplinary nature of KM studies, these distinctive classifications are derived from the different KM schools of thought. The current study subscribes to the knowledge creating stream that promotes assessment of KM from a process perspective, which recognises diverse knowledge-related activities for managing knowledge (Goldoni & Oliviera, 2010; Jasimuddin, 2012; Song et al., 2005; Xu et al., 2010). Distinctive classifications of processes for managing knowledge as shown in the literature (Heiseg, 2009; Jasimuddin, 2012) imply that there is inherent subjectivity in recognising KM processes. Knowledge processes are considered as context-dependent from the knowledge creating perspective; thus, the nature of KM processes might differ, based on individuals' interpretations and experiences. Also, these processes could be complex due to interplays among people, infrastructure, strategy and process, representing primary KM pillars. For these reasons, the subjectivity of knowledge indicates that developing understanding of processes for managing knowledge is best achieved through the interpretive lens.

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Most importantly, the current study intends to assess how multidimensional change readiness shapes firms' KM processes. The study focuses on discovering potential interactions among change readiness elements and distinctive KM processes in order to understand the phenomenon. The focus is on the quality of the process and meanings given by individuals in describing the phenomena rather than on quantifying causal relationships among variables, as found in quantitative studies (Denzin & Lincoln, 2013). Deep understanding of the phenomenon requires close interactions with those directly involved in processes for managing knowledge, which could be achieved through a qualitative study.

Further, a review of the literature indicates that a holistic understanding of the multi-characteristics of change readiness is still inconclusive, particularly in the KM field, in which the integration of change readiness in KM studies is evolving (Holt, Bartczak, Clark, & Trent, 2007; Holt, Helfrich, Hall, & Weiner, 2009; Mohammadi et al., 2009; Mohanavel & Ravindran, 2012; Weiner, 2009). Additionally, most extant studies adopt KM critical success factors as proxies for representing organisational KM readiness elements. While these studies offer indications on the potential linkages among those factors and KM process outcomes, the representation of change readiness elements could be incomprehensive, thus offer limited explanation regarding the ways readiness shapes KM processes. The majority of these studies are quantitative in nature (e.g., Mohammadi et al., 2009; Mohanavel & Ravindran, 2012; Shirazi et al., 2011) and tend to focus on a pre-determined KM process. Findings are, therefore, restricted to a particular process with a lack of contextual-bounded explanation.

On the basis of the above arguments, the complexity of change readiness in KM research requires a holistic assessment of the phenomenon of interest. For these reasons, the current study adopts a qualitative methodology that permits a rich understanding of the phenomenon within its context. Qualitative research is claimed to be appropriate for conducting research with a limited understanding of the phenomenon (Creswell, 2012).

The chosen qualitative research methodology guides the decision for adopting the appropriate qualitative research design. Research design is important to enable the adoption of a strategy of inquiry that could address the research questions in discovering the influences of change readiness on distinctive KM processes.

Discussion and rationales for the selected research design is presented in the following section.

4.5 Qualitative Research Design

The choice of research design is guided by the research questions and philosophical assumptions that underlie the study. According to Merriam (1988), research design represents

> a plan for assembling, organising and integrating information (data), and it results in a specific end product (research findings). The selection of a particular design is determined by how the problem is shaped, by the question it raises, and by the type of end product desired (p. 6).

Most common designs for a qualitative study comprise narrative study, phenomenology, ethnography, grounded theory and case study (Creswell, 2007; Sarantakos, 2005). Narrative study focuses on a systematic exploration of real life stories, including social issues. Phenomenology describes the crux of individuals' experience, and ethnography emphasises interpretation of culturally-based groups. Grounded theory, on the other hand, aims at developing theory that is grounded in data while case study offers deep understanding and detailed pictures of phenomena of interest. Any decision on the suitability of these designs for adoption in a particular qualitative study is determined by the purpose of the study. Since gaining an in-depth understanding of the phenomenon represents the main aim for conducting this qualitative research, the current study was conducted on the basis of the case study design.

4.5.1 Qualitative Case Study

In social science research, a case is the focus of the assessment, representing a phenomenon that occurs within a bounded system (Merriam, 1988; Miles & Huberman, 1994; Stake, 1995). The case could refer to an individual, a group, a process, an event or an organisation that is chosen for the study. As a research design from the interpretive perspective, case study focuses on a detailed assessment of a phenomenon to understand human experience and the way things occur within the context (Sarantakos, 2005; Stake, 1995). Merriam (1988) states that a qualitative case study is adopted "in order to gain an in-depth understanding

of the situation and its meaning for those involved. The interest is in the process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation" (p.xii). Instead of focusing on the verification of pre-formulated hypotheses, a qualitative case study is concerned with discovery and interpretation of new or unknown relationships and concepts that characterise the phenomenon, which could lead to re-consideration and theoretical development of that phenomenon (Merriam, 1988; Stake, 1978).

Scholars suggest several primary characteristics of a qualitative case study. Apart from its particular focus on a specific phenomenon (particularistic), a qualitative case study design is well-suited for studying an emerging practice-based problem, with emphasis on experience and context in which the phenomenon occurs (Merriam, 1988). Since the qualitative study is conducted in a natural setting, concrete and holistic insights into the case could be presented through a heuristic assessment and interpretation of the phenomenon that is rooted in its context (Merriam, 1988; Stake, 1978; Thomas, 2011).

Case Classification

Various types of cases are discussed in the literature. For instance, Thomas (2011) proposes the classification of local knowledge case, key case and outlier case. From this scholar's perspective, the selected case represents the *subject* for the study. The local case implies that the case is selected due to a researcher special knowledge with regards to the issue, which consequently sparks curiosity to further examine the case. Key case refers to an exemplary case that could be chosen after a pilot effort to identify significant issues to focus on in relation to the case. Outlier case, on the other hand, refers to a case that is selected for its uniqueness and difference from the norm, making it interesting to be explored (Thomas, 2011).

Stake (1995) suggests that the selection of cases depends on the nature of the case, including an intrinsic, instrumental or collective case. Similar to the outlier case suggested by Thomas (2011), the intrinsic case is selected due to its uniqueness. The selection of an instrumental case seeks to focus on a specific issue or phenomenon that can be derived from the case. The collective case study also intends to assess phenomena, but understanding of any phenomenon could be enhanced by portraying the issue from various platforms and perspectives. In

other words, a collective case, which is also known as multiple case study, consists of a combination of instrumental cases.

4.5.2 Rationales for Multiple-Case Study Design

The purpose of this study is to discover and gain understanding of the ways change readiness shapes KM processes within the context of the study. As suggested by Merriam (1988), the decision to adopt case study as the research design should align with the study's research questions and research aims.

There are various reasons for justifying the selection of case study as the research design. The emphasis on the detailed assessment implies that deep understanding of the phenomenon could be developed by exploring participants' viewpoints from their experience of engaging in processes for managing knowledge in their firms. The qualitative case study offers in-depth understanding since the researcher, as the key instrument, conducts the study in a natural setting where the KM processes occur in order to discover contextual interactions that shape the phenomenon. This approach enables holistic construction of meanings about the phenomenon through interpretation of participants' viewpoints (Merriam, 1988; Stake, 1995; Thomas, 2011). The current research also focuses on extending insights into the ways change readiness elements shape the diverse KM processes, rather than testing relationships between those elements and processes. The interpretive perspective for studying the cases leads to a rich description of phenomena which include development of concepts, categories and interpretations that contribute towards theorising the phenomenon (Merriam, 1988). While Yin (2009) claims that a qualitative case study could suggest causal relationships among elements discovered in the study, Stake (1995) argues that the focus on those cause-effect linkages inherits the characteristics of a quantitative case study. Merriam (1988), however, contends that the conceptualisation and abstraction of findings in the interpretive case study could range from proposing linkages among variables to contributing to the theoretical development of the phenomenon.

Development of change readiness as a multilevel construct in the KM field is still evolving. Thus, the focus of the study is to discover the multidimensional elements of change readiness as applied in the KM field, and the ways in which these elements shape KM processes. The interest is also dedicated to exploring the ways these change readiness elements interact with other factors to understand

how these interactions characterise the phenomenon in a specific context. Findings from the qualitative case study are considered rich and concrete since they are rooted from the interpretation of participants' viewpoints within a specific boundary (Merriam, 1988; Stake, 1978; Stake, 1995).

Consideration of context, which refers to the professional service industry, is crucial in the current study, due to the fact that processes for managing knowledge could differ among firms as those processes are shaped by various factors. The nature of the industry and the firm's operation, for instance, determine mechanisms that are appropriate for managing knowledge in the firm. In the same way, change readiness for knowledge processes, as viewed by participants, could vary due to differences in individuals' background, experiences and perceptions. Therefore, a holistic understanding of the phenomena requires a close consideration of the context in which these phenomena occur. For these reasons, the case study design is suitable for studying each phenomenon where it is impossible to separate the phenomenon's variables from the context.

Multiple case design, which is adopted in the current study, could enhance understanding of a phenomenon through assessment of several cases together, and could reveal complexity of the phenomenon from the differential views (Stake, 2006). The choice of multiple case design enables the researcher to focus on the phenomenon of interest within each firm while undertaking a thorough assessment about change readiness influences on KM processes across various firms' industries and nature of operations. In other words, the selection of multiple cases permits elicitation of multiple perspectives, which illustrates the phenomenon of interest in different contexts. Similarities and contradictions found in these collective cases contribute towards a rich explanation and a detailed picture about the phenomenon. Consequently, the holistic understanding provides a basis for a better theorisation effort (Stake, 2005; Stake, 2006). Finally, findings from multiple perspectives about the phenomenon could be more robust in comparison to a single case (Yin, 2009).

4.6 Overview of the Research Design

The following sections present the overview of the multiple case study design. In general, three firms are involved in the current research. These firms represent the

collective cases in which the qualitative assessment of change readiness influences on processes for managing knowledge was accomplished. In this qualitative study, the researcher was the key instrument for collecting data. Interview represents the primary data collection method, apart from non-participant observation and document access that were permitted in only two of the participating firms. All interviews were conducted at the participating firms' venues. Detailed explanations of the data collection and data analysis processes are presented below. Due to its qualitative nature, accomplishment of this research involves progressive and emerging changes. Changes in the selection of firms and participants were experienced during the data collection stage. Adoption of change management as the theoretical lens also introduced a new perspective in the KM assessment. Therefore, modifications and improvements in research questions and interviews questions were considered as the study was carried out. Data collected from the interviews process were used to improve and streamline the focus of the study. The emerging and inductive characteristics of the qualitative case study have resulted in a non-linear process for accomplishing this multiple case study. Prudent analysis of findings was made to ensure that these interpretations reflect the meanings assigned by participants. Nevertheless, the researcher's background and familiarity with certain aspects of service industry practices may have influenced the interpretation of results.

Case Selection

The multiple case study includes three professional service firms from the accounting and engineering service sectors. The accounting establishments are comprised of one small-medium firm with six staff members and another, a branch of the accounting industry leader, which employs nearly 100 employees. The engineering firm is a specialist in aircraft maintenance, providing its consulting service to the national aircraft carrier. This firm has approximately 50 employees. To preserve anonymity of these firms, they are known by pseudonyms in this study as ACC, CNS and ENG. Each of these firms represents an instrumental case, the assessment of which is intended to extend the researcher's understanding about the phenomenon of change readiness in KM processes. Collectively, findings from these cases contributed towards a holistic picture of the phenomenon within the study context.

The participating firms represent firms with a variety of organisation sizes and nature of operations. The diversity of these firms' backgrounds provided opportunity for the interpretation of findings with considerations of the different contextual elements. Selection of the cases was made purposively by targeting firms within the knowledge intensive industry, due to the assumption that a high reliance on knowledge implies knowledge management processes are critical in these firms' operations (Andreeva & Kianto, 2011; Fong & Choi, 2009). In this study, professional service was identified as the most suitable context for the study since the professional service sector is recognised as a genuine example of the knowledge-intensive industry (Alvesson, 2000; Løwendahl, Revang, & Fosstenløkken, 2001). Thus, the selection of these firms enhances the opportunity to understand the phenomenon due to the significance of knowledge in shaping these firms' operations and their competitiveness.

Number of Cases

Since the aim of qualitative case study is to understand human experience from multiple perspectives, and study of each case focuses on particularity and uniqueness rather than the generalisation of findings to population, scholars believe that sampling in qualitative research is less focused and addressed differently from quantitative study (Denzin & Lincoln, 1998; Stake, 2006; Thomas, 2011; Yin, 2009). The focus of the interpretive case study is generalisation to theory; therefore, the number of cases is determined by the purpose of the study. Merriam (1988) suggests that a non-probabilistic sampling, including purposive sampling, is common for a qualitative case study due to its focus on discovery, interpretations and meanings, rather than on statistical numbers. This scholar states that, "purposive sampling is based on the assumption that one wants to discover, understand, gain insight; therefore needs to select a sample from which one can learn most" (p. 48). Additionally, sampling in the qualitative case study could follow theoretical replication logic rather than statistical logic (Eisenhardt & Graebner, 2007; Yin, 2009). In the same way, Denzin and Lincoln (1998) claim that many qualitative studies have adopted theoretical or purposive sampling. Purposive sampling occurs before data collection, while theoretical sampling is done in conjunction with data collection.

Selection of the participating firms focuses on the opportunity to discover the phenomenon of interest within the context. The aim is to explicate the diversity of interactions among elements that could explain the phenomenon from distinctive participants' perspectives (Stake, 2006). For several reasons, three cases were included in the study. Since the assessment of change readiness in the KM field is evolving, this study explores the phenomenon with a specific focus on the professional service context. As mentioned by Yin (2009), for study that does not focus on confirmatory and excessive certainty, two or three cases are considered adequate for theoretical replication. Further, Creswell (2007) recommends fewer than four or five cases as the larger number of cases could affect the depth of analysis in each case. Nevertheless, Creswell (2007) acknowledges that the exact cut off number of cases to be included in the case study is inconclusive; the number of cases depends on the rationale for choosing case study as the research design. Moreover, gaining access to resources is one of the limitations in qualitative research (Neuman, 2012). In the same way, gaining access to firms for the purpose of conducting case study was challenging. The inclusion of three firms was basically due to the agreement from these firms to participate voluntarily in the study. Further, these firms' differences in their nature of operations and sizes offer insights to develop understanding about the phenomenon with consideration of these distinctive firms' contexts. Additionally, the decision to include firms from the professional service sector meets the aim of studying the phenomenon within the knowledge intensive industry. While admitting that the limited number of cases could represent a limitation to the study, findings from this multiple case study could offer exemplary outcomes and contribute to the theoretical development of change readiness within the KM field, from the lens of professional service.

Following the research design decision is the selection of data collection techniques and data analysis tools to find the answers to the research questions and to achieve the research objectives. Table 4.2 depicts common characteristics for a qualitative case study design.

Table 4.2: Qualitative case study design characteristics

Characteristic	Explanation
Philosophical assumptions	Interpretive, Social Constructivist
Purpose	In-depth understanding of the case (process, event, entity, individuals) within a context.
Types	Single case, multiple case
Data collection	Interviews, observations, documents, physical artefacts.
Data analysis	Memoing, case description, coding and establishing patterns (classifying), direct interpretation, naturalistic generalisations
Presentation of findings	Within-case, cross-cases

Adapted from the following sources: Creswell (2007), Merriam (1988), Sarantakos (2005) and Stake (1995).

4.6.1 Data Collection Technique

This section explains the process for collecting data in the current study. The primary method is a semi-structured interview which was carried out at the participating firms. In addition, non-participatory observations were also conducted during the data collection process in one of the firms. Secondary data of firms' documents such as company profile, internal memos and procedural documents were also gathered in two of these firms as a supporting data collection method. However, due to the confidentiality issue, these methods were restricted in the third firm. Therefore, inputs from these secondary methods were mainly used to verify viewpoints captured during interviews. No other specific analysis was carried out on these inputs.

Gaining Access for the multiple case study

In the current study, the initial aim was to assess the phenomenon among accounting establishments. Therefore, the list of the potential firms was retrieved from the New Zealand Chartered Accountant website. Formal invitation for participating in the study was made through e-mails to the director or manager of these firms. About 20 emails were sent and at this stage, only one large firm, providing accounting and consulting services, had agreed to participate in the study. Another three replies were received, but these firms refused to participate for various reasons including company's policy, unavailability of employees and lack of expertise related to the research topic as well as time constraints.

Then, follow-up e-mails were sent to non-responding firms, after which phone calls were made to these firms with suggestion that the manager or director of these firms might prefer a direct conversation rather than an email communication. As a result, one small firm agreed to participate in the research. Several additional attempts were made to invite other firms to participate, including by extending into other geographical areas. Due to the limited access within the accounting industry, scope of service sector was extended into other service areas, including the engineering sector. One engineering firm was contacted through the supervisor / third party recommendation. This firm is a medium-size firm that provides aircraft maintenance and engineering services. Although the nature of operation is different from the initial intended service scope, this firm is qualified to be included since it represents a professional service firm. Overall, the study consists of multiple case studies involving three firms providing professional services in different service sectors.

Interviewing

Interviewing represents the primary data collection/gathering method for the study. An 'interview' refers to a conversation between the interviewer and the interviewee; it is a powerful way of facilitating active interactions that permits the creation of reality and situated understandings of phenomena within a particular context (Denzin & Lincoln, 2008; Walsham, 1995). Interviewing, as the common technique for collecting data in a case study (Mason, 2010), enables researchers to discover new knowledge and new interpretation about the phenomenon (Kvale, 2007). Face-to-face interviews were conducted in these three participating firms.

This method was selected as it enables elicitation of rich data through direct interactions with the participants, which could provide an accurate picture of the participants' experiences with shared meanings (Fontana & Frey, 2008). As mentioned by Silverman (2011), qualitative interviewing represents a rigorous way of gathering and accessing one's real life experience, including understanding of individuals' attitudes.

Semi-structured interviews were chosen because they provide a guideline for the interview process while allowing flexibility in the conversation. Additionally, this type of interview is common in a qualitative study (Sarantakos, 2005). In comparison to the structured interviews, a semi structured interview offers the potential for gathering new ideas or insights which might not be identified from the extant literature (Kvale, 2007). Inclusion of probing questions during the interview process, for instance, permits clarification and extended understanding of information provided. At the same time, compared to the unstructured interview, semi structured interviews could ensure a consistent questions being asked within the scope of the research (Bryman & Bell, 2007).

The researcher adhered to two principles of conducting interviews in the case study: following a consistent line of interview with reference to the interview protocol, and presenting the questions in as unbiased manner as possible (Rubin & Rubin, 2005; Yin, 2009). Kvale (1996) guidelines on developing an interview protocol and questions were followed in the interview design phase. In comparison to a survey in which standardised closed-ended questions/items are provided, the interview protocol serves only as a guideline that includes open-ended questions to facilitate the researcher's exploration of the relevant issues in detail (Marks, 2000). Also, with the open-ended questions, participants could freely share their views, opinions and beliefs beyond issues imposed by rigid questions. Following-up and probing questions were asked of participants for explanation and clarification purposes. For example, probing questions such as "Could you please elaborate more about….?" and "You have mentioned about….Did you mean that…?" were included during the interviewing process. Probing questions consist of neutral questions that encourage participants to elaborate their responses without inducing bias in the way responses are formed (Sarantakos, 2005). Further, the use of the interview protocol is also aligned with Pansiri's (2006) recommendation for improving the richness of qualitative data

gathered. This scholar suggests that similar questions should be posed to all interviewees to increase support for a particular issue asked. However, different follow-up questions could be included for the purpose of clarifying inputs. Consequently, if answers gathered from the participants are similar and include minimal variations, this indicates that an adequate support is found, thus conducting more interviews is less likely to be necessary. Appendix 1 presents the interview protocol used in the current study.

Number of interviewees

The decision on the number of participants was challenging because no clear guidelines exist on the precise number of interviews to be conducted in a qualitative study (Guest, Bunce, & Johnson, 2006; Perry, 1998). Some authors recommended a certain range on the numbers of interviews, based on experience with their research. For example, Perry (1998) recommends a maximum number of 50 interviews; while Mason (2010) suggests that the number of participants used in a case study approach ranges from 1 to 95. Further, other scholars asserted that it is a researcher's responsibility to decide the appropriate number of interviews by considering the purpose and reason for the interviews, and resource availability (Kvale, 2007; Patton, 1990). Achieving saturation level is another indicator that no further interview is required (Perry, 1998). In the same context, Guest et al. (2006) suggest that saturation is achieved when no new information emerges from the subsequent interviews. On the basis of their study, which involves 60 participants, it was found that constant themes are derived after the completion of six interviews. However, they recommended that saturation is demonstrated within the first 12 interviews.

Mason (2010) conducted a study to identify the number of participants included in PhD studies utilising qualitative interviews. Results from the analysis of 560 studies concur that the number of participants for each type of qualitative methodology adopted is uncertain. Although the most common sample sizes included in a research were 20 to 30, there was lack of evidence to support researchers' strict adherence to the guidelines for saturation as established by previous scholars. The majority of the studies followed recommendation of 15 being the smallest number of participants for a qualitative study, regardless of the methodology, and adhered to guidelines that samples often "lie under 50".

The above arguments suggest that, in contrast to quantitative design, number of participants is flexible and less important for a particular qualitative study. Instead, many other factors need to be considered in deciding the number of participants, including the purpose of conducting interview, resource availability and accessibility, and the saturation level of data collected. In line with the above arguments, 16 interviews were included in this study. With consideration of time constraints and participants' availability, data gathered during the interview process could satisfy the purpose of this qualitative study in discovering and exploring change readiness in the KM field.

Engagement with Cases

The process of interviewing involved three PSFs located in Hamilton, New Zealand. The selection of these firms within the professional service industry enabled theoretical replication of cases representing the same industry, while the different nature of operations and sizes of these firms could extend the explanation about the phenomenon of interest, on the basis of variations in the background of the cases. A richer discussion of firms' nature of operation and industry can be found in the Appendix 2 of the thesis.

Interviews were held for two months beginning from April until June 2011. Management and operational level professionals were invited to participate in the interviews with the purpose of gathering inputs and understanding of the phenomena from multiple perspectives. The interview questions were piloted with one doctoral student and two academic experts in the KM area, in order to ensure questions clarity and freedom from bias. Changes were made accordingly to improve clarity and avoid leading questions.

Case 1

The first case involves a small accounting practitioner. The firm was contacted through emails and phone calls. Agreement to participate in the study was gained through conversation with the director during the follow up call. Interviews were conducted a week after the appointment was made. During the visit to the firm, the researcher was invited to look around the office and being introduced to staff members. There were six staff members working with the firm. The researcher was then being required to provide overview of the research to the director.

Following the briefing, the director explained about background of the firm, its operations and clients' composition. Then, the researcher was invited to visit the file and database room, which was controlled by automated lock. In this room, the researcher was allowed to view documents used in the firm's operations. Explanation on documents flow and individuals responsible for the task was also discussed. On the basis of the director's explanation, the research perceived the way information being passed around in the firm. Also, initial understandings of the firm's operation were developed during the discussion.

The researcher spent approximately three hours at the firm, including two interview sessions which took about an hour each. The first interview was conducted with the director, who took over the firm four years prior to the study, from the previous owner. During the interview, the director shared views on segregation of duties among staff members, and business processes performed in carrying out services offered to clients. This input provided a greater understanding of knowledge-related activities in the firm. The director also shared experience of introducing database system to streamline information and knowledge flow in the firm. Diverse feedback was received from staff members since changes were rarely carried out by previous management. The researcher was given the opportunity to compare documents used and work processes followed, before and after the changes took place. This comparison enhanced the researcher's interest to explore perception and experience of staff members. The interview ended after an hour of conversation since the director has an appointment to meet a client.

The researcher was seated in the office area while waiting for the second interview. During this time, the researcher was permitted to observe ways staff members interact in performing their jobs. Two administrative staff members were working in the middle area, while three accountants were working in three separate office rooms. The director room was located at the end of the corner, which was not directly observable from the waiting area. Conversation and communication among staff members were observed, which indicated interactions among them.

Then, the researcher was introduced to the second interviewee - a senior accountant who has been working with the firm for more than 10 years. The

accountant was selected by the director to represent staff members' viewpoint due to a long tenure experience working with both previous and current management. The interview process took almost one hour to complete. The interviewee shared experience of changes in workflow and system introduced by the new director. It includes the transition process that staff members went through, which affect them psychologically and in practice. Many important points were highlighted with regards to modifications in documents flow, job responsibility and the overall business processes. The researcher was also provided with documents used by the interviewee in completing clients' engagement. Prolonged conversation with the interviewee contributed to a greater understanding of changes and processes for managing knowledge in the firm. Inputs received from the accountant were compared to the director's as a basis for triangulating data.

On the basis of the preliminary analysis from the first case, relevant concepts related to the objective of the study started to emerge. For example, the researcher was able to gain preliminary understanding about possible knowledge-related activities carried out in the PSF. Further, slightly different to the previous KM literature which focuses on the organisational level analysis, it appeared that the readiness issue in KM processes implementation is also related to personal attitudes and characteristics. Therefore, the concepts identified from the first case guided the researcher by providing focus on the variation in KM processes and the importance of diverse change readiness dimensions in the context of KM study. On the basis of the first case, the researcher refined the interview questions in order to align with the research aims.

Case 2

The interview process for the second case was conducted two weeks after the first case. The lag between the interview sessions was required to enable the researcher perform the preliminary analysis that guided the subsequent interviews.

Two rounds of interviews and visits were made to complete the interview sessions for the second case. All interviews were conducted in the discussion room. From the researcher's observation, the firm's setting is more formal as compared to the first case. Although operating in the same industry – accounting, different sizes and complexity of operations reflect segregation of departments in the second case.

Participants for the first visit consisted of management team members with different areas of responsibility, ranging from a department with the least change experience in KM processes to a department that experiences constant changes in KM practices. The aim of having participants from the various areas and change experiences is to ensure all possible factors underlying change readiness and KM implementation are well discovered and supported.

The first interview involved a manager responsible for assurance services. The researcher was explained about processes and tasks performed by professionals working in this service line. The manager's viewpoints with regards to knowledge-related activities within the department and at the management level were gathered. The manager also shared experience on changes in the system and way knowledge-related activities are implemented in the firm.

Then, the second interview was conducted with another manager from a different function. The interviewee responsibility includes overseeing advisory services, which include offering guiding clients through major strategic transactions and decisions, and operational changes. The manager has been working in the firm for more than four years. During the interview, the manager disclosed processes required to provide tailored advices to clients with different service needs and expectations. While processes explained by the previous manager were focusing on routine procedures, tasks performed by the advisory team are more unstructured. Hence, in-depth knowledge and experience about the market and businesses' future potentials are crucial. The manager also shared the advisory team's experience in developing a new service line to fulfil clients' needs. Conversation with the interviewee strengthened the researcher's understanding of functional processes in the firm.

The third interviewee was a manager responsible for the development and change in the firm. Conversation with the interviewee focused on these two aspects and the way they impacted employees and the firm's planning. Information gathered from the third interviewee was compared to the first two interviews in order to better comprehend changes in knowledge-related processes that have been accomplished and, are on-going in the firm. The interview lasted after about an hour and important understandings of the firm's operation and planning were developed.

The second round of interviews was conducted on the following week. The interview process involved various areas of expertise, including audit, tax and advisory associates. Interviews were conducted in the discussion room, similar to the first session. Participants consisted of those who are familiar with processes for managing knowledge in distinctive functions and who have experienced many changes in these processes. Conversation with these interviewees provides insights about changes and knowledge processes from the perspective of professionals at the operational level. Separate interview session was conducted with each interviewee, which led to deeper understanding about each functional processes and changes that have been experienced by employees of the firm.

The selection of participants with specified characteristics was discussed with the firm's representative prior to the interview session to enable the researcher gain data from reliable sources. The researcher was satisfied with the selection of participants since most of the employees are working in a similar functional area with the managerial teams interviewed. This situation allows for verification of the data collected from the earlier stage.

Although the researcher was intended to gather data from other sources such as through observation and documents review, the request to view systems and work processes performed was not approved. The reasons provided were due to the confidential issue and information security policy practiced by the firm. Also, the researcher was unable to observe employees' work space from the discussion area. Despite this limitation, data from multiple sources in the interview, however, provide dense understanding of the phenomena of interest.

Case 3

The next case study involves an engineering and maintenance service firm. Upon receiving consent from management, the first visit was accomplished. The visit was held on a Friday morning, involving a key informant – the technical supervisor engineer. During the visit, the researcher waited in the reception area of the aviation management building for about fifteen minutes before being greeted by the supervisor who was, at that time, supervising work on the maintenance floor. There is a main meeting room located next to the reception area, which is used for management meeting, as informed by the supervisor. During the time of waiting, a group of flying officers were having a discussion in

the meeting room. After an ice breaking session with the key informant, the researcher was invited to enter the maintenance office area, which was located in a different building. Next to the maintenance office is the maintenance floor, where the main operation for maintaining airplanes are performed.

Visiting the office and engineering maintenance floor was an eye opener experience for the researcher with accounting background. When the researcher arrived at the maintenance office area, there were a supervisor and two engineers performing maintenance checking on an airplane. The researcher was told that maintenance service by a larger team is commonly performed during the night shift to prepare airplanes to fly on the next morning. The researcher was guided to the administration office, where workflow documents, forms, aviation guidelines and maintenance procedure files were kept. The supervisor informed that a shift meeting is held in the administration room every night before the maintenance shift begins. The researcher was then introduced to administrative employees before being explained by the supervisor about basic workflow and processes performed by the maintenance and consulting team. The researcher was also allowed to look through the documents in order to gain understanding of work processes. Then, the researcher was invited to visit other rooms located in the maintenance building, which include spare parts room, equipment room and the finance office. Conversation about the firm's operation continues during the visit.

After visiting the maintenance office area, the researcher was invited to the technical supervisor's office where the formal interview was conducted. The researcher was provided with overview of the maintenance operation, and allowed to read through the maintenance operation file. The file contains, among all, background of professional engineers, shifts planning, and compilation of work processes. During the conversation, the researcher was informed that the firm is the process of streamlining its knowledge-related activities.

The formal interview session with the technical supervisor took almost two hours. At the beginning of the conversation, the technical supervisor was reluctant to agreeing on the importance of change in implementing knowledge processes. It was due to the opinion that implementing knowledge processes was about modifying the organisational culture, which from the supervisor's perspective, has no influence of change elements. However, following the conversation, the

technical supervisor seems to be agreed on possibilities of integrating change in enhancing professionals' contribution in knowledge-related activities.

In-depth discussion with the technical supervisor was experienced by the researcher. Although the researcher was unfamiliar with nature of the firm's operation, conversation with the technical supervisor enabled the researcher to clarify understanding about the firm. In between of the conversation, the technical supervisor shown supporting documents to provide explanation on activities and processes performed by professionals. The researcher was also invited to visit the archive room that locates past records of maintenance consultation and operations, as required by the aviation professional body.

After completion of the interview with the technical supervisor, a brief discussion on selection of interviewees and schedule for subsequent interviews were made. The researcher informed the technical supervisor that participants from both managerial and operational levels would be needed to satisfy the study's requirement.

The researcher was then allowed to interview one of the engineers on duty. The interview was conducted at the participant's work space in the equipment room. Throughout the interview process, the researcher was also given opportunity to look at the computerised work flow system to better comprehend the process. The system requires completion of tasks by maintenance teams before a particular airplane is allowed to operate. Various forms accompanied each procedure that recorded processes of distinctive maintenance jobs until completion.

The first session of the visit ended with the agreement that arrangement for subsequent interviews will be made through email conversation. Input from observation was recorded in a note book and was reviewed that night as input for later interactions. Minor modifications to the interview questions were made at this stage to align with nature of the firm's operation.

Follow up email conversation led to the agreement that the second visit will be held on the following Monday, in which the researcher could attend and observe the maintenance supervision meeting. The researcher arrived at the firm on the following Monday evening, fifteen minutes before the meeting began at 8.00 p.m. The researcher was introduced to attendees of the meeting, comprising middle

managers from administration, production, development, finance and maintenance units. The team was quite surprised with the visit, but the researcher informed the study purposes and clarified the non-participation observation that will be conducted. Then, the meeting began with reports from all units and discussions of on-going issues in the firm's operations. From the observation, the researcher was able to understand the way various units communicate, assignment of tasks and responsibilities, reporting functions and the decision processes.

After the meeting ended, the researcher interviewed the development manager. The interview was enlightening since the interviewee is responsible for research and development area, in which invention of processes are encouraged. The way for gathering and disseminating input for service improvement reflects various knowledge-related activities performed in the firm. The researcher was explained about involvement of professionals in service innovation from the perspective of management. After approximately an hour of conversation, the interview ended.

Another two interviews were conducted with two engineers, respectively. One is working at a supervisory level, while the other interviewee is the operational engineer. Both of the interviewees have been working in the firm for 13 years. They have experienced various changes in processes and operations of the firm, including streamlining of the service line, which influenced their perspective on the current effort by management to improve knowledge-related activities. These interviews extended the researcher's understanding of the phenomenon from the perspectives of employees who have been experiencing various degrees of changes in the firm. The interviews session was completed at 11.30 on that night.

The researcher was than invited by the key informant for the third visit on the following week. Due to the nature of the firm's operation, the visit was held during a night shift. This visit gave opportunity for the researcher to join the shift meeting, to observe the maintenance work and to conduct three interviews with two operational engineers and a supervisor. During the shift meeting, the researcher was able to observe assignment of duties to shift teams, discussion of maintenance operation issues and sharing of information about another branch's operation in the South Island of New Zealand. The researcher was informed that operational issues discussed in the shift meeting will be presented to top management by the technical supervisor. At the end of the meeting, teams were

given job card describing maintenance tasks that require completion during the shift.

After that, the researcher was accompanied by the technical supervisor to visit the maintenance floor. There were two teams, comprising of eight to ten members each, working on maintenance of two airplanes. The researcher was given the opportunity to check on the airplane and observe the way team members perform the tasks assigned to them. Since each member was assigned an individual task, which is however related to other members' tasks, communication and exchange of ideas among them seem to be pertinent. The maintenance floor was quite busy that night with discussions among supervisory teams in resolving an airplane incident, which happened earlier of the day.

Then, the researcher was invited to the maintenance meeting room, in which three interviews were conducted. The first interview for the night involved an engineer with 13 years' experience in the firm. The interviewee has experienced changes in operations and processes similar to the previous two interviewees due to about same length of job tenure at the firm. The following interview was conducted with a new entrant with a year experience working in the firm. The interviewee is an expatriate who possess vital expertise, which is needed by the firm, as informed by the technical supervisor. During the conversation, the interviewee shared his views on the way maintenance and consultation processes are performed in comparison to his previous experience. The interviewee also disclosed the adaptation process that was required due to different work culture and background. The final interview involved a supervisor with five years experiences in the firm. Despite limited experience in the firm, the interviewee expressed his concerns about the existing approach and system that have an impact on knowledge processes. The interviewee also shared some insights about changes that were performed and required to be considered to improve the firm's operation. Since the final interviewee was the duty supervisor for the night, the researcher was invited to observe the engine test procedures. The researcher and two supervisors went into the airplane that has completed the maintenance and checking procedure. The airplane is considered ready to fly; yet the final engine check needs approval from the duty supervisor. During the procedure, the researcher observed communication and documentation process in finalising the maintenance task. The opportunity to interview professionals from different levels, visit the

maintenance floor and read through documents allowed the researcher to triangulate data gathered from different sources. By the end of the session, the researcher was satisfied with the data collected as consistency could be identified. After conducting on-going analysis of the data, it was concluded that saturation of data has been achieved since similar incidents and common concepts regarding change readiness and KM processes had been gathered from the participants.

All the interviews were recorded using an audio recorder device with consent from all participants. Every interview was transcribed by the researcher in the form of verbatim transcriptions. The transcription process was carried out as soon as interviews were completed at each firm, so that the researcher was able to include summary and descriptions about the interview process. Some of this important information was gathered during a debriefing session, which was purposely not recorded to encourage participants to share other important information that was considered 'off-record' and preferably unrecorded. Finally, to mitigate bias in the process of collecting data from these interviews, multiple and knowledgeable informants from each firm were included, which, according to Eisenhardt and Graebner (2007) permits diverse perspectives to be gained about the phenomenon of interest. Participants from both managerial and operational levels were interviewed in all firms, and participants from the various functional levels were also involved in the interviews conducted in the second case.

4.6.2 Data Analysis

Interpretive data analysis

Analysing qualitative interviews requires a researcher's subjective interpretation and reflexive view of social reality on the basis of viewpoints provided by the interviewees, who are the experts in the phenomenon of interest (Sarantakos, 2005). Miles and Huberman (1994) highlight three approaches to a qualitative data analysis: interpretivism, social anthropology and collaborative social research. The current study adopts the interpretivist approach where understanding of professionals' readiness towards processes for managing knowledge is inductively derived from the transcription of interviews. The process of analysing data was performed according to the interactive model for qualitative analyses, which involves stages of data reduction, data display, and verification and conclusion formulation (Miles & Huberman, 1994). Data reduction depicts the process of

selecting and transforming raw data into condensed forms. Data display involves organising and structuring the transformed data into an abstract representation to enhance understanding of the phenomenon and to facilitate the process of developing conclusion. The verification stage focuses on the analytic assessment of patterns and explanations to develop linkages between findings with abstract concepts, and to support the formulation of propositions and conclusions for the study (Given, 2008). These stages are iterative; they were performed back and forth prior to arriving at the final conclusions. The above-mentioned stages were experienced throughout coding and writing-up cases phases. In comparison to quantitative analysis, where data analysis is performed upon completion of data collection, qualitative analysis is commonly an on-going process starting as soon as the data collection phase begins until after its completion (Sarantakos, 2005). Due to the emergent design of qualitative studies, this on-going analysis is crucial for the researcher to shape the focus of the study.

Transcribing and Coding

Interviews were transcribed verbatim by the researcher. From the interpretive perspective, transcribing is considered as part of the research activity, which involves interpretations and judgements in the process of converting conversational-based into written-based communication to facilitate subsequent analysis (Kvale, 1996). Verbatim transcription was selected due to its purpose to capture entire conversation with the interviewees. McLellan, MacQueen, and Neidig (2003) argues that for qualitative research that aims at discovering in-depth understanding of phenomenon, which involves a thorough interpretation of the ways social phenomena is shaped by interactions of the diverse elements, an extensive and a detailed level of transcription is essential. This approach could minimise any possibilities of missing 'data' from the interviews due to the fact that interpretations and analyses of qualitative data are non-sequential.

Kvale (1996) claims interview analysis could involve meaning condensation, meaning categorisation, meaning interpretation, narrative structuring and ad-hoc methods. Analysis of interview transcripts in the current study involves coding process and meaning interpretation. Coding procedure is part of the data reduction stage, which involves focusing, grouping and clustering raw data by assigning codes or themes. The inductive data analysis in this multiple case study design

required the researcher to develop codes, concepts and categories on the basis of the data gathered from the interviews. The analysis involved movement from the classification of specific incidents to the development of abstraction categories (Creswell, 2007). The process was performed dynamically where the researcher revisited interview transcripts and coding records back and forth (multiple times) during the analysis process in order to ensure concepts and categories reflect meanings assigned by participants about the phenomenon in interest. The current study adopts the grounded theory analysis pioneered by Strauss and Corbin (1990) as the basis for coding and analysing of qualitative data. Discussion of the coding process is provided later in the chapter following the explanation on qualitative cases study analysis.

Qualitative case study analysis: Within case analysis and Cross-cases analysis

Multiple level analyses were carried out on the qualitative data gathered from interviews. Creswell (2007) proposed a template for analysing a case study which could be used as a guideline in analysing multiple case study. Two central means of analysing case studies are within-case analysis and cross-case analysis. Figure 4.1 presents the guideline used in the current multiple case study analysis.
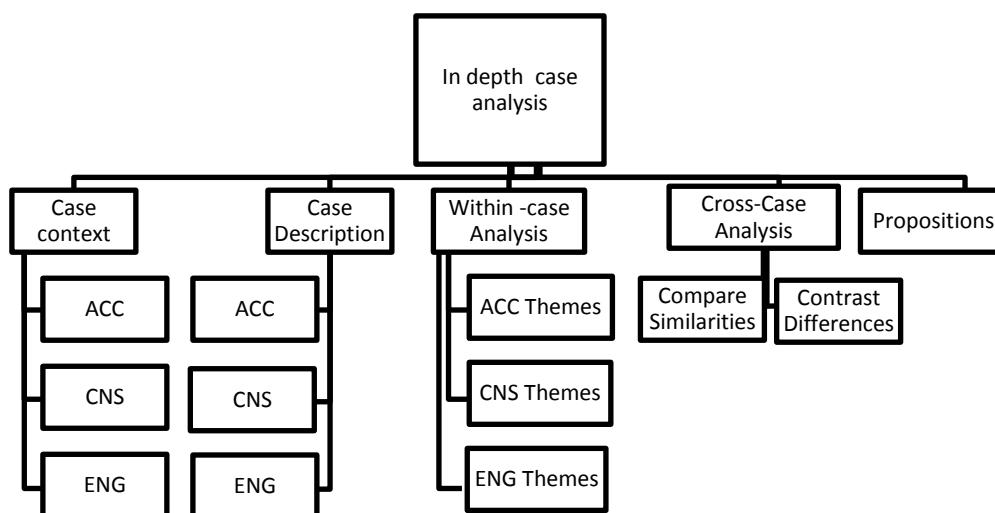
Figure 4.1: Coding for Multiple case study

*(*Adapted from "Qualitative Inquiry & Research Design" by Creswell, J. W., 2007)

The central role of within-case analysis is to provide detailed write-ups for each case that facilitate preliminary understanding of phenomena despite bulky data from various case studies (Eisenhardt, 1989). Following the adoption of within-case analysis, individual cases are described separately to demonstrate a thorough understanding of each case. At this stage, the within-case description technique was used. A descriptive summary for each case was prepared and discussion was structured on the basis of four focused themes arising during the interviews: defining knowledge and knowledge management, processes for managing knowledge, change readiness influences, and knowledge processes outcomes. Nevertheless, results for KM processes outcomes are not included in this thesis. Quotes from participants are included in the discussion to provide illustration of important points highlighted by the participants. In line with Eisenhardt (1989), the adoption of within-case description facilitated the identification of and familiarity with emerging patterns for constructs in the cases. Further, it also provided comprehensive background for all cases, which is important to guide subsequent phase of comparing and contrasting patterns across the cases. Findings from the within-case analysis are presented in Appendix 2 (pp. 268- 398).

The second approach for analysing data gathered from the multiple-case study is cross-case analysis. Cross-case analysis enables the development or formulation of cross-case conclusion and provides evident about the phenomenon of interest from multiple lenses (Eisenhardt, 1989; Yin, 2009). This analysis permits generalisation and understanding of the patterns emerging from within-case description, by comparing and contrasting data from deviating perspectives (Eisenhardt, 1989). The chosen analysis is intended to provide explanation about KM processes and change readiness influences in the context of PSFs, while being open to any potential interactions with other contextual elements that might shape the phenomenon. In order to accomplish the cross-cases analysis, Eisenhardt (1989) suggests the use of dimensions or categories to represent the data for comparing and contrasting purposes among the cases. Classification of data and identification of categories in this study was performed according to three coding stages of grounded theory analysis based on the approach introduced by Strauss and Corbin (1990).

Grounded Theory Analysis

The data gathered from the interviews were analysed following the grounded theory analysis. Grounded theory as a data analysis technique offers rich understanding of phenomenon being studied as a result of detailed and rigorous coding procedures (Denzin & Lincoln, 2000). The technique focuses on providing explanation about people's experience that is grounded on the data gathered from the real practice.

After the 'Discovery of Grounded Theory' in 1967, Strauss and Glaser pursued separate path and promoted different techniques for analysing data, known as the *Straussian* and the *Glaserian* approaches (Grbich, 2007). The *Straussian* approach was developed by Strauss and Corbin (1990), which involves dimensionalisation and focuses on the fragmentation of data through three stages of coding procedures. The coding stages consist of open coding, axial coding and selective coding. These stages lead to the generation of theory relating to categories. These structured coding procedures and the fragmentation of data raise concerns about such a complex technique in which researchers could lose track of the overall picture that emerges (Grbich, 2007). On the other hand, Glaser argues that his *Glaserian* approach represents the pure version of grounded theory analysis with less emphasis on the coding procedure. This approach focuses on a constant comparison method in the development of new theoretical explanations with less focus on the coding procedures and framing of data within the existing conceptual positions (Charmaz, 2003; Grbich, 2007). For the purpose of the current research, the *Straussian* approach to analysis was adopted as the data analysis technique. Despite critiques in the literature, this analysis approach continues to gain attention as a more practical technique for grounded theory data analysis (Denzin & Lincoln, 2000). The structure provided for coding is suitable and useful for guiding a novice qualitative researcher.

Open coding represents the first stage of coding in grounded theory analysis. The process, which is intended to discover and develop concepts and categories, involves examining, fracturing, conceptualising and categorising of data (Strauss & Corbin, 1990). Open coding is also known as an indexing system to tentatively develop and label concepts that potentially reflect the phenomenon of interest (Hardy & Bryman, 2004). In performing the open coding process, the researcher

read and re-read the interview transcript in detail in order to identify potential empirical indicator of concepts, as proposed by Sarantakos (2005). As mentioned earlier, labelling the concepts is a tentative process which involves modifications in the terms used to ensure 'fitness' of data. Open coding was performed with reference to two analytic procedures of making comparison and asking of question, which involved constant critiquing of data.

First, data from interview transcriptions were classified in the form of incidents and were labelled following the line-by-line open coding procedure. This process involves conceptualisation of data. The process was documented in the form of tables, using Microsoft Excel. The incidents were compared to each other as the process was carried out and similar incidents were assigned with the same conceptual label. This process is known as concept labelling. Following this procedure, 216 conceptual labels were generated and were labelled accordingly. These concepts represent the basis for developing the theoretical model of the phenomenon. Appendix 3A presents the excerpt for category development.

Concepts that belong to the same phenomenon were classified together to form categories, under the process known as categorising. The phenomenon representing the category was then assigned a more abstract conceptual name that represents the phenomenon. Improvement and refinement to these categories were constantly made. As suggested by Pidgeon & Henwood (Hardy & Bryman, 2004), integrating and splitting the initial categories occur commonly by linking and reclassifying concepts. Thirty two (32) initial categories were formed and the process of assigning names to these categories was carried out based on guidelines recommended by Strauss and Corbin (1990). They suggest three ways for assigning names to the categories: on the basis of the researcher's interpretation, with reference to a pool of concepts from literature, or on the basis of catchy words mentioned by participants themselves, known as *in-vivo* codes. In the present study, categories were named based on the researcher's interpretation of the concept, reference to the literature and participants' categories *(in-vivo)*.

Hardy and Bryman (2004) mentioned about the choice of adopting a suitable and balanced approach for assigning names to categories. In-vivo codes are commonly context-based while researcher categories involve a general theoretical perspective. In the current study, some in-vivo concepts were captured from

participants, yet those with less theoretical support could be considered for future research. As a result, only 20 categories are considered in the current study. Appendix 3B depicts the list of initial categories created while Appendix 3C shows the list of finalised categories.

At this stage, categories representing change readiness elements and dimensions began to emerge. Individual related concepts, including expertise and adaptability seemed to be important for the participants, which supported the inclusion of the individual dimension in the initial conceptual model. Further, individual concerns regarding change benefit, change goal, need for knowledge and perceived management support reflected the importance of these concepts in defining the individuals' understanding with regards to their readiness for KM changes. Similarly, communication, learning, management support and participation were found to represent the relatively important organisational elements in the change readiness context.

Strauss and Corbin (1990) proposed that each category that is developed must be assigned properties and dimensions. This step is known as dimensionalisation. Therefore, the categories were assigned with properties captured from the interviews and these properties were then dimensionalised to represent their location along a continuum. As an example, *'communication'* category is dimensionalised into frequency, mechanism and direction of communication. These dimensions were further allocated along a continuum of *infrequent – very frequent, informal – formal* and *single direction – multi-direction*. The dimensionalisation of categories and identification of their properties formed the basis for developing linkages among categories or between categories and subcategories. This procedure of dimensionalisation contributes to a more dense and precise theory development (Charmaz, 2003).

Additionally, in the process of developing categories, Strauss and Corbin (1990) suggest that the comparison between actual data and the proposed elements derived deductively from the literature could stimulate theoretical sensitivity by providing concepts and relationships that are verified against the actual data. Nevertheless, these similarities provide only an initial idea of linkages between the change readiness elements and the concepts; thus these categories are still

inconclusive. Further coding procedures are required to enhance understanding and clarity of the phenomenon of interest.

The second coding stage – the axial coding is also known as theoretical coding (Sarantakos, 2005). While, during the open coding stage data were fractured and classified into concepts, categories, properties and dimensional location, axial coding requires rearrangement and assembling of data in a new way. The process of putting data back together was carried out by creating possible linkages between categories and their subcategories to develop higher-order concepts (Sarantakos, 2005). These linkages, which are captured from the data, formed the foundation for main categories development. The aims of axial coding are to discover and relate categories, which Strauss and Corbin (1990) recommend to be performed systematically using a paradigm model in explaining the phenomenon. Phenomenon, which refers to the categories identified during the open coding stage, represents the essential idea described by the data gathered. During axial coding, these phenomena were described in detail within a model that links the casual and intervening conditions, context, strategy and consequences, to explain the phenomenon. The axial coding process involves empirical/heuristic analysis that portrays the phenomenon on the basis of data gathered, with theoretical explanation (Hardy & Bryman, 2004). Since Strauss & Corbin's (1990) axial coding provides particular/systematic guidelines for theoretical development, those elements suggested in the paradigm model were considered and included in the development of findings of the current study. Generally, axial coding in the current study involves the integration and establishment of relationships among categories presented in Appendix 3C, which offers a holistic representation of the phenomenon of interest – understanding how change readiness elements shape the distinctive KM process. These processes consist of knowledge acquisition, knowledge application and knowledge sharing. Linkages between the above-mentioned categories are provided in the discussion of findings in the following three chapters.

The final coding stage is known as selective coding. Selective coding requires integration among core categories through the grouping process of categories based on their dimensional location, validating those relationships and filling in categories that need further refinement to achieve variation in the theory (Strauss & Corbin, 1990). The coding process of grounded theory analysis, thus, leads to

the development of core categories of change readiness in a knowledge management context. The core categories identified from the interviews and qualitative data analysis provides guidelines and supports the formulation of propositions for a theoretical model. The core categories and relationships among them were also used as a basis to explain the phenomenon in the cross-case analysis. Appendix 3D presents the list of core categories.

The overall purpose of accomplishing this grounded analysis is to discover interactions among change readiness elements, KM processes and other contextual factors that might shape the phenomenon. Both deductive and inductive thinking were applied during the coding stages. Strauss and Corbin (1990) recommend that, while researcher derives the linkages between data deductively, the researcher also needs to verify these linkages through comparison between incidents. This guideline was followed during the analysis process due to the fact that the constant interplay between developing propositions and performing verifications could ensure that findings are grounded on the data collected from real phenomena.

Open coding resulted in the development of categories, in which their interrelations were formed during the axial coding stage. Verification was accomplished at this stage of relating the categories, whereby the researcher asked questions and returned to data multiple times in order to look for evidence, incidents and events that support the questions, thus verifying the data. During selective coding, reference to literature provided supplemental validation as well as showed how findings differ from literature (Creswell, 1998; Strauss & Corbin, 1990).

Consequently, the adoption of grounded theory analysis, which led to the identification of concepts, categories and core categories, has extended understanding of change readiness influences on diverse processes for managing knowledge in the professional service context. Outcomes from the three coding stage were used as a basis for building cross-case analysis and led to the development of propositions for understanding the phenomenon of change readiness influences on KM processes.

Cross-case analysis and propositions development

Cross-case analysis not only highlights the commonality among cases, but also highlights the uniqueness of each case (Stake, 2006). During cross-case analysis, empirical evidence from each case was compared and contrasted, which led to the discovery of similarities and differences among change readiness elements that shape KM processes in each firm. These findings enriched the development of the general understanding of the phenomenon with considerations of the study context. Findings were combined to develop propositions reflecting interactions among change readiness elements, contextual elements and the diverse KM processes. Stake (2006) suggests that the generation of assertions during the cross-case analysis, on the basis of empirical evidence, is crucial in order to ensure the credibility of findings. These assertions represent the understanding of the phenomenon through the processes of merging, sorting and ranking of categories across cases, which form the basis for developing theoretical propositions of the phenomenon (Walsham, 1995). Along with findings and discussion of the multiple-case study, development of propositions from this current study is presented in Chapters 5, 6 and 7.

Figure 4.2 depicts the structure of research design for the current study.

ONTOLOGY: SUBJECTIVIST (multiple realities and socially construct).

EPISTEMOLOGY: INTERPRETIVE (reality is socially constructed, through complexity of human sense making in a specific context))

RESEARCH PARADIGM: INTERPRETIVIST (constructivism, understanding phenomenon)

APPROACH TO THEORY: INDUCTIVE LOGIC

NATURE OF GENERALISATION: Generalise to theory and context-bounded

RESEARCH METHODOLOGY: QUALITATIVE METHODOLOGY

QUALITATIVE RESEARCH DESIGN: MULTIPLE CASE STUDY

RESEARCH METHODS:

Data Collection: Semi structured Interviews , non-participant observation.

Data Analysis: Grounded Theory Analysis Techniques, Within-case analysis and Cross-case Analysis

Figure 4.2: Structure of research design for the study

4.7 Literature Review

An on-going literature review was conducted to inform this study. This research bridges three streams of literature: knowledge management, change management and the professional service literature. The focus of the literature review was two-fold. The first phase focused on the integration of a change management perspective within firms' KM processes. The review led to the development of the initial conceptual model for the research as presented in the published article in Chapter 2. This preliminary review also provides guidelines for the formulation of research questions.

The second phase of the literature review was conducted after the completion of the data analysis process. The review provided the basis for arguments and support for the discussion of findings, which resulted in the formulation of propositions and development of the theoretical models presented in Chapters 5, 6 and 7. Creswell (2007) acknowledges diverse stages and purposes of literature review underlie qualitative studies.

4.8 Ethical Considerations

Merriam (1988) highlights two points of ethical dilemma when conducting a qualitative case study research: during the data collection stage, and at the stage of disseminating research findings. In providing guidelines for qualitative research ethics, Kvale (2007) addresses the same concerns by emphasising the aspects of informed consent, capacity and anonymity.

Informed consent implies that agreement to participate in the study is gained through an informed process, whereby participants are given adequate information about the research so as to facilitate their decisions about participating in the study. In the current study, participants were provided with full information about the research aims and procedures during initial briefing prior to the interview process. Further, they were also informed on their rights to choose not to answer a particular question, or to withdraw from the study within a certain period of time, and about consequences of their participation in the study. Although consent for accessing the firms was initially gained through gatekeepers such as directors and

managers of the firms, information in written form was provided to each participant prior to the interview process. The relevant information was provided in the participants' information sheet and consent form. These ethics-related forms are included in Appendix 4. The form required a signature indicating their agreement to participate and only those who agreed to participate were included in the study. Also, those participants are considered capable of making the decision about their participation, since they are knowledgeable professionals working in these firms.

Further, the possibility of disseminating findings was discussed with participants, including through conference presentations and proceedings, and publication of journal articles. In line with the recommendation by Merriam (1988), in the process of writing and disseminating research findings, the anonymity of research participants and the participating firms was preserved through the use of pseudonyms. By indicating anonymous identity, participants were informed that individual participants would not be identifiable in the reporting of findings. Likewise, the confidentiality of participants and participating firms is protected through restricting disclosure of raw transcripts only to researcher and the supervisory panels. There were also 'off the record' comments made by participants that were shared after the recording device was turned off. Although these comments were not directly included in the quotation of findings, the information was used in the researcher's reflections in evaluating incidents mentioned in the recorded interviews.

4.9 Quality in Qualitative Studies

Qualitative studies are commonly multidisciplinary in nature, which permits flexibility in the methods and practices to be adopted (Denzin & Lincoln, 2013). Despite flexibility in the study design, scholars propose research practices that can preserve the quality of any qualitative research (Guest, MacQueen, & Namey, 2011; Lincoln & Guba, 1990; Morse, Barrett, Mayan, Olson, & Spiers, 2008; Patton, 1999). Patton (1999) suggests three aspects for consideration in the judgement of qualitative studies' quality and credibility, which consists of: rigorous techniques and methods, a researcher's credibility and a consistent philosophical beliefs of qualitative methodology. Rigour in this qualitative context focuses on the provision of sufficient details about the nature of data collection

and analysis that represents credibility of the research process and outcomes (Guest et al., 2011; Patton, 1999).

In conducting the study, the researcher considered several aspects that could improve credibility of this qualitative research. Interview questions were reviewed and rephrased through discussion with other doctoral student and two KM experts to ensure clarity and relevancy to the research scope. Multiple data sources were accessed during the data collection process. Interviews were conducted involving participants at both management and operational levels in each firm. This multiple data sources enable multiple viewpoints to be gathered, at a different time from participants, with regards to the phenomenon of interest (Patton, 1999). In other words, multiple perspectives from participants enable triangulation, or cross-checking of data during analysis, which could minimise bias due to a single data source (Guest et al., 2011). Since case study focuses on particularisation, rather than generalisation, each case needs to be drilled from different directions and angles to gain a holistic understanding of the phenomenon (Stake, 1995). Consistency of responses from different participants was compared, while inconsistent in responses lead to further exploration that enhances understanding about the phenomenon. For instance, in ENG, there was dissimilar opinion about knowledge processes effort as viewed by management and operational professionals. Further assessment revealed that this dissimilar understanding could be explained through further exploration of the firm's operational structure, which is presented as the firm's archetype. In the current research, the diverse background of the data sources enabled responses to be triangulated among different participants, hence improving credibility of findings and conclusions made.

Another important aspect for enhancing research credibility is the consideration of context-based nature underlying qualitative research. Firms within the professional service industry were purposely selected in the assessment since they consist of knowledge intensive establishments, where processes for managing knowledge are critical to their operations. Inputs from these participants were seen to be potentially useful in providing rich understanding of the phenomenon (Patton, 1999). Moreover, although selection of participants was made by the gatekeeper or director, the researcher discussed with the responsible person about criterion of participants that were expected, so that those individuals have basic

understanding about the scope of research. Morse et al. (2008) emphasise that appropriateness of participants is crucial to improve the quality of qualitative research process.

In presenting the findings, verbatim quotes were included, which represent the basis for categories that were developed. Disclosure of these quotes and their linkages to the developed categories increases transparency of the research process and implies the way interpretations of data were made by the researcher. As proposed by Guest et al. (2011) the inclusion of supporting codes reflect real phenomena captured from the research process.

Researcher's credibility is also crucial in promoting quality of the qualitative study (Patton, 1999). Although the researcher could be considered novice in conducting a qualitative study, the research process including research design and reporting findings were guided and monitored by the supervisory panels, which are proficient in qualitative research and KM research domain. Through the process, the researcher was trained and exposed to the assessment of evidences and findings from multiple perspectives, along with deep consideration about the context of this study. The process has also improved the intellectual rigour aspect, where the researcher was required to re-visit data for multiple times to improve consistency among concepts, categories and interpretations that were made during the analysis stage.

Also, in relation to philosophical beliefs, this study design emphasise the congruent of the research worldview, questions and methods, as well as the interpretation of findings. Morse et al. (2008) suggests these aspects represent the methodological coherence of the study, which contributes to the process quality of qualitative research.

In addition to the credibility of the study, Guest et al. (2011) address the importance aspect of research dependability. From Guest et al. (2011), dependability refers to a consistent application of the study design and conformability to research methodology practices. The aim includes offering ideas to other researchers to follow in conducting a similar study and assess if similar findings could be achieved. Nevertheless, due to the subjectivity, inductive and non-linear characteristics of a qualitative study, dependability is argued to be less critical as compared to the credibility aspect of qualitative research. The study

focuses on the interpretation of meanings within the context, and aims towards theory generalisation; therefore even similar methods adopted would unlikely produce identical findings. Generalisation to population is less practical/reliable in qualitative research. Notwithstanding, certain aspects that could improve dependability of the study were performed accordingly. This includes the use of the interview protocol for semi-structured interviews, which provide guidelines and consistency with regards to the questions asked of participants. While following-up and probing questions might differ depending on individuals' responses and a study context, this interview protocol, at a certain stage, offers a systematic comparison of questions to other researchers.

Moreover, Guest et al. (2011) highlight the essentiality of maintaining adequate documentation of the study, known as an audit trail (Given, 2008) that could improve transparency of the research process. Due to the emerging design of the current qualitative case study, changes and modifications were carried out throughout the research process, including during the data collection and analysis stages. Interview records and transcriptions, coding and analysis documents, and drafts of research reports are maintained in both computerised and manual forms to provide an adequate chain of evidence, as suggested by Yin (2009). In addition to assisting the researcher to keep track of the changes, the preparation of audit trail could also increase the ability for replication of the study procedures for future research.

Therefore, two important aspects of credibility and dependability of the current research and the researcher have been considered in completing the current study. These elements are believed to be important in enhancing the quality of this research process and the findings derived from the current study.

4.10 Chapter Summary

This chapter discussed the fundamental elements underlying this qualitative multiple case study. Section 4.1 introduced the research methodology and design for the thesis. Section 4.2 presented the perspective of knowledge and KM processes adopted in assessing the phenomena of interest. Section 4.3 provided arguments on the epistemological, ontological and methodological aspects of the research paradigm, including rationales for the interpretive paradigm. Section 4.4

compared the qualitative and quantitative designs, and provided arguments for this qualitative study. Section 4.5 discussed the qualitative multiple case study design as adopted, followed by the explanation on data collection and analysis procedures in section 4.6. The remaining sections included description of the literature review process, ethical and quality issues in qualitative studies. The understanding and adherence to this research design and implementation leads to the formulation of findings and discussions, which will be presented in the following chapters.

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5.0 FINDINGS AND DISCUSSION

Preamble for Findings and Discussions

The findings and discussion for the thesis are presented in three separate chapters representing change readiness influences on knowledge acquisition, knowledge application and knowledge sharing, respectively. These chapters consist of three peer reviewed published/publishable manuscripts. The knowledge acquisition manuscript is under revise and resubmits for the *Knowledge Management Research and Practice Journal*. The knowledge application manuscript will be submitted for publication consideration to the *Journal of Management Information Systems,* while the knowledge sharing paper has been accepted for publication in the *Journal of Knowledge Management*.

Throughout the study, the initial theoretical frameworks presented in Chapter 2 have undergone some changes and modifications due to the qualitative nature of the study. Under the qualitative research design, theoretical frameworks are developed primarily on the basis of data emerging from data collection and analysis. For these reasons, changes in change readiness elements and knowledge processes within the study context were also found as explained in the following findings chapters.

The following manuscripts were prepared for submission to the various peer review journals. Therefore, the format and structure of each manuscript may vary to comply with the respective journal's and editor's specification. As mentioned earlier, some similarities in introductions, methods and literature might appear in the following chapters. This situation is inevitable since all manuscripts provide introductions to the similar research aims and questions, as well as methods. These manuscripts also contain literature discussing the same key constructs, yet the extended review of the literature is included in each manuscript to focus on the distinctive KM process. Finally, findings and discussions in each manuscript differ depending on the particular discussion of change readiness influences on the knowledge acquisition, application and sharing process.

5.1 Manuscript Status

Title: *Change Readiness: Creating Understanding and Capability for the Knowledge Acquisition Process*

Publication Status:

This manuscript was sent to a peer review journal, the *Knowledge Management Research & Practice* for publication consideration. The manuscript is currently under revise and resubmit.

Declaration:

I conducted data collection for this study. I had full responsibility for data analysis including transcription, coding and interpretation. I prepared the first draft of the manuscript including the development of the theoretical framework. The co-authors provided feedback on the manuscript writing, proof reading and editing. The co-authors also contributed to improvement in the theoretical framework. Overall, the theoretical contributions from this study are largely derived from my analysis and interpretation (see Appendix 5 for the Co-Authorship consent).

5.2 Abstract

Acquiring new knowledge to enhance the existing knowledge base is crucial for firms to effectively compete in the current dynamic market. Firms' ability to adapt to changes could be enhanced through continuous efforts in acquiring new knowledge and recognizing existing knowledge for application. The current study aims to gauge understanding of how change readiness shapes the knowledge acquisition process in the firms studied. This study was carried out in the context of three New Zealand professional service firms. A professional service context is selected since knowledge is the fundamental source for such firms' competitiveness and innovativeness. Lack of readiness in acquiring new knowledge could negatively impact service quality, service development, and innovation capability.

This qualitative study is grounded in interpretive philosophy and adopts a multiple-case study design. Findings reveal that knowledge acquisition change

understanding, knowledge acquisition change context, and individual differences, represent primary dimensions defining change readiness for the knowledge acquisition process. Finally, distinctive firm archetypes, inter-profession differences, and professionals' demography, affect the way change readiness elements shape the knowledge acquisition process in the firms studied.

Index terms: Knowledge acquisition, knowledge management process, change management, change readiness, professional service firms.

5.3 Introduction

Processes for managing knowledge consist of various knowledge-related activities that could be repetitively and concurrently performed in order to acquire, utilise, maintain and disseminate knowledge (Jasimuddin, 2012; Xu, Houssin, Caillaud & Gardoni, 2010). These processes enable knowledge flow and development in a firm (Hawryszkiewycz, 2010). Knowledge acquisition, one of the knowledge management process, permits expansion of the prevailing knowledge base through attainment of new knowledge and enhancement of existing knowledge and skills (Kim & Lee, 2010; Liao, Wu, Hu, & Tsui, 2010; Pacharapha & Ractham, 2012). Knowledge acquisition therefore determines the extent and quality of knowledge captured to enable other knowledge management processes in the firm (Chen & Mohamed, 2007).With expansion of the firm's knowledge base, the firm is able to formulate and offer new products and services, hence contributing to the firm's survival and innovation.

Despite the fact that acquisition is an important process for obtaining and developing the organisational knowledge base, a review of literature shows that the knowledge acquisition process is relatively neglected in the knowledge management (KM) literature, particularly from the behavioural perspective. Greater effort is thus required to understand drivers of knowledge acquisition.

A review of the literature indicates that earlier studies of knowledge acquisition have focused largely on the role of information technology (Motta, 2013). Knowledge acquisition studies from the technological perspective evolved from constructing and modelling intelligent problem solving systems to establishing

large scale distributed data acquisition and management systems (Motta, 2013). Nevertheless, KM is not simply about technology. Technology is of less value if it is not being utilised effectively by key players in KM processes. For instance, a bottleneck of knowledge acquisition represents one of the main dilemmas highlighted by information technology scholars (Motta, 2013). This dilemma is concerned with amount and quality of knowledge that is transferred from experts to computer systems, and effective mechanisms for acquiring distinctive knowledge types. Tacit knowledge for example, embedded in the knower and context, requires a complex consideration of knowledge sources' and recipients' willingness and abilities to engage in the knowledge acquisition process. Due to the complexity and dynamism of the process, studies of knowledge acquisition from the technological perspective are by themselves inadequate, prompting the need to extend understanding of the human-related aspects, including social and cognitive elements, in the process of eliciting experts' knowledge (Gaines, 1987; 1989).

Therefore, by shifting away from technologically-based acquisition, this study suggests that the success of knowledge acquisition is shaped by readiness to embark on the process. Little studies have examined individuals' motivation for seeking and acquiring new knowledge. Knowledge acquisition depends on employees' willingness to seek new knowledge; therefore, understanding the elements that enhance readiness for the process would be useful for firms aiming to institutionalise the knowledge acquisition process in their operations (Pacharapha & Ractham, 2012). Further, most available knowledge acquisition literature focuses on factors affecting inter-firm knowledge acquisition, which results from strategic business alliances. Little empirical evidence is available for explaining the phenomena within the firm. Knowledge acquisition does not necessarily involve external sources, particularly for professional service firms that employ key experts in the industry. By implication, these firms are able to focus on the internal acquisition and creation of knowledge.

This paper addresses gaps in the literature by proposing a theoretical model for understanding individuals' and firms' readiness towards the knowledge acquisition process (within the context of professional service firms). Theoretically, the study proposes that the process for acquiring knowledge

involves changes in individuals' cognitive structures and firms' prevailing practices. Consequently, this study views knowledge acquisition from a change management perspective. The paper structure is as follows. First, the paper establishes the theoretical background of the research that integrates knowledge management, change management and professional service literatures. Second, the paper explains the research methodology. Next, it provides results and discussion of findings, which leads to the development of the theoretical model. Finally, the paper offers some theoretical and practical implications, while indicating limitations to the study. The paper concludes with suggestions for future research.

5.4 Literature review

5.4.1 Understanding the Knowledge Acquisition Process

Definition of knowledge acquisition varies in the extant literature. In general, acquisition encompasses activities of identifying, seeking, discovering, locating, obtaining, accepting and collecting new knowledge as well as recognising existing knowledge in existing knowledge bases. However, some literature considers activities of creation, exploitation and development of the existing and acquired knowledge as part of the acquisition process (Chen & Mohamed, 2007; Davenport, 2005; Hoe & McShane, 2010; Kim & Lee, 2010; Liao et al., 2010). In this study, knowledge acquisition focuses on identifying and seeking new knowledge and recognising existing knowledge. Nevertheless, since acquisition of knowledge could modify one's present belief system, there is an ambiguity in setting a clear boundary between identification/recognition of knowledge and the subsequent effect of inducing modification in the prevailing knowledge base. Thus, in this study, creation of new knowledge is considered as a subsequent outcome of the acquisition process.

Literature shows that knowledge acquisition influences firms at multiple levels (Zahra & George, 2002). Individuals, as knowledge sources and recipients, represent key players in the knowledge acquisition process. At the individual level, Gray and Meister (2006) propose that accessing and acquiring others' knowledge contributes to individuals' performance. Hoe and McShane (2010) add that the

acquisition of knowledge also expands an individuals' knowledge base and offers greater opportunities for knowledge utilisation in individuals' task performance.

The firm, on the other hand, provides the context in which the process is implemented (Thuc Anh, Baughn, Minh Hang, & Neupert, 2006). At the firm level, the process is vital for development and expansion of the firm's knowledge base through its functions in recognising and accepting new knowledge. Knowledge acquisition enables firms to obtain knowledge that is critical to support firms' survival and competitiveness (Chen, Hwang, & Raghu, 2010). Many studies also suggest the influence of knowledge acquisition on firms' innovation capability (Andreeva & Kianto, 2011; Cassiman & Veugelers, 2006; Darroch, 2003; Davenport, 2005; Grimpe & Kaiser, 2010; Van Wijk, Jansen, & Lyles, 2008). Liao et al. (2010) suggest that knowledge acquisition increases innovation capability through the influence of a firm's absorptive capability.

Absorptive capability has been discussed widely in the knowledge acquisition literature (Van Wijk et al., 2008). Cohen and Levinthal (1990) introduce the notion that a firm's absorptive capability refers to the firm's ability to recognise, assimilate and apply new knowledge. Specifically, prior knowledge is a fundamental component of absorptive capability that facilitates the absorption of new knowledge from external sources. Zahra and George (2002) extend the conceptualisation of absorptive capacity by suggesting it to be a firm's dynamic capability. Dynamic capability is represented by a set of routines and processes which enables new knowledge to be acquired, assimilated, transformed and exploited in a firm's operation (Zahra & George, 2002). In this re-conceptualisation, Zahra and George (2002) propose the classification of absorptive capability into potential and realised capabilities. Under this classification, knowledge acquisition capability represents a firm's potential absorptive capability. It implies that knowledge acquisition capability increases the firm's potential to be flexible in reconfiguring resources and adapting to market changes through the acquisition of new knowledge. However, the knowledge acquisition process, crucial for developing a firm's potential dynamic capability, has received less attention in KM literature compared to processes that represent realised capability, such as knowledge application and dissemination (Zahra & George, 2002).

Despite the relative scarcity of studies on knowledge acquisition, a review of the literature shows that organisational learning and innovation diffusion represent major theoretical lenses for the assessment of knowledge acquisition at the firm level. Most studies, from the organisational learning perspective, focus on inter-firm knowledge acquisition from strategic business alliances such as joint ventures, outsourcings and mergers. Rather than investing resources to create new knowledge, such structured knowledge acquisition initiatives enable firms to integrate knowledge and learn from their strategic partners (Evangelista & Hau, 2009; Inkpen, 2000; Lyles & Salk, 2006; Norman, 2004). Further, knowledge acquisition from the innovation perspective proposes positive effects of acquired knowledge on a firm's capability to improve its services and products (Andreeva & Kianto, 2011).

From the organisational learning perspective, Hoe and McShane (2010) differentiate formal (i.e., structural) from informal knowledge acquisition. Structural refers to a formal, planned knowledge acquisition process, in which the flow of information and interaction to obtain knowledge could be identified from a firm's structural orientation. In contrast, an informal knowledge acquisition process refers to spontaneous and voluntary acts of obtaining knowledge, which occur through personal, casual and ad-hoc interactions. It is claimed that informal knowledge acquisition could compensate for weaknesses in the structured knowledge acquisition process. Further, informal acquisition is crucial for the acquisition of tacit knowledge, which could be transferred effectively through direct interactions and observations between individual knowledge recipients and knowledge sources.

The discussion of different knowledge acquisition approaches leads to the understanding that both external and internal sources of knowledge are fundamental for accomplishment of the knowledge acquisition process (Fong & Lee, 2009; Kim & Lee, 2010; Liu & Liu, 2008; Lopez & Esteves, 2012). Knowledge acquisition within and across firms is seen as a complementary strategy for achieving a firm's innovation capability (Cassiman & Veugelers, 2006; Van Wijk et al., 2008).

From a social relationship viewpoint, internal knowledge acquisition focuses on seeking knowledge on the basis of personal networks, colleagues' expertise and

experience, and organisational routines (Darroch, 2003; Fong & Lee, 2009; Ryu, Kim, Chaudhury, & Rao, 2005; Yang & Farn, 2010). In the absence of internal knowledge sources, knowledge is acquired externally from a firm's environment, including from policymakers, suppliers and clients (Andreeva & Kianto, 2011; Darroch, 2003; Liu, 2010). External knowledge acquisition includes recruitment of external experts and involvement in professional networks, as well as benchmarking and collaboration through strategic business alliances (Davenport, 2005; Fong & Lee, 2009; Inkpen, 2000; Kim & Lee, 2010; Liu & Liu, 2008; Sherwood & Covin, 2008).

Processes for managing knowledge involve human-related elements (Chen & Mohamed, 2007). Therefore, understanding the nature and elements affecting knowledge acquisition at the individual level is also crucial. Individual knowledge acquisition refers to employees' ability to seek new knowledge from internal and external domain experts, or to develop new knowledge on the basis of their existing knowledge base (Kim & Lee, 2010; Politis, 2002). An individual's knowledge acquisition is important for a firm's knowledge acquisition since the firm's process is comprised of individuals' collective performance (Matusik & Heeley, 2005).

Due to the fact that knowledge acquisition involves a flow of knowledge and skills from knowledge sources to knowledge acquirers, a review of the literature indicates that some studies use the terms knowledge acquisition, knowledge sourcing and knowledge transfer interchangeably (Gray & Meister, 2006; Kang & Kim, 2010; Van Wijk et al., 2008).

5.4.2 Factors influencing the knowledge acquisition process

In line with various mechanisms and sources for acquiring knowledge, the extant literature suggests diverse factors affecting the process. Effective knowledge acquisition is not only about obtaining new knowledge. The process also requires ability, expertise and effort to identify relevant and useful knowledge for acquisition that can be utilised for the firm's benefit (Andreeva & Kianto, 2011; Kim & Lee, 2010).

Previous studies discuss the linkage between knowledge acquisition and firms' absorptive capability (Thuc Anh et al., 2006; Van Wijk et al., 2008). In these

studies, a firm's absorptive capability significantly contributes to the knowledge acquisition process. Matusik and Heeley (2005) suggest that, in addition to firms' absorptive capability, the ability to absorb external knowledge also depends on individuals' absorptive capability. Although a firm's absorptive capability is not exclusively defined by its individuals' capability, individuals' absorptive capability does contribute to the development of the firm's absorptive capability (Matusik & Heeley, 2005; Thuc Anh et al., 2006).

While absorptive capability is important for knowledge acquisition, the process of obtaining and integrating knowledge could be difficult in the absence of appropriate organizational support. For example, top management support is essential for motivating and providing directions for knowledge acquisition in the firm (Evangelista & Hau, 2009; López-Sáez, Navas-López, Martín-de-Castro, & Cruz-González, 2010; Lyles & Salk, 2006). Additionally, participation and autonomy granted in decision making could enhance employees' commitment to engage in the process (Chandler & Lyon, 2009; Kim & Lee, 2010). Moreover, acquisition of knowledge involves interactions among knowledge sources and recipients. Therefore, social interaction is claimed to be fundamental in driving the process of seeking and recognising new knowledge. Intensity of communication that enhances interactions, for instance, triggers identification of new knowledge and can lead to a greater effort in acquiring knowledge (Carley, 1986; Kim & Lee, 2010). Also, knowledge characteristics (Chen et al., 2010; Desouza, Awazu, & Wan, 2006; Hoe & McShane, 2010; Inkpen, 2000; Pacharapha & Ractham, 2012; Van Wijk et al., 2008), firm characteristics (Kim & Lee, 2010; Koskinen & Vanharanta, 2002; Van Wijk et al., 2008), and job characteristics (Chandler & Lyon, 2009; Gray & Meister, 2004), could also affect the knowledge acquisition process in distinctive contexts (Liu & Liu, 2008; Ranft & Lord, 2000).

Firms' knowledge could be held collectively or reside within individuals' minds (Matusik & Heeley, 2005). The acquisition of knowledge that is embedded in knowers and specific contexts is more challenging. Therefore, the ability of acquirers to recognise and understand new knowledge is vital in the knowledge acquisition process. Since knowledge acquired requires assimilation into the existing knowledge base, prior knowledge, skills and understanding affect

individuals' ability to engage in knowledge acquisition (Kang & Kim, 2010; Lyles & Salk, 2006; Yin & Bao, 2006). Hence, consideration of individual factors that could stimulate involvement in the knowledge acquisition process is crucial. Nevertheless, the literature offers little empirical discussion of individual factors affecting knowledge acquisition. For these reasons, the current study intends to assess both firm and individual elements that potentially affect the knowledge acquisition process. This study assesses this phenomenon in the professional service context.

5.4.3 Knowledge acquisition in the professional service context

Professional service firms (PSFs) are characterised by their knowledge-intensive operation. A PSF's operation focuses on offering customised services to clients in accordance with professional standards and regulations issued by a professional authority. The literature emphasises the importance of knowledge acquisition for the knowledge-intensive professional service sector. The intensity of knowledge in a PSFs' operation, for instance, requires an on-going effort to recognise, absorb and transfer important knowledge to enable the delivery of expected services (Andreeva & Kianto, 2011; Chen et al., 2010; Kang & Kim, 2010).

Advancements in the current business environment dictate dynamic changes in the clients' service scope. These changes, that could be rooted in globalisation, technology applications and deregulation, imply the need for professional service providers to expand their existing knowledge base (DeNisi, Hitt, & Jackson, 2003; Malhotra, Morris, & Hinings, 2006). Quality of services by professional firms is largely determined by professionals' knowledge and skills. Therefore, changes surrounding the industry have exerted pressure on the quest for new knowledge among professionals to offer cutting-edge services to their clients (Fong & Choi, 2009; Leiponen, 2006; Stumpf, Doh, & Clark, 2002). Further, the common practice of team-based job orientation also explains the essential role of knowledge acquisition in the PSFs' operation (DeNisi et al., 2003). The combination of different levels of experience among team members requires effective knowledge acquisition and transfer to ensure service accomplishments that meet clients' expectations. For these reasons, acquiring and enriching knowledge to keep up with industry development is required for professionals to remain competent and for PSFs to remain competitive.

Nonetheless, empirical studies examining factors that motivate professionals to engage in the firm's knowledge acquisition process remain scarce. Specifically, what makes professionals willing and able to acquire new knowledge remains inconclusive. In the context of the current study, these motivating forces comprise professionals' and PSFs' change readiness for the knowledge acquisition process. Consequently, the study assesses individual and organisational elements that shape readiness for knowledge acquisition in the professional service context from the change management lens.

5.4.4 Change readiness for the knowledge acquisition process

Similar to other KM processes, knowledge acquisition also brings changes into individuals' and firms' prevailing knowledge bases and practices. As previously mentioned, the literature shows that a firm's absorptive capability contributes to its knowledge acquisition performance. Greater absorptive capability enhances knowledge acquisition effectiveness, and increases the firm's capability to adapt to changes (Zahra & George, 2002). A firm's absorptive capability is shaped by various factors, including past experience, investment and other organisational factors that support the intensity of knowledge acquisition (Cohen & Levinthal, 1990). Consequently, changes in the firm's absorptive capability could derive from modifications in these organisational factors. This linkage indicates that changes in organisational practices are needed to foster knowledge acquisition. In a similar way, from the organisational learning perspective, Norman (2004) proposes that changes in behaviour facilitate firms' learning in the knowledge acquisition process.

At a micro level, Carley (1986) positions individuals' knowledge acquisition from a social phenomenon perspective, and suggests that the acquisition of knowledge is the result of an individual's interactions with the environment. As the individual interacts and obtains more knowledge, his/her thinking changes, which stimulates further knowledge acquisition. It is important also to note that an individual's knowledge acquisition depends on his/her willingness to engage in the process (Gray & Meister, 2004). Acquisition, assimilation and utilisation of new knowledge induce changes in the individual's cognitive structure to account for differences and similarities of knowledge acquired in comparison to existing

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understanding (Pacharapha & Ractham, 2012). This modification in the individual's thinking is essential for the integration of new knowledge, which contributes to the expansion of his/her prevailing knowledge base. For these reasons, individuals' willingness to receive new ideas that alter their current mental model is critical.

Apart from willingness to acquire and integrate knowledge, Gagne & Paradise (1961) suggest that individual differences in terms of basic abilities influence the capability to acquire new knowledge. An individual's prior knowledge and experience, for instance, could enhance that individual's capability to recognise and understand new knowledge (Matusik & Heeley, 2005). This means that individuals' capability to acquire new knowledge, which depends on changes in individuals' cognitive structure and their intention to utilise the acquired knowledge, could shape the knowledge acquisition process.

Moreover, acquisition of new knowledge leads to changes in individuals' knowledge bases and behaviours (Van Wijk et al., 2008). For example, an individual's knowledge acquisition could result in the incremental understanding of knowledge acquired, and thereby invent novel changes and solutions from the knowledge acquired (Gray & Meister, 2006). These changes in individuals' behaviour could positively affect a firm's performance if knowledge acquired is elevated to the firm level through the processes of knowledge application, creation and dissemination. Therefore, the above arguments indicate that engagement in the knowledge acquisition process induces changes in a firm's practices and behaviours at macro as well as micro levels. For these reasons, understanding the elements, at both the individual and firm level, that shape readiness to adapt to changes from the knowledge acquisition, is crucial.

Despite the scarcity of studies on knowledge acquisition readiness, Yin & Bao (2006) emphasise that readiness reflects proactive attitudes and the preparedness of the recipient to obtain knowledge from knowledge sources. Both organisational and individual factors are important for stimulating knowledge acquisition readiness. Lack of readiness is claimed to contribute to failures in the knowledge acquisition process among recipient firms. Notwithstanding that the knowledge acquisition process affects individuals and firms, few studies have been conducted

in assessing the ways individuals are affected by engaging in the process (Kim & Lee, 2010; Liu & Liu, 2008). Therefore, assessment of elements that enhance readiness for the knowledge acquisition process within the firm, in the PSF context, is essential. Results from the assessment could offer empirical and theoretical explanations underlying the phenomenon of readiness for the knowledge acquisition process, particularly for a knowledge-intensive operation. Due to the absence of extensive efforts in understanding the phenomena, a qualitative approach through multiple case studies is adopted to reveal these phenomena, as discussed in the following section.

5.5 Research Method and Design

This qualitative study adopts an interpretive paradigm, which considers that the understanding of the phenomenon of interest is based on the interpretation of meanings from participants' inputs. The adoption of a multiple case study design permits understanding of the phenomena through intensive analysis of various perspectives in a specific professional service context (Merriam, 1988; Stake, 2006). The participating firms consisted of three New Zealand PSFs. Two of these firms are accounting establishments and one represents an engineering maintenance firm. Size and nature of the firms' operation vary. One firm, CNS, is a branch of an accounting industry leader; another firm, ACC, represents a small accounting practitioner with six staff members. ENG, the aircraft engineering maintenance provider, is a medium-sized PSF employing about 50 professional engineers. All firms possess characteristics of professional service practices as suggested by Fong & Choi (2009) and Løwendahl, Revang and Fosstenløkken (2001). These firms operate in a knowledge-intensive sector and deliver services directly to clients on the basis of specialised professional knowledge, skills and experience. Further, the completion of service engagements by these PSFs requires the adherence to a professional code of conduct since their operations are regulated by professional bodies governing their industries.

The data collection process involved semi-structured interviews with 16 participants. Each interview session lasted between 45 minutes and 2 hours. The interview focused on eliciting participants' perspectives and experience regarding elements that influence their readiness to engage in the knowledge acquisition process. Involvement from professionals at both managerial and operational levels

permits data source triangulation and enhances understanding of the ways change readiness influences knowledge acquisition in the PSFs studied.

Data analysis adopted a grounded theory analysis technique, which involved three stages of coding. Results from the coding process led to the emergence of concepts and categories that represent multiple dimensions of change readiness at both individual and organisational levels. These change readiness elements shape the knowledge acquisition process in the PSFs studied. The following section presents the findings on the basis of the cross-case analysis.

5.6 Case findings

Findings from the case studies indicate the importance of both internal and external sources of knowledge for acquisition in these PSFs' operations. New knowledge is generally acquired internally from colleagues or superiors. External knowledge, on the other hand, is obtained through recruitment of experts, participation in external courses and training, and interaction with clients and other stakeholders such as professional bodies. Mechanisms and sources for knowledge acquisition vary among the firms studied. Due to the different mechanisms for acquiring knowledge, findings indicate that there are various factors that stimulate professionals' readiness to acquire knowledge.

On the basis of the analysis, six concepts representing change readiness for the knowledge acquisition process were developed. These concepts comprise of individual and firm levels of change readiness in the assessment of the knowledge acquisition process.

5.6.1 Individual level analysis of change readiness for the knowledge acquisition process

In the context of the firms studied, beliefs about the need for new knowledge, perceived management support, level of individual expertise, and adaptability, represent important elements for stimulating individuals' readiness in acquiring knowledge.

Need for knowledge. Findings indicate that beliefs about the need to seek new knowledge enhance professionals' readiness to acquire knowledge. There are different elements that trigger the identification of new knowledge. For ACC, the

need for new knowledge is recognised by an individual professional who is responsible for handling a particular service niche. For larger firms such as ENG and CNS, the need for knowledge commonly results from team or management decisions. Discussion with other team members during the service engagement or operation, for instance, leads to the identification of new knowledge that is essential for problem solving and process improvement. Further, interactions with external sources such as professional bodies and clients also trigger the need to expand the existing knowledge base in order to conform to regulatory changes and clients' demands.

> If we see a knowledge hole, we will go through the issues, will discuss it and we will try to find the solution (P9, ENG-Supervisor).

> A lot of our knowledge I would say comes internally, because it is such a large firm. It is not only in Hamilton, but also from the branch in Auckland. We have experts in various areas and we are usually the first one to know [new development] (P3, CNS-Manager).

However, the narrow service focus of ENG minimises recognition of the need for new knowledge, which limits new knowledge acquisition efforts in the firm, in comparison to CNS.

> For us, a lot of them are taken from big brother, which is the airlines company…. They will say we are in this direction; you need to come with us in this direction…. We are not really exposed to the latest development in the industry that much, because we've only got one type of aircraft and they are getting on for ten years old now. We just sort of focused on that aircraft (P10, ENG-Engineer).

Perceived management support also appears as an important element that motivates employees to acquire knowledge. In ACC, management acknowledges that the firm relies heavily on external sources to support the firm's knowledge base development. Hence, from the professionals' point of view, they are granted extensive support to attend external courses for acquiring knowledge. Similarly, management support for seeking new knowledge also exists in CNS.

> If it [external course] looks interesting and we need to know, we will choose any course that is relevant for the development of small practice operations or clients. We approached the manager and so far he never says 'no' (P2, ACC-Accountant).

> I think that support from management is important. I think it is from the top where the knowledge comes on-board (P3, CNS-Manager).

In the case of ENG, management claims that the firm is supportive of new knowledge acquisition. However, professionals at the operational level assert that

there is limited opportunity for external knowledge acquisition, particularly in supporting enhancement of professional development. Their contradictory opinions are depicted below,

> We are looking for those knowledge holes…. And, people on the top are part of it, supporting it (P9, ENG-Technical Supervisor).

> We have many types of engineers here, unlicensed engineers like I am. Then, we have licensed engineers who have the authority to release the aircraft. To become a licensed engineer you have to do about ten licensing exams. We have to do it on our own…. There should be resources for us to help us up-skilled and become licensed engineers. At the moment, it is done individually …there is no official policy. So that is the way to upgrade your knowledge (P10, ENG-Engineer).

Expertise. Individual *expertise* is essential in shaping professionals' readiness for the knowledge acquisition process in the PSFs studied. Findings indicate that the availability of experts determines the sources of knowledge to be acquired. For ACC, due to its limited expertise, capturing knowledge externally from clients, regulatory bodies and other leading firms is vital. In contrast, the availability of experts within the firms provides opportunity for ENG and CNS to focus on internal knowledge acquisition. As a global professional firm, CNS relies on its key internal experts for knowledge acquisition across branches and international networks. Since the PSF's operation is highly dependent on knowledge possessed by experts, the development of expertise involves maturity and experience working in the area for a certain period of time. Therefore, senior and experienced professionals represent the main source of knowledge for acquisition in CNS and ENG. The availability of expertise that meets the acquirer's knowledge need thus shapes professionals' readiness to acquire knowledge from internal, external or both sources.

> We are such a small firm. We've got knowledge from courses outside, knowledge from clients and knowledge employees bring in from other places, wherever they come from, where they might have done things better (P2, ACC-Accountant).

> So, when new legislation comes out, we sit in-house, and with our company network, we have specialists in different areas (P3, CNS-Manager).

> If I have any question I can ask along the way and supervisors will give feedback. Anything that I have in mind and any doubt can be asked about (P15, ENG-Engineer).

Moreover, employing new experts is seen as another effective way of acquiring industry knowledge. In a highly regulated industry, the expertise of professionals is vital in ENG's operation. Due to the shortage of local talent, the firm focuses on hiring expatriates with relevant expertise in the aviation industry. By hiring established talent from outside, these professionals are expected to bring in their experience and skills, hence accelerating the knowledge acquisition process in ENG.

> Because we are in an engineering and maintenance facility, it is quite complex and we only have a small group of guys, so it is important that we have high expertise. The way to get the expertise is experience…. Part of the strategies, we have people from overseas, who already had that knowledge. So, we will see if there is a knowledge deficiency that we can't find within New Zealand; we will go through and employ people from overseas…. When they come here, they've already got some expertise and experience. We try to grow on our own, but you know sometimes people are not available and it takes time to build the experience up; so therefore we try to bring it in externally from off shore….Because they've got engine experience that we required (P9, ENG-Technical Supervisor).

Adaptability. Knowledge acquisition at the individual level involves the individual ability to recognise, assimilate and apply new knowledge. Effective knowledge acquisition requires the knowledge recipient to be able to integrate new knowledge within his/her prevailing knowledge base. Since knowledge acquisition is aimed at addressing knowledge deficiency, new knowledge acquired could be inconsistent with the existing mental model. For instance, knowledge acquisition that aims at instilling innovation may require the integration of novel and unfamiliar ideas and thinking. Therefore, the ability to be adaptable to new ideas could enhance professionals' readiness to acquire new knowledge. Findings indicate that professionals who are less flexible towards accepting new knowledge face difficulties in adjusting to changing knowledge requirements. As a result, initiatives for acquiring and assimilating new knowledge could be difficult.

> There are some people who took changes [new knowledge] very quickly and get to the new methodology, but others didn't…. Those guys who are the change-against, they need to look at different organisation's environment, benchmark themselves (P9, ENG-Technical Supervisor).

> I think we rely much on the ability to maintain relationship, being flexible and adaptable…. I think that individual as a knowledge worker, we need to go out and find information about new knowledge (P5, CNS-Senior Manager).

Also, individual adaptability could be influenced by demographic factors including job tenure. Job tenure could be related to age, where older employees might show some resistance to change. For instance, as mentioned by participants,

> I do think some resistance to a certain level. It is age-related from my perception, different level with different perception. To learn something new might take even longer or even more (P5, CNS-Senior Manager).

> The issue is do you want to embrace change or not. Probably, we got people from age 35 to 68 years old. Are they willing to change or not, that is the issue (P1, ACC-Director).

Therefore, findings indicate that the need for knowledge, perceived management support, professionals' expertise and adaptability are crucial in triggering individuals' readiness to engage in the knowledge acquisition process among professionals in the firms studied.

Apart from these readiness elements at the individual level, readiness elements at the firm level are also crucial to enhance professionals' engagement in the process, as presented in the following section.

5.6.2 Firm level analysis of change readiness for the knowledge acquisition process

Findings reveal that there are two firm-level readiness elements that are critical to shape readiness for the knowledge acquisition process in the PSFs studied: learning and communication.

Learning. Coaching and training programmes are two major learning mechanisms that enhance professionals' readiness for acquiring knowledge in the firms studied. Coaching improves readiness to acquire knowledge by facilitating new entrants' understanding of the firm's procedures and processes. Training enhances knowledge acquisition readiness by enabling continued learning of new knowledge and the changing practices for both new and existing professionals.

Findings indicate that coaching represents a common approach for new entrants to learn firm specific knowledge. While CNS emphasises a structured and formal coaching approach, semi-formal coaching is more common in ENG. Under both approaches, new entrants are assigned to work under the supervision of experienced superiors for a certain period of time. The formal approach reflects

the assignment of a specific 'buddy' to work with the new entrant, while the semi-formal approach involves rotation of superiors to supervise the new entrant during the induction period. Throughout this period, new entrants could gain exposure and knowledge about the firm's practices and operations, and, most importantly, could acquire tacit knowledge from these experts,

> When I started here, I received what they call a 'Buddy', someone senior probably about two levels up, and this is someone who you can go to and ask all sorts of silly questions; a lot of it is you receiving all tacit knowledge. It is like whom I proof my readings to (P7, CNS-Senior Associate).

> When a new engineer comes in we will put someone experienced on the roster to work with the newbie… so they can use that person to ask question… information about the company that they need to know (P9, ENG-Technical Supervisor).

> Knowledge here is from experience and your thoughts. For younger engineers, they are mentored internally and trained externally. So, that is the path of knowledge for the young. For new people coming that have got aviation experience, they are also mentored but to a lesser degree until they got trained in a course for a specific aircraft type (P11, ENG-Development Engineer).

Formal coaching is of less concern for ACC, possibly explained by limited expertise and high job specialisation in the firm.

> There was no specific program to assist employees to go through the changes. Again, this is a small practice where you see the people every day…. There is no formal induction program for new employees, but everybody helps each other (P2, ACC-Accountant).

Further to coaching, readiness for knowledge acquisition is also enhanced through training programmes. Attending formal group training and courses, for instance, enhances professionals' readiness to acquire new knowledge concerning changes in job procedures and industry regulations, as emphasised by the following participants,

> I was given the initial training when I came here. Knowledge that I acquired initially helped me a lot in understanding about the aircraft. So, the training gives me basic ideas how to carry out my task and whereabouts to do the things related to the aircraft (P15, ENG-Engineer).

> There is training, a whole range of training including technical, accounting and project management. I see training as a learning process for people (P5, CNS-Senior Manager).

> I've also experienced some changes during the implementation of the recovery database and changes in the legislation. For instance, there are new ways of doing

recovery actions…. In this case we have to do training... We have a continuous system; it is calendar based, rolling out the courses by specific dates (P6, CNS-Associate).

While learning of new knowledge through internal training improves readiness for acquiring new knowledge in larger firms, readiness for acquiring new knowledge among professionals in ACC is enhanced through the availability of external training.

At this stage, there is no internal training since we don't have the speakers for that. It is something that we might need to look at soon (P2, ACC-Accountant).

In addition to learning about new knowledge through formal training, informal learning through on-the-job-training is also important for fostering readiness to acquire knowledge, particularly in ENG. This mechanism facilitates professionals to assimilate new knowledge into existing practice.

Their knowledge is acquired by experience and teaching….First of all you give them education, we do a lot of training here, so therefore we go through and giving them education, and then we go through and giving them experience and on-the-job-training….We educate a lot of people on tasks by on-the-job training; train them on how to do it (P9, ENG-Technical Supervisor).

Moreover, the lack of internal sources of knowledge requires PSFs to be ready to learn from external sources. Benchmarking with other companies, for instance, is one of the strategies applied to enhance professionals' readiness to engage in ENG's knowledge acquisition initiative. This strategy commonly results in the identification of knowledge loopholes in the firm's operation. Benchmarking is an active effort for learning that allows firms to identify essential knowledge to be acquired from the external environment (Yli Renko, Autio, & Sapienza, 2001). Consequently, professionals are motivated to engage in the necessary knowledge acquisition activities to overcome the prevailing knowledge deficiency that is apparent from the benchmarking effort.

When we want to implement changes in our organisation, we benchmark to challenge our own perceptions…. I need to take them [engineers] to different organisations for them to view. It is only then, they start to change, and it is when learning in that change behaviour will only occur. I have to take them outside of their own comfort zone to a different environment, and challenge their own old theory. It really occurs in behavioural changes (P9, ENG-Technical Supervisor).

The establishment of the above formal and informal learning mechanisms enhances firms' capabilities in implementing the knowledge acquisition process in

the firms studied. Therefore, having in place these learning mechanisms fosters professionals' readiness to engage in the process.

Communication. A communication platform is also essential in shaping readiness for the knowledge acquisition process in all PSFs studied. Although communication approaches for acquiring knowledge vary in these firms, findings show that the establishment of appropriate communication mechanisms improves interactions and transfers of new knowledge from knowledge sources to knowledge recipients.

In ENG, interactions among team members and supervisors are particularly important for deriving solutions for problems that are encountered while performing maintenance tasks. Communication among professionals also enables transfer of tacit knowledge from experienced professionals to others. Due to the lack of formal learning in ACC, face to face interactions among professionals is critical to support new entrants' knowledge acquisition. 'Open communication' practices thus contribute to enhancing readiness for the knowledge acquisition process. Nevertheless, internal communication for acquiring domain knowledge is minimal in ACC due to a limited number of experts and high individual specialisation in a particular service domain.

Findings also indicate that an effective communication mechanism with external stakeholders is essential for enhancing readiness to acquire knowledge. For ACC, with a relatively small number of experts, new domain knowledge is largely obtained through communication with larger firms and regulatory bodies. Also, with stiff competition from other small and medium-sized practitioners, effective communication practice with clients enables relevant market knowledge to be gathered. This interaction, in turn, could strengthen professional relationships with the clients on a long-term basis. Moreover, although CNS's knowledge acquisition initiatives focus on accumulating knowledge from internal sources, communication with external parties such as professional networks and clients leads to acquisition of new insights for professional development and innovative advancement of services.

> Informally, knowledge is acquired in a way of going for coffee with people, clients, suppliers, to know what is happening in the marketplace, to build relationships and to share things around…. I personally join the professional bodies, I receive e-mails and magazine, updates of what is happening, keep

informed with the network and thinking around. Knowledge gets down to individual, if not the organisation, to update knowledge because we are knowledge workers. I think it is important to keep it current (P5, CNS-Senior Manager).

In summary, findings from the multiple case studies show that the establishment of appropriate learning and communication mechanisms is critical to promote engagement in the knowledge acquisition process. In the PSFs studied, availability of these mechanisms supports the identification of knowledge gaps and assimilation of new ideas, which in turn, increases professionals' readiness to engage in the knowledge acquisition process.

5.7 Discussion

Change readiness concepts discussed in the previous section comprise the multilevel characteristics of the construct. Subsequently, these concepts are categorised to represent the multidimensionality of change readiness as a construct in the current study. Main categories consist of KM change understanding, KM change context and individual differences. The need for knowledge and perceived management support represent the individual KM change understanding dimension, while expertise and adaptability comprise the dimension of individual differences. Additionally, learning and communication together represent KM change context. Figure 1 depicts the ways the above-mentioned change readiness elements shape the knowledge acquisition process in the PSFs studied.
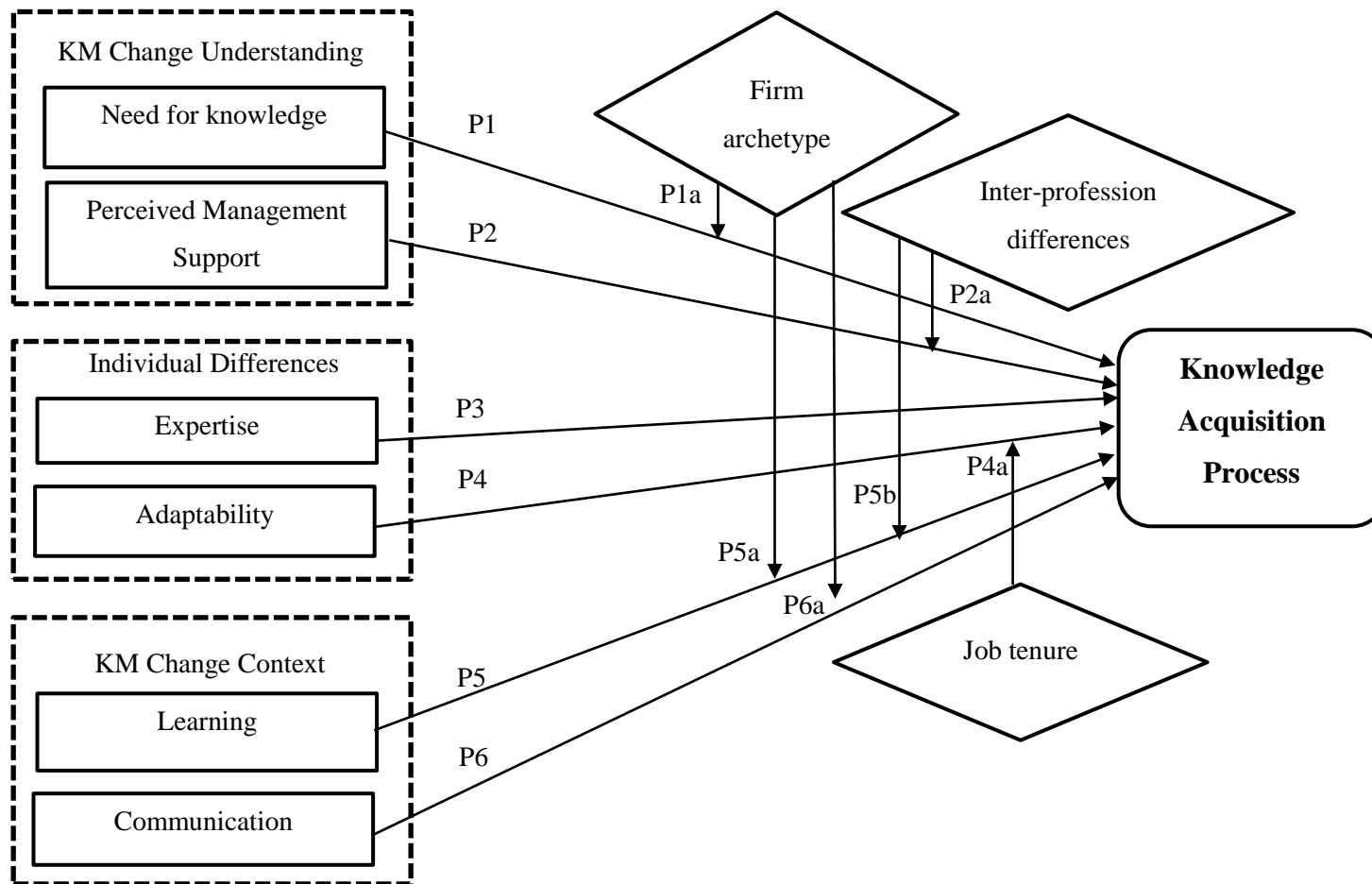
Figure 1: Theoretical Model of Change Readiness Influences on the Knowledge Acquisition Process

5.7.1 Individual's readiness for the knowledge acquisition process

Findings reveal four elements of individual change readiness that shape the knowledge acquisition process. Individuals represent knowledge sources and recipients in the process; hence their involvement in knowledge acquisition activities could affect their cognitive structures and practices. Therefore, these individuals' readiness to engage in the process is crucial. Adopting the change readiness perspective, individual readiness represents beliefs and attitudes that form a positive momentum to embrace changes in the knowledge management process (Armenakis & Harris, 2002; Holt, Armenakis, Feild, & Harris, 2007). Developing individual readiness thus involves the creation of motivation to engage in the process. Previous studies of knowledge acquisition emphasise the importance of individual-level motivation for the knowledge acquisition process (Kang & Kim, 2010; Yin & Bao, 2006). Motivation for an individual's knowledge acquisition is portrayed by the individual's willingness and ability to acquire and utilise new knowledge; his/her motivation is shaped by attitudes towards the process (Gray & Meister, 2004; Pacharapha & Ractham, 2012). Similarly, findings from the current study echo previous understanding and suggest that individuals' motivation for knowledge acquisition explicates their readiness to engage in the process.

Knowledge acquisition is commonly a purposeful process, which mainly focuses on addressing knowledge loopholes in the prevailing knowledge base (Ranft & Lord, 2000). Literature indicates that various knowledge characteristics are evaluated as worth seeking by knowledge acquirers. The relevancy of new knowledge to satisfy acquirer's knowledge loopholes is critical (Matusik & Heeley, 2005). From the innovation diffusion perspective, knowledge relevancy reflects perceived compatibility, by which the acquired knowledge is consistent with the acquirer's knowledge need (Pacharapha & Ractham, 2012). However, new knowledge does not necessarily align with the acquirer's existing mental model. Therefore, assimilation of conflicting ideas could be challenging (Desouza et al., 2006). Further, willingness to acquire knowledge also increases as the individual perceives a higher value of knowledge to be acquired (Ford & Staples, 2006). Knowledge value is assessed from knowledge usefulness, benefits, sources, uniqueness and accessibility. Knowledge acquirers seek knowledge that offers advantage, in the sense that its application could increase the effectiveness of task

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performance (Pacharapha & Ractham, 2012; Van Beveren, 2002). Some individuals also expect that new knowledge would benefit them in terms of gaining expertise, a sense of pride and power (Ford & Staples, 2006). Moreover, from the organisational learning perspective, an exploratory model of knowledge acquisition shows that perceived importance of knowledge positively influences both formal and informal knowledge acquisition (Hoe & McShane, 2010). Findings indicate that professionals' motivation for acquiring knowledge results from the evaluation of their prevailing understanding, hence they seek new knowledge that could address their knowledge deficiency. Consequently, recognition of the need for knowledge stimulates professionals' readiness to acquire knowledge from various sources, both internally and externally. Therefore, it is proposed that,

P1: A greater understanding of need for knowledge enhances individuals' readiness for knowledge acquisition in PSFs.

Nevertheless, findings reveal that in the firms studied there are differences in the decision about the need for knowledge acquisition and the extent of motivation for acquiring knowledge. In ACC, with a high individual specialisation in a particular service domain, the decision about the need for acquiring new knowledge is the responsibility of the dedicated professional. In CNS and ENG, however, due to their bureaucratic structure and high integration at the top level, the need for new knowledge is commonly decided by teams or management. Additionally, findings also indicate that a distinctive firm archetype affects the way the need for knowledge shapes professionals' engagement in the knowledge acquisition process. Representing professional accounting firms, ACC and CNS offer multidisciplinary service to their existing and prospective clients. Due to the variety of service portfolios, professionals are well aware of the necessity to expand their knowledge base by engaging in knowledge acquisition activities. In ENG, however, the firm's operation specialises in maintaining a single type of aircraft for a major client. The lack of pressure to expand the existing service scope thus reduces knowledge acquisition activities and exerts minimal effect on the need to acquire new knowledge. It is suggested that,

P1a: The relationship in proposition 1 is stronger for a firm archetype with multidisciplinary operations.

Further, findings show that perceived management support is crucial for stimulating professionals' readiness to acquire new insights and ideas. This result is aligned with the literature, which suggests that knowledge acquisition is less feasible without management commitment (Lopez & Esteves, 2012). Perceived management support provides indications that the knowledge acquisition process is seen as part of managerial strategy. Moreover, support from management is crucial to delineate a firm's knowledge need and acquisition planning. In an ideal case, management leads the knowledge acquisition initiative, which could increase the process's effectiveness (Evangelista & Hau, 2009; Lyles & Salk, 2006). Therefore, an understanding of perceived management support could enhance employees' engagement in the knowledge acquisition process, which could consequently foster the assimilation of new knowledge into the prevailing knowledge base. On the basis of the above arguments,

P2: A greater belief in perceived management support enhances individuals' readiness for knowledge acquisition in PSFs.

Findings further reveal that the effect of perceived management support in shaping readiness for the knowledge acquisition process could be influenced by the dynamism of the individual's profession. For ACC and CNS, clients come from various operational backgrounds and industries. Changes in their clients' businesses also affect these firms' service scope and capabilities. The advancement in the clients' industries and the consistent regulatory changes underlying the accounting practice induce the need for continuous enhancement in the services offered. The acquisition of new knowledge is critical to prepare professionals to be well-versed in changing regulations and to be capable of fulfilling clients' varying demands. Therefore, management in both firms are perceived to be committed to supporting knowledge acquisition initiatives, although the main knowledge source for these firms differs.

In ENG, however, management's enthusiasm for supporting new knowledge acquisition is less apparent. This lack of support as perceived by professionals might be due to ENG's focus on its niche maintenance service. This highly concentrated service is concerned with ensuring that maintenance procedures are performed to the highest level of precision. With high risk underlying aircraft operations, rigid regulations are imposed by the aviation regulatory agency.

Therefore, there is minimal pressure to attain new knowledge due to the inflexible nature of service accomplished and infrequent changes in maintenance procedures. This situation may explain the perceived lack of management support for the knowledge acquisition process in ENG. Consequently, the lack of perceived management support discourages professionals' initiatives in expanding their knowledge base. From an educational psychology perspective, Gray and Meister (2004) highlight the effect of job nature in shaping individuals' knowledge acquisition. Their study suggests that individuals with a highly intellectual and demanding job, characterised by inter-dependency, non-routine and complex tasks, tend to acquire more knowledge and be involved in greater knowledge seeking activities. On the basis of the above arguments, the dynamism of a profession could affect the way perceived management support shapes readiness for the knowledge acquisition process. Thus, it is proposed that,

P2a: The relationship in proposition 2 is stronger for professionals working in a dynamic profession.

Additionally, the availability of experts with relevant knowledge within the PSFs studied enhances professionals' readiness to acquire knowledge from each other. This situation is apparent in ENG and CNS. On the other hand, professionals in ACC demonstrate a high reliance on external sources of knowledge. Lack of expertise thus motivates ACC's professionals to seek new knowledge from external sources. These practices are aligned with the extant literature which suggests that the evaluation of knowledge sources' expertise is important in motivating knowledge recipients' readiness to acquire knowledge. There is a high tendency to acquire knowledge from a specific source when the knowledge source is perceived to possess a higher value of knowledge (Ford & Staples, 2006; Kang & Kim, 2010; Ryu et al., 2005). Also, professional teams with developed expertise tend to rely more on internal expertise as a source for knowledge acquisition, and are less ready to acquire knowledge from external sources (Chandler & Lyon, 2009). Therefore,

P3: Availability of expertise enhances readiness among professionals to engage in the knowledge acquisition process in PSFs.

Effective knowledge acquisition requires the absorption and application of new knowledge to leverage benefits from the process (Kang & Kim, 2010). However,

the absorption of new knowledge could be challenging since the process requires the assimilation of new ideas into existing cognitive structures. Previous studies suggest that the development of individuals' absorptive capability, which could be rooted in prior knowledge and experience, is critical in facilitating an individual's adaptation to new knowledge (Hambrick, 2003; Li & Zhu, 2009; Matusik & Heeley, 2005; Van Wijk et al., 2008; Zahra & George, 2002). Also, effective knowledge absorption depends on the individual's ability to adapt to changing cognitive structures (Pacharapha & Ractham, 2012). Therefore, findings imply that prior knowledge held by professionals contributes to the development of the professional's absorptive capability. This, in turn, could enhance the professional's adaptability to new knowledge acquired. The ability to adapt to changes enables the professional to fully exploit the assimilated knowledge for the firm's benefit. Consequently, the professional's adaptability to a changing cognitive structure could improve their readiness to engage in the knowledge acquisition process. For these reasons, it is proposed that,

P4: Adaptability enhances readiness among professionals to engage in the knowledge acquisition process in PSFs.

Moreover, findings indicate that job tenure could shape a professional's adaptability to new knowledge. For instance, findings show that some older professionals with longer job tenure who are contented with their existing knowledge are reluctant to assimilate changes in their prevailing practices. Hence, it is suggested that,

P4a: The relationship in proposition 4 is stronger among professionals with shorter job tenure.

In conclusion, the need for knowledge and perceived management support represent two elements that drive professionals' understanding of the knowledge acquisition process. This study proposes that developing understanding of the process could stimulate professionals' readiness to engage in the knowledge acquisition process. Also, expertise and adaptability reflect professionals' abilities to engage in the process. These elements are categorised under the individual differences dimension of the change readiness construct for the knowledge acquisition process (see Figure 1).

5.7.2 Firm's readiness for the knowledge acquisition process

Further to recognising individual differences that stimulate readiness for acquiring knowledge, considering a firm's context that fosters the knowledge acquisition process is found to be crucial. Literature asserts the importance of multilevel elements that influence the knowledge acquisition process, including at the organisational level (Kang & Kim, 2010; Lopez & Esteves, 2012). Findings show that the appropriate context for learning and communicating in the PSFs studied could enhance professionals' readiness to engage in the knowledge acquisition process.

A review of the literature suggests that the absorption of new ideas through learning could increase performance and lead to innovative solutions (Andreeva & Kianto, 2011; Norman, 2004). A firm's learning is reflected in employees' learning activities (Chandler & Lyon, 2009). The extant literature discusses the importance of establishing those distinctive learning mechanisms that suit a firm's knowledge acquisition need. Employees could acquire new knowledge through learning from interactions with others, learning from experience, and learning from technology-based knowledge sources (Ryu et al., 2005). Also, firms could learn through internal adaptation of knowledge, and from external knowledge sources (Zellmer-Bruhn, 2003). Similarly, findings show that a firm learns about new knowledge by adopting various mechanisms through formal and informal learning. The establishment of an appropriate learning context fosters the activities of recognising, assimilating and applying new knowledge, which could improve readiness for the knowledge acquisition process in the PSFs studied. Hence, it is suggested that,

P5: Learning mechanisms enhance readiness for the knowledge acquisition process in PSFs.

On-going learning, particularly through formal training, is emphasised in CNS and ACC. In contrast, apart from the initial formal training at the beginning of the employment, in ENG subsequent formal learning is less apparent. The differing emphasis on learning mechanisms for acquiring knowledge in these firms could be explained by two factors: the range of services offered and the nature of changes underlying the professional practice. ENG represents a specialist firm archetype that provides a niche aircraft maintenance service for a single client.

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This highly focused service requires professionals to concentrate on developing expertise for accomplishing the maintenance tasks for the client. For this reason, the need to learn about the advancement of knowledge for the maintenance of other aircraft types is less critical. In contrast, CNS and ACC offer multidisciplinary service to their clients, although on a different scale. The composition of clients from the various industries requires these PSFs to keep up with advancements in the industry in order to fully customise services for the clients' distinctive demands. Consequently, these firms emphasise the importance of establishing a consistent formal learning mechanism through the knowledge acquisition process. Therefore, findings show that firm archetype, characterised by the range of services offered, could affect the way learning shapes readiness for the knowledge acquisition process. Thus,

P5a: The relationship in proposition 5 is stronger for a PSF archetype with multidisciplinary services.

Further, ACC and CNS operate in the accounting industry where amendments in the standards and practices are common. Additionally, the changes in the various clients' industry backgrounds and business operations indirectly affect the services offered by these firms. The dynamic changes underlying and surrounding these accounting establishments exert pressures on their professionals to keep their knowledge base current. A structured way to expand their knowledge scope is by implementing formal learning mechanisms that foster new knowledge acquisition. The literature proposes that formal learning through consistent training represents an important mechanism for acquiring new knowledge (Li & Zhu, 2009; Lyles & Salk, 2006). This formal learning mechanism is also essential for firms to adapt to the dynamic changes affecting the task environment (Chandler & Lyon, 2009; Zellmer-Bruhn, 2003).

On the other hand, routine tasks with infrequent changes in ENG's service scope and operation minimise the urgency for learning about the assimilation of new knowledge. Since safety is the main concern in the aviation operation, accomplishment of maintenance operations is governed by rigid regulations. The maintenance tasks performed are subjected to strict safety inspection. In this situation, ENG emphasises informal learning through on-the-job training to sharpen the firm's professional expertise in this niche area. This practice is

particularly apparent for firms with a high service specialisation (Leiponen, 2006; Ryu et al., 2005). It is proposed that,

P5b: The relationship in proposition 5 is stronger for PSFs operating in a dynamic profession.

Previous studies highlight that communication mechanisms, channels, and intensity determine the effectiveness of the context for knowledge acquisition activities (Norman, 2004). Communication provides a platform for interactions that enables the creation of collective meaning for understanding others' knowledge (Pacharapha & Ractham, 2012). Rich communication channels thus foster intense interactions among knowledge sources and recipients, which contributes to an effective knowledge acquisition process (Fong & Lee, 2009; Li & Zhu, 2009; Sherwood & Covin, 2008). Also, from a social capital perspective, a strong relational capital among knowledge sources and recipients, resulting from extensive communication, increases their relationships and leads to a more effective knowledge acquisition in the intra-firm setting (Van Wijk et al., 2008). Similarly, findings indicate that a firm's communication context is critical for enabling interactions and transfers of new knowledge. The availability of various mechanisms for communication, including formal and informal, enables the acquisition of knowledge from both internal and external sources. These mechanisms could enhance professionals' readiness to engage in the knowledge acquisition process through the adoption of an appropriate communication approach that meets their knowledge need. In conjunction with that,

P6: Communication mechanisms enhance readiness for the knowledge acquisition process in PSFs.

Further, findings also reveal that the adoption of communication mechanisms differs among PSFs, depending on their job accomplishment setting. For instance, each professional in ACC is specialised in a specific service domain, and is granted individual autonomy to make decisions within the particular service domain. Tasks and engagements in a particular service domain are commonly indivisible, and are performed by one dedicated professional. In this individual setting of job accomplishment, new knowledge is mainly acquired through direct communication with external knowledge sources. In contrast, clients' engagements and maintenance tasks in CNS and ENG are performed in a team-

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based setting. Decisions are mainly made on a collective basis. The knowledge acquisition process in these PSFs largely involves interactions among professionals within the firm, through multiple direct and indirect communication channels. Therefore, there appear to be greater and potentially richer communication mechanisms in a team-based, rather than an individual-based, setting. It is concluded that,

P6a: The relationship in proposition 6 is stronger for a firm archetype with team-based orientation in the PSFs.

5.8 Conclusions and future studies

Findings from the multiple case studies reveal the multidimensional and multilevel change readiness elements that affect the knowledge acquisition process in the PSFs studied. The findings propose that readiness for acquiring knowledge in these PSFs is shaped by individuals' beliefs about the need for new knowledge and their perception of management support for the acquisition initiative. Additionally, professionals' capabilities in terms of expertise and adaptability represent the individual differences that determine the professional's readiness to engage in the knowledge acquisition process. Findings also suggest that firm-level elements, including communication and learning, are imperative for providing an appropriate context that stimulates readiness for the knowledge acquisition process. Moreover, the study shows other factors that moderate the relationships between change readiness elements and the knowledge acquisition process. These factors are identified as firm archetype, inter-profession differences and demographical factors.

Findings from the current study contribute to the KM literature by suggesting the importance of considering these change readiness elements in developing PSFs' knowledge acquisition strategies. By providing the empirical evidence for these linkages, the study offers a deeper understanding of the ways KM change understanding, KM change context and individual differences shape readiness for the knowledge acquisition process. This study is one of the first to empirically explore the influences of change readiness on the knowledge acquisition process within the professional service context. Hence, the study offers a novel perspective on knowledge acquisition by demonstrating the significance of integrating the change readiness lens into the assessment of this KM process.

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The findings suggest several avenues for future study. While the study highlights elements of change readiness at individual and organisational levels that shape the knowledge acquisition process in the PSFs studied, dyadic elements are less apparent from the case studies findings. Dyadic elements include particular relationships between knowledge sources and knowledge recipients representing the relational capital, such as trust among both parties, which could enhance their readiness to engage in the knowledge acquisition process. Such studies could complement insights from the current study and offer an extended explanation of change readiness using a multilevel analysis, including the individual, dyadic and organisational levels. Future study could also assess the influences of change readiness in shaping other KM processes and in a different industry setting. Such studies may enhance the applicability of findings from this multiple case study within a larger context. Finally, a continuous effort to integrate change readiness assessment in the context of KM research could result in a holistic understanding of the role of change readiness in mitigating the failure of knowledge processes.

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6.0 FINDINGS AND DISCUSSION

6.1 Manuscript Status

Title: *Change readiness influences on the knowledge application process: a case of three professional service firms.*

Publication Status:

This manuscript will be submitted for publication consideration in the *Journal of Management Information Systems*.

Declaration:

I conducted data collection for this study. I had full responsibility for data analysis including transcription, coding and interpretation. I prepared the first draft of the manuscript including the development of the theoretical framework. The co-authors provided feedback on the manuscript writing, proof reading and editing. The co-authors also contributed to improvement in the theoretical framework. Overall, the theoretical contributions from this study are largely derived from my analysis and interpretation (see Appendix 5 for the Co-Authorship consent).

6.2 Abstract

In response to a lack of existing theory explaining linkages between change readiness elements and knowledge management processes, the current study aims at assessing how multidimensionality of change readiness affects the knowledge application process. Methodologically, the research strategy involves multiple case studies for theory building from cross-case analysis. The adoption of a grounded theory analysis technique led to identification of key knowledge management (KM) processes and refinement of change readiness dimensional elements. Findings of the study indicate that change readiness construct is comprised of three dimensions at the individual and organisational levels: KM change understanding, individual differences and KM change context. Additionally, assessment of KM from a process perspective, and interpretation of change readiness within the professional service context, enriched understanding

of the phenomena by uncovering the importance of firm archetype, inter-profession differences, change nature, and employees' age that affect readiness for the knowledge application process. Findings from this research aim to contribute to practical and theoretical development of change readiness within the KM field.

6.3 Introduction

Institutionalisation of new knowledge is the ultimate goal of knowledge management (KM) implementation, which requires evaluation and integration of KM elements into firm's business process. The integration infuses changes in the prevailing systems and procedures, and is a change management process. However, a recent study disclosed that change management in KM implementation is often neglected by firms, and therefore impairs effective KM implementation (O'Dell and Hubert, 2011).

Effort for integrating change readiness within the KM context has started to gain attention (Holt, Bartczak, Clark and Trent, 2007c; Mamaghani, Akhavan and Saghafi, 2011; Mohammadi, Khanlari and Sohrabi, 2009; Mohanavel and Ravindran, 2012; Shirazi, Mortazavi and Azad, 2011). These studies have largely focused on KM critical success factors to represent readiness for new knowledge implementation, with a major focus on the organisational factors facilitating the initiatives (e.g., Mamaghani et al., 2011; Mohammadi et al., 2009). Despite recent scholarly efforts to assess change readiness, this complex construct is not understood clearly in the KM literature, especially its influences on KM processes. From a wider perspective, a potential direction for improving KM implementation is to assess elements that could stimulate change readiness at both individual and organisational levels.

The paper is intended to empirically examine the phenomena of change readiness in relation to knowledge application. Through multiple case studies within New Zealand professional service firms (PSFs), the current study offers insights into how change readiness elements at the individual and organizational levels affect the knowledge application process. The knowledge-driven nature of PSFs'

operation and high reliance on expertise means effective knowledge application is a significant contributor to the firms' success and survival.

The rest of this article is organised as follows. First, the article provides conceptual understanding of KM from a process perspective, particularly focusing on the knowledge application process within PSFs. The article then positions the assessment of knowledge application from a change management lens. It also offers definition and conceptualisation of change readiness as a multidimensional construct. After explaining the methodology adopted in the current study, findings from the cross case analysis is presented, followed by discussion of the proposed theoretical model for the assessment of change readiness on the knowledge application process. Finally, the article draws certain conclusions and the implications for theory and practice.

6.4 Theoretical Background

6.4.1 Knowledge Management and Its Processes

KM processes implementation focuses on development and enhancement of organisational knowledge through various activities, including knowledge acquisition, creation, application and dissemination. This study positions KM from the knowledge-based view (KBV) that posits knowledge as a resource that is difficult to directly measure or observe. The existence of knowledge can only be inferred through a firm's actions. There has been a consistent agreement that capacity to act upon the knowledge, which is a firm's capability, is crucial for sustaining competitive advantage and performance (Gold, Malhotra and Segars, 2001; Grant, 1996; Jasimuddin, 2012; Kaplan, Schenkel, von Krogh and Weber, 2001; Nonaka, Toyama and Nagata, 2000). While past literature has portrayed the various dimensions of KM capabilities, including infrastructure, strategy and process, least attention has been given to understanding KM from a process perspective (Gold et al., 2001; Lee and Choi, 2003). From the process perspective, establishment of structured KM processes could ensure appropriate knowledge is being delivered at the right time and being applied in an appropriate context to improve firm's performance (Andreeva, 2009; O'Dell and Hubert, 2011). However, in spite of abundant investment by firms in KM and the mounting studies on KM frameworks, the failure rates of KM implementation have been

increasing (Chua, 2009; Mehta, 2008). This phenomenon requires further assessment of the missing elements that could explain the discouraging results of the KM process implementation. Since knowledge application is a critical process that enables value creation from the firm's accumulated and created knowledge, the current study focuses on the assessment of factors that enhance this process implementation from a change perspective.

6.4.2 Knowledge Application and Factors Affecting the Process

Knowledge application involves the activities of utilising, exploiting, integrating, and translating knowledge. Although the main aim is for problem solving, the process also involves translation of intellectual ideas into new and innovative products, services and processes (Alavi and Tiwana, 2002; Berta et al., 2006; Song, Van Der Bij and Weggeman, 2005).

Alavi and Tiwana (2002) mentioned that "creation, codification, and storage of new knowledge without its exploitation or application lead to its underutilisation" (p.1030). With respect to the KBV, knowledge application initiates at the individual level, instigating the integration of contemporary concepts and procedures within prevailing practices, which consequently enhance individuals' skills, capabilities and creativities (Fong and Choi, 2009; Grant, 1996; Henderson and Winch, 2008; Xu, Houssin, Caillaud and Gardoni, 2010; Sarin and McDermott, 2003). The process offers a greater benefit to the firm when these individual's knowledge are combined and applied in the firm's context. Integration of knowledge among the experts from the different domains for the purpose of problem solving, for instance, could lead to enhancement in the firm's products, services and processes (Hoe and McShane, 2010). Insufficient effort, however, has been devoted to systematically assessing factors affecting knowledge application, and the outcomes that enhance business performance (Gold et al., 2001; Sigala and Chalkiti, 2007), including in the context of professional service.

6.4.3 Knowledge Application in the Professional Service Context

PSFs' primary operation focuses on application of knowledge and expertise in delivering customised services and intangible solutions to clients within the

boundary of professional practice (Brock, 2006; Fong and Choi, 2009; Løwendahl, Revang and Fosstenløkken, 2001; Morris and Empson, 1998; Von Nordenflycht, 2010). Improving the quality of professional services requires greater investment for developing the firm's intellectual capital, transcending the need for physical asset as commonly observed in conventional businesses (Von Nordenflycht, 2010). Such investment involves the on-going effort to enhance the firm's knowledge application process. Along the way, PSFs are also experiencing consistent changes due to globalization and market deregulation (Malhotra, Morris and Hinings, 2006). For these reasons, developing the capability for applying knowledge and adapting to changes becomes increasingly crucial for PSFs' competitiveness. The effective knowledge application process enables the transformation of the firm's knowledge and expertise into high quality services that meet or exceed clients' expectation (Andreeva and Kianto, 2011; Nätti and Ojasalo, 2008). With the critical role of knowledge and changes underlying the PSFs' operations, this service segment provides the appropriate context for studying the effect of change readiness on the knowledge application process.

6.4.4 Knowledge Management from a Change Perspective

The link between KM and change has been increasingly discussed and acknowledged at the conceptual level; however, the practical implementation is unclear (Holt et al., 2007c; Holt, Helfrich, Hall and Weiner, 2009; Baskerville and Dulipovici, 2006). From the change perspective, readiness represents the first stage of the organisational change process, during which the employees create understanding and prepare for the change (Armenakis and Harris, 2002). Their perception would shape change adoption, and contribute to change institutionalisation (See Figure1).
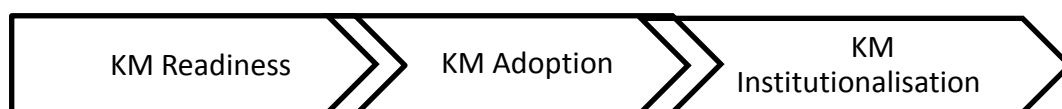
Figure 1: Stages of KM from a Change Perspective

KM implementation is argued to induce changes in the prevailing structure, culture and procedure to support knowledge flow in the firm (Ajmal, Helo and Kekäle, 2010; Siemieniunich and Sinclair, 2004; Walzack, 2005; Yeh, Lai and Ho,

2006). These changes consequently affect employees, and KM implementation that ignores human management is prone to failure (Coakes, Willis, and Clarke, 2001). Also, the changes resulting from KM implementation could trigger internal opposition. Therefore, ineffective efforts to mitigate resistance to change may hamper successful KM processes (Jasimuddin, 2012). This situation indicates that KM implementation requires the need to manage change, along with KM initiatives.

The extant literature suggests that equipping employees with capacity and skills to change and developing a supportive environment are crucial for improving change commitment and facilitating knowledge application (Berta et al., 2006; Wallin, 2003). Nevertheless, integration of change perspective in KM studies is scarce. Additionally, change management is a broad concept comprised of various phases; hence, further assessment of change management for knowledge application is essential. In attempting to contribute to extant KM literature, the present study particularly concentrates on understanding how readiness for change affects and shapes the knowledge application process. Findings from this study could potentially offer insights into the multifaceted change readiness construct that makes up knowledge application capabilities of the firms studied.

6.4.5 Change Readiness: An Overview of Conceptualisation and Its Definition

Previous scholars emphasised that employees' attitude and change readiness represent critical elements determining the success or failure of a firm's change initiative (Bernerth, 2004; Rafferty, Jimmieson and Armenakis, 2013; Bouckenooghe, 2010). In fact, from a practical perspective, inducing high readiness for change motivates organisational members to be more persistent and invest greater effort in the change process (Weiner, Amick, and Lee, 2008). Underestimating the effects of readiness on the change increases the probability of failures in organisational change effort.

In organisational literature, readiness is positioned similarly to the unfreezing stage of Lewin (1947) organisational change process model. This positioning implies that readiness is created prior to change adoption. However, with dynamic forces and constant changes surrounding businesses, instilling readiness only at the initial state may not guarantee a long- term commitment by affected

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employees (Armenakis and Harris, 2002; Stevens, 2013). Therefore, crafting readiness should be a continuous effort, because "creating readiness *should be* at an all-time high" throughout the change process (Bernerth, 2004). Armenakis and colleagues suggest that change readiness implies creating beliefs about the proposed change that influences reaction to change (Armenakis and Bedeian, 1999; Armenakis and Harris, 2002; Armenakis, Harris and Mossholder, 1993). In the subsequent development, scholars infused a positive attitude element into the definition of change readiness and included content, context and process of change, and individual attributes in shaping the change beliefs, and nurturing positive emotion towards changes in the existing practice (Holt, Armenakis, Harris and Feild, 2007b; Bernerth, 2004). Further, apart from triggering internal precursor of a positive mind set, readiness creation also stimulates positive momentum for an individual to embrace the proposed change (Bernerth, 2004; Weiner et al., 2008). Nonetheless, since organisational change should be seen as a social process affecting a group of personnel, instilling the individual's beliefs may be inadequate. Readiness creation should transcend an individual's consideration, and needs to account for coordination of change recipients' collective mind set (Amis and Aï¨ssaoui, 2013; Armenakis et al., 1993; Weiner et al., 2008). In this regard, Weiner (2009) emphasised that organisational readiness for change demands a conjoint capability and action among the employees, which shape their confidence in undertaking the change.

Further works then indicate that scholars acknowledged the importance of firms' and employees' conditions - the structural dimension - as the emerging dimension of change readiness (Holt et al., 2009; Holt and Vardaman, 2013). This implies that beliefs alone could be insufficient to prepare employees for changes if the firm's structure is not supportive of change, and if employees are lacking the capabilities to undertake changes affecting the prevailing process. A more practical definition of change readiness was then offered referring to *'the degree to which those involved are individually and collectively primed, motivated, and technically capable of executing the change"* (Holt et al., 2009). This definition reflects that creating readiness involves motivating employees by providing rationales for their action and simultaneously preparing them to act in favour of the change by recognising the firms' and individuals' conditions. In a more recent development, Holt and Vardaman (2013) acknowledged two important elements

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to advance assessment of change readiness: change nature, and regulatory/institutional context, for a heuristic assessment of the construct.

Consequently, this study defines change readiness as the beliefs that shape positive mind set and, capabilities that are manifested into inclination behaviour towards KM process implementation. As a multifaceted and multilevel construct, assessment of change readiness requires analysis at both micro (individual) and macro (firm) levels.

6.4.6 Understanding Change Readiness in Knowledge Management Research

Despite the construct development in change literature, its integration within the KM research is relatively new (Rusly, Corner & Sun, 2012). As emphasised by Walzack (2005), KM implementation infuses modifications to the firm's culture. Maximising the benefits requires adaptation to a new knowledge-oriented culture for facilitating KM processes. Siemieniunich and Sinclair (2004) and Holt et al. (2007c) proposed the preliminary KM framework and postulated readiness influences on KM attitude. A number of quantitative studies focused on KM readiness success factors and factors influencing commitment to KM (e.g., Mohammadi et al., 2009; Mohanavel and Ravindran, 2012; Shirazi et al., 2011). These studies offer insights into the factors, deduced from the literature, for assessing KM readiness. However, change readiness is multifaceted and the processes and approaches for managing knowledge could differ according to each firm's context. For these reasons, adoption of a qualitative assessment from multiple perspectives could reveal complex interactions among change, KM and other elements, in explaining the phenomenon on how readiness shapes KM processes. More importantly, the current study addresses KM implementation from a process perspective with specific consideration of the phenomenon within the PSF's context. This could answer the call highlighted by Weiner (2009), Weiner et al. (2008) and Amis and Aïssaoui (2013) concerning the lack of *aprocessual* and *acontextual* nature of change readiness studies.

Further, while change readiness literature commonly examines the individual's readiness (Rafferty et al., 2013), our analysis of KM literature shows that most studies concentrated on the organisational KM readiness. This implies scarce consideration of readiness as a multi-level construct in KM assessment. Hence,

this study offers clarification by explicating change readiness elements at the different levels, and builds their linkages to the KM processes literature. Moreover, the processes for managing knowledge could vary among firms, depending on the complexity of process and uniqueness of the firm's operation and industry. Likewise, change readiness could affect each KM process in a distinctive way; therefore, in-depth understanding requires a process-specific study of the phenomena. In an effort to bridge these gaps, the present study assesses change readiness dimensional elements that influence the knowledge application process, with a specific focus within the PSF context.

6.5 Research Design and Method

6.5.1 Research Design

This study seeks to extend understanding of change readiness complexity as a multi-faceted construct in relation to knowledge application. Because it is a complex phenomenon, it is best studied within a real context using case study design (Alavi, Kayworth and Leidner, 2006; Stake, 2006).

Three PSFs were included in the study, consisting of two accounting and one engineering establishments. The size of the firms varied according to employee size.[1] The two accounting firms consist of 6 and 90 employees respectively, and the engineering firm has 50 employees. Being of various sizes and from different industries, the firms enable comparison of instances across many cases, which consequently improve the understanding of how phenomenon is shaped by specific contextual elements (Yin, 2009).

6.5.2 Data Collection

Data for this study were collected through semi-structured interviews, which were digitally recorded and transcribed verbatim. Participants from the managerial and operational levels were included in the interviews in order to gauge the phenomenon from multiple perspectives. Involvement of participants from diverse functional areas and at multiple levels of the firms' hierarchy permits data source triangulation that increases credence in interpreting qualitative research findings

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[1] Firms with less than 20 employees are referred to as small enterprises in New Zealand (Ministry of Business, Innovation & Employment, 2013).

(Stake, 1995) and mitigates bias concerning interviews as a data collection technique (Eisenhardt and Graebner, 2007). Further, Nätti and Ojasalo (2008) argued that organisational knowledge utilisation is a multi-level phenomenon, and interviewing people from different roles enhances richness of the data needed to understand the process. Also, Weiner et al. (2008) asserted that selection of target participants represents a methodological challenge for change readiness assessment. Therefore, gathering evidence from multiple sources is crucial to avoid change champion bias or elite bias.

Sixteen participants were interviewed. Appendix A depicts the participants' background information. To maintain anonymity, the research participants and participating firms are identified through pseudonyms. The three firms are ACC, CNS and ENG. ACC is a small firm offering accounting, auditing and taxation services. CNS, an accounting conglomerate, offers wide-ranging consultation and advisory services to diverse clients. The firm was established as a result of an acquisition of a smaller firm by one of the Big 4 accounting firms. Finally, ENG, an engineering establishment, focuses on maintenance service for a leading New Zealand domestic airline company. The diverse work background of the participants enriched the findings by providing input from multiple perspectives, including those who have been experiencing various changes in the firms and the employees who are in the process of adapting to the on-going KM processes. The participants were asked to highlight factors that nurture or impede their readiness for embracing changes in the KM processes. In this paper, focus is given to the factors that shaped readiness for the knowledge application process.

6.5.3 Data Analysis

Data from the interviews were analysed using a grounded theory analysis following the three-stages coding procedure of Strauss and Corbin (1990). The interview transcripts were read and re-read along with constant critiquing of the data process to acquire in-depth understanding of the phenomena. Through the coding process, concepts, categories and core categories were formed that conceptualised the phenomena under study.

Development of within-case and cross-case analyses extends the understanding of change readiness influences on the knowledge application process. The within-case description facilitates the identification and familiarity of emerging patterns

for constructs in distinctive cases (Eisenhardt,1989). Nevertheless, discussion of within-case analysis is excluded from this paper[2]. Focus is given instead on comparison of cases to enhance interpretative of findings. This provides evidence from multiple lenses, a broader exploration of research questions and a stronger base for theory building (Eisenhardt and Graebner, 2007; Stake, 2005; Yin, 2009; Merriam, 1988).

6.6 Findings

Appendix B illustrates the concepts and categories developed from the coding process that characterises the phenomenon of change readiness influences on the knowledge application process within the context of PSFs' operations.

6.6.1 The Cross-Case Analysis: Change Readiness and the Knowledge Application Process

Despite their homogeneity as PSFs, the nature of firms' operation provided unique contexts that distinguished the types and mechanisms of knowledge application implemented in these firms. ACC, with a classical setting of small accounting firm, is in its initial stage of KM implementation. Application of procedural knowledge represents a major process in the firm's operation. On the other end of the continuum, with a diverse client base and a wider service portfolio, CNS is more proactive in implementing operational changes in order to reflect revisions in the regulatory frameworks. Hence, employees consistently experience adjustment in application of knowledge. ENG's operation as the aircraft maintenance provider is strictly regulated by the aviation professional authority where safety is the main focus. Although technology and aviation knowledge evolves, the fact that ENG specialises in maintaining a single aircraft type has restricted integration of new application in the prevailing practice. The findings are aligned with Song et al. (2005) assertion that KM may vary according to firm's characteristics.

Knowledge application refers to the deployment of prior and new knowledge by the individual experts in PSFs that is integrated for utilisation at the firm level. Findings indicate various individual and organisational readiness elements that

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[2] For information regarding within-case analysis, please email the corresponding author.

influence firm's knowledge application. Findings are arranged by main themes derived from the cross-case analysis. Interestingly, other factors exert moderating effects on these linkages, predominantly related to the nature of change, firm setting, the nature of profession and the demographic element.

The individual change elements seem to have major influences on readiness for the knowledge application process. Change goal, change benefit and perceived management support are the fundamental elements that trigger individuals' understanding about the process, and are present in all firms studied. Additionally, mutual understanding affects readiness at the collective level for knowledge application, depending on firms' setting. We now go on to discuss these concepts that were derived from the case studies.

Change Goal provides a direction for individual employees to understand the reasons for changes. Clarity of goal, for instance, understanding why new knowledge application aimed at achieving operational compliance and service improvement, is invaluable for change readiness at individual level. For example,

> *The change must be approved by everybody. It must be informed to everybody, so that they know what will be going on. Telling them this is what we doing and why we are doing it and this is how we are going to do it (P8, CNS-Senior Associate).*

Also, continuing changes introduced in the practices are sometimes excessive and create unclear change direction for the employees. Therefore, individuals' understanding of knowledge application goal is enhanced if changes are planned, well communicated, and incrementally implemented, rather than impulsive acts. As quoted below,

> *You need to explain what would happen to them as a result of the changes.... You also need to focus on goals. People could be a bit more relaxed with the changes, based on the way it is presented... They just want to know which directions to go (P2, ACC- Accountant).*

> *You need to come out and say what we are doing at the moment is unsustainable. We need to wake up and we need to change the way we do things... So what we are going through now is to improve the processes and ensure that the processes are simple and everybody can follow them... Continuous improvement: that is why we need to do things in a smarter way (P9, ENG -Supervisor).*

Change Benefit triggers readiness for knowledge application in which individuals are more ready to contribute if they could foresee potential positive outcomes from their effort. Individual performance improvement, job expectation

achievement, and job control are among the convincing outcomes. Explicit understanding of change implication is particularly crucial in dealing with employees who are resisting changes that affect their prevailing practice. The following extracts were quoted from participants:

> *There are couple of guys here that don't like what we doing. They may do what you told them or they might change the way to do it. For this people, you can't just ask them to do it. We need to tell them the benefits of doing that (P16, ENG-Supervisor).*

> *Once they know how easy it is and talk about it and are communicating on how it works, experiencing the advantages and have found that it is really good, there will be no more issue for that… Explain to them the benefit for each people, there will be no dramas. By the end, they are all excited… Compare old and new stuffs to make them more comfortable, because they are not losing out (P2, ACC-Accountant).*

Perceived Management Support, as perceived by an individual, is crucial, particularly at the early stage of introducing changes associated with knowledge application. If management is seen as supportive of changes, employees' confidence in the change process could be elevated. In turn, the employees develop positive perception that improves their preparedness for the process. For instance,

> *From what I have learnt about change, it is all about how it is presented. Management should look at it from that person's perception and trying to understand what they want. If you can focus on people's concerns and help them to focus on what they want, it could reduce their fear of change. It is already half of the battle and people will be more accepting of change (P2, ACC-Accountant).*

Nevertheless, management support for understanding knowledge application is less needed by professionals in ACC. Being a small firm with high individual specialisation structure, readiness for knowledge application is commonly triggered by the expert in-charge with less intervention by management. With a greater autonomy granted to those experts, they are trusted and responsible in applying new knowledge within their domain of expertise.

Collective commitment, which is rooted in collective understanding of the change, is crucial in shaping readiness for knowledge application, although its effects differ depending on firms setting. In the situation where regulatory changes may impact the team's function, collective effort becomes increasingly

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essential. In CNS, nurturing mutual understanding that is transformed into collective commitment among the functional team members could increase readiness for applying knowledge. Similarly for ENG, there are situations in which the shift team encounters unusual maintenance issues that demand collaboration among the specialists. Collective commitment among employees facilitates adaptation of new ideas and produce effective solution for the problem. A manager in ENG explained,

> *What we do basically if we need to change, probably we look at the system or we look at the resource aid, we discuss and sketch it and then we will find the short cut of what we thought it was. We still sketch it because not everything is in the book. We have the manuals but if something is not in the book you need to work it out….You go through everything it could be, it might be easy, it might be not. You pool together and the idea will come. It may be silly but it normally works (P16, ENG-Supervisor).*

However, the structure of shift operation affects collective understanding between maintenance floor and management.

> *Most of the guys work at night and I will come during the night once a week; talk to those guys. You need to keep reinforcing and informing them, because you come with different groups of the guys…We will go through meetings and make those changes and make sure supervisors are aware (P16, ENG-Supervisor).*

Conversely, collective effort in applying knowledge is less important in ACC. Due to emphasis on the individual specialisation, internal collaboration for applying individual-specialised and context-specific knowledge is unnecessary.

While collective commitment is pertinent in creating readiness for knowledge application, readiness level among the team members could vary. As discovered, individual readiness for the process could be influenced by personal characteristics. Notably, there are two influential characteristics shaping individual readiness for the process: expertise and adaptability to change.

Expertise. In all the firms studied, individual expertise is imperative for integrating personal knowledge with context-specific knowledge. With autonomous individual's job in ACC, each expert is responsible for assimilating changes in their prevailing job scope.

For CNS with various functional units focusing on diversified services, development of expertise is crucial to comply with various regulatory framework and changes to accounting standards. Professionals' expertise facilitates the

formulation of customised services and best practices within a functional domain. Exposure to clients' business contexts through consulting experience, for instance, enriches employees' expertise, making them more capable and prepared for applying knowledge in wide-ranging contexts. Participant in CNS agreed with this fact, stating that:

> *Our knowledge is in a mixture of both explicit and tacit. In tax, because everything you do has to be catered for a specific company or specific situation and at a specific point in time, relating to the law that exists at that time. You may have write up for one person, I mean if someone else tries to apply it, they have to apply their own tacit knowledge that needs to change, to make them applicable…. I think if you have a lot of skills and you face with the change, you now have all the backgrounds and you are going to learn a whole bunch of new skills that you can use in between (P7, CNS-Senior Associate).*

For ENG, availability of experts enables transfer and application of knowledge to meet the current operational requirement. Experts with specialised experience working on the advanced aircraft models are more efficient in problem-solving process and tasks accomplishment, outperforming the other non-expert co-workers. As mentioned by the participants in ENG,

> *We modify the way of thinking on work based on the old aircraft and adapt to the new aircraft, we are supposed to. We use knowledge from the old aircraft…. That is what we do but some people can't do that (P16, ENG-Supervisor).*

> *Generally, it is based on experience. Most people come out on their own solution based. What we are doing is solution based and because we have past experience in this area. So you draw from everyone's past experience (P11, ENG-Development Engineer).*

Nevertheless, ENG experienced greater difficulties for integrating change in knowledge application, as compared to CNS. ENG represents a specialist firm with a focus on high quality professional service. Employees developed their niche expertise from prolonged experience working in the firm. They are confident with the established procedures for maintenance. Hence, inducing changes in the prevailing practice could compromise their established proficiency. As mentioned by the manager,

> *The older guys that have been around for a long time are harder to change because they know what works for them. Supervisors tend to be, they are the people who have been around for a long time and have tacit knowledge that they try to pass to the younger guys (P9, ENG- Supervisor).*

Further, due to its concentrated service scope and client, infrequent changes were experienced in ENG's operation. Unfamiliarity with changes may explain the difficulties to engage the experts in change initiative for knowledge application. In contrast, ACC and CNS face constant changes in the accounting industry. As such, incremental changes requiring application of knowledge for enhancement in the services offered are common.

Although age could also represent maturity that shapes the expertise, younger employees tend to be more ready for knowledge application, particularly concerning sophisticated technology utilisation in which they possess the knowledge. For instance,

> *Those who have been here longer are more settled; they have more concerns about the changes. They are happy with the current style, so it's quite hard to change (P2, AAC- Accountant).*

> *It is very easy to introduce change to the young engineers because what happened is that you've got young guys who have the respect and change behaviour according to the standard (P9, ENG- Supervisor).*

> *A lot of our employees in a particular area are younger and certainly the ways we are changing are towards a technology-based, which staffs are comfortable. So, it works quite well (P3, CNS-Manager).*

Adaptability refers to the ability to cope with the changing contexts and new expectations, and to institutionalise the new ideas into the prevailing procedures. Adaptability is related to openness to change, one of the dimensions in the five-factor personality model (LePine, Colquitt, and Erez, 2000). Those individuals with high openness are better in adjusting to changes in their tasks. Adaptability is thus crucial for professionals engaging in a dynamic field. As quoted from participant in CNS:

> *In our industry, consulting, you must be able to change, be flexible and adaptable to changes. Otherwise, you are lagged behind…. To cope with the changes, we have to have this mind set about change (P5, CNS- Senior Manager).*

Being adaptable to changes also reflects the employees' flexibility and confidence in embracing modification in the firm's operation. A participant mentioned that:

> *Flexibility, if you are not flexible, you won't be able to change. Keep an open mind; think about what the change might offer. You might even change better…. Being open to change, it is a flexible learning and mind of accepting that there is more than one way of doing something. Of course, you are going to make mistakes when you change, anyway…. But if you are happy and supportive, and*

be flexible, it may be a little easier mind and even stronger of to carry on and after all, that is it (P7, CNS-Senior Associate).

Less adaptable employees are more likely to have negative feelings towards new idea, hence demonstrate less readiness for knowledge application. Employees could be contended with the prevailing practice. Therefore, introducing changes impair their familiarity with the existing processes. As observed in ENG:

Some people appreciate changes, so they don't get so bored. Others don't like changes because they like things familiar…. There are couple of guys here that don't like what we doing. They may do what you told them or they might change the way to do it (P16, ENG-Supervisor).

I guess it is just someone who does not like change. There are some people who like the status quo; stick with the way they do things. We have used this way and if you put something new in place, they get stressed, I suppose. They don't like things out of the ordinary (P12, ENG-Supervisor).

Adaptability to changes could also be explained by nature of the professions of the participants. The accounting professionals face evolving changes in their practice, implying integration of continuous changes in professional development is necessary. In contrast, ENG performs routine maintenance service on a single aircraft type. Safety concern governed by a rigid aviation regulation characterised infrequent changes in ENG's operation. There are marginal changes to improve efficiency, yet major changes that affect ENG's primary service are hardly imposed. For instance, a participant mentioned that:

In this industry, it is much regulated, there is narrow corner that we walk down; you can't deviate from the simple lines, so everyone understands that there are certain rules and regulations that you will accept. So, in this structured and regulated industry, you just accept it because that is how it is. It has to be that way. You don't have the luxury to say something. Everyone understands the rules; it is very rule-bounded (P11, ENG-Development Engineer).

Consequently, less dynamic profession could explain lower adaptability to changes by the ENG's professionals. Interestingly, findings highlighted that the conflict is more obvious among the senior experts who possess a deeper understanding of the firm's operation. The experienced manager shared this thought:

We deal with a lot of expertise and expert knowledge, they have positional power. They're working on their own and they tend to think on their own; they refer to their own embedded beliefs because it has worked for them before. Then, because

they have positional power or expert power, and they know what works well, trying to modify their behaviours could be very hard (P9, ENG-Supervisor).

From a different angle, although operating in the same field as CNS, limited clients' range and service scope dictate minimal changes in ACC operation. Further, with high individual specialisation, ACC's professionals are capable to gradually absorb these changes for application in their specific domain.

Findings also revealed the importance of organisational factors, identified as learning and management support, in shaping readiness for the knowledge application process.

Learning. Both formal and informal learning are crucial to prepare the firms for the knowledge application process. Nevertheless, the diverse firm setting delineates differences in learning mechanisms implemented in these firms.

ACC represents a PSF with limited internal experts. Due to this limitation, professionals learn about new development through trainings offered by larger firms and external consultants. In contrast, in a larger firm such as CNS, availability of key experts enables in-house learning for applying knowledge. Similarly for ENG, employees are equipped with theoretical knowledge prior to involvement in the maintenance operation. Application of knowledge however occurs largely in these PSFs through on-the-job learning, which exposes employees to the diverse practical experiences of problem solving. Moreover, on-the-job learning mechanism challenges individual and team capability to effectively deploy knowledge in the changing contexts. As the following quotes show:

> *There is a lot of on the job learning.... You may learn theoretically the best way to do it, but we can get you numbers to provide you with how you do that. But, there is no one way of doing it, there are multiple different ways, and you will be asked for a better way and you have to know from the routines and you go for the better way. Most of them you can do in a better way (P7, CNS-Senior Associate).*

> *Most of us probably learn from someone else. Probably 40% of your knowledge you learned from someone else, while 60% is self-learning (P16, ENG-Supervisor).*

Different industry setting further affects the way learning shape readiness for knowledge application. Despite its small service scope, the dynamic nature of the accounting industry forces ACC to continuously learn about changes affecting its

clients' operation. In CNS, on-going learning to support professional development is more critical since the firm is offering diversified, full range of services to clients. There is greater possibility that regulatory changes will affect a certain segment of CNS's clients. Continuous exposure to new developments enhances the firm's capabilities to learn from past experiences and to adapt to the evolving practice. Therefore, incremental industry changes shape the firms' continued learning and enhance their readiness for knowledge application. As found in the study,

> *We know what we should be doing next, so it is constantly evolving. If employees are ready, changes are often, it can make introducing change a lot smoother and transition is faster... We're used to experience changes that happen on a regular basis. So, that is the normal way we used to do things. They keep changing.... I mean, if we haven't changed for years, it would be quite a shock. Probably, one more difficult change was possibly because we haven't change too much before it, for quite a long time (P3, CNS- Manager).*

In contrary, with a less diversified operation in ENG, infrequent changes are foreseen in the prevailing procedures, implying a lesser need for a recurrent formal learning by management. Nevertheless, some employees aired their frustration of the inconsistent training arrangements and lesser opportunity for formal learning. Limited formal learning is claimed to affect their professional development, which could limit their ability to assimilate new knowledge.

> *I think one thing is the frustration in terms of training and retraining. Some of the guys who have done their last training about 3-4 years ago are querying retraining right now. Sometimes, something [training] is not being done in the appropriate or efficient time frame. It takes too long. Then, it will cause frustration among the employees (P15, ENG- Engineer).*

Management Support. While perceived management support could motivate individual's readiness for knowledge application, findings also indicate the importance of management support in shaping readiness at the firm's level. Support from management that is translated into actionable strategy, including provision of training and clarity of goal, shapes firm's readiness and capability to sustain knowledge application implementation. As quoted,

> *Regulation change... it affects the operation....The managing partner communicated the issue well and most people are satisfied with the way changes are handled (P6, CNS-Associate).*

The outcomes could differ if there is inadequate support for continuous application of knowledge in the firm. For instance,

> *The company sort of encourages you to up-skill and been up-skilled as you go along, but there is no special facility here to help you (P10, ENG-Engineer).*

> *Since they [management] don't change in what they do, so therefore we're just stagnant....We are still doing the same thing now, apart from a different aircraft, as what we were doing in 1998 when I started.... You can give ideas that they like, make money or make things easier, I'd like to know if the ideas are adopted (P16, ENG- Supervisor).*

In conclusion, findings indicate that the knowledge application process is largely influenced by change readiness elements at the individual level. Even so, the presence of learning platform and continuous management support foster readiness for the process implementation at the firm level. Figure 2 depicts the important elements of readiness for knowledge application derived from the study.

Figure 1: Change Readiness Elements for Knowledge Application

6.7 Discussion

6.7.1 Knowledge Application and Multidimensionality/Multilevel Analysis of Change Readiness

In line with literature (e.g. Rafferty et al. 2013), the findings corroborate change readiness as a multidimensional and multilevel construct. The eight readiness elements derived from the coding process were classified into three dimensions of change readiness, consisting of *KM change understanding, individual differences* and *KM change context* (see Appendix B). KM change understanding represents individual and collective understanding of the knowledge application process; individual differences reflect individuals' characteristics that determine their capabilities to cope with changes in the process, while KM change context refers to elements that represent a firm's capacity to apply knowledge. Classification of these change readiness dimensions portrays the construct analysis at organisational and individual levels (See Figure 3). The following section discusses each change readiness dimension for the knowledge application process.

Individual Change Readiness
Organisational Change Readiness

		KM Change Understanding		KM Change Context
Individual Differences	*Individual:*			
Expertise			*Firm/Collective:*	Learning
Adaptability	Change Goal			Management Support
	Change Benefit			
	Perceived Management Support			
			Collective Commitment	

KM Change Capability
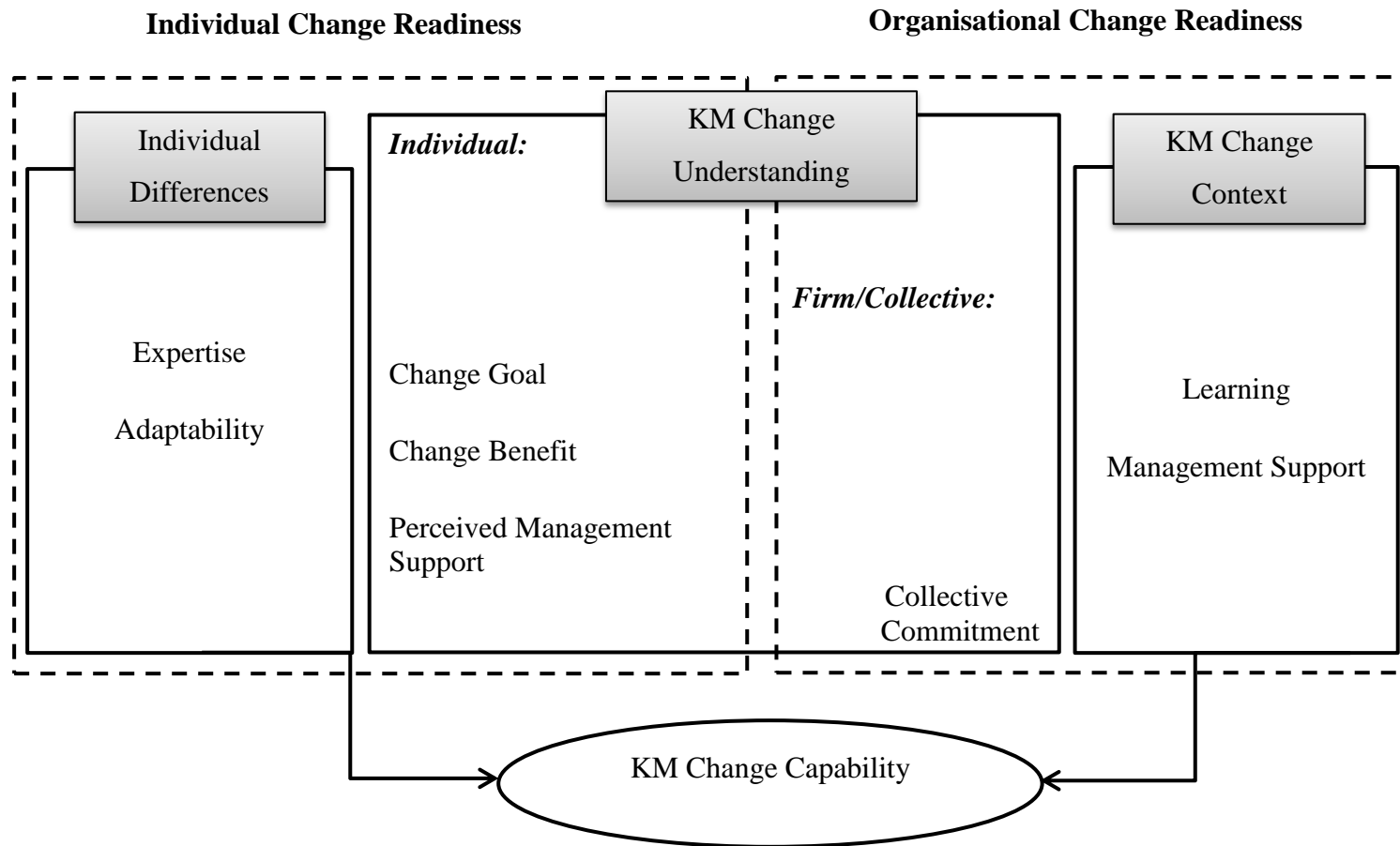
Figure 3: Change Readiness Dimensional Elements

6.7.2 Individual Analysis of Change Readiness

Amis and Aï¨ssaoui (2013) highlighted that concentrating on leaders' roles while ignoring change recipients' readiness and involvement in change implementation could result in failure to change. Assessment from a change perspective implies that knowledge application implementation is influenced by the way individuals appraise the process and their change capabilities. Two dimensions of individual elements triggering readiness were categorised as *Individual KM Change Understanding* and *Individual Differences*.

Individual KM change understanding represents elements that form individual beliefs about knowledge application. Understanding of change goals, change benefits and perceived management support appear to be important for instilling positive beliefs and triggering an individual's readiness for the process. Change benefit and perceived management support have similarity to change valence and principal support – the components of change message espoused by Armenakis and Harris (2002). These elements represent the psychological readiness dimension of Holt et al. (2009). Additionally, findings revealed change goal as another element that improves individual understanding, hence readiness for knowledge application. Individuals are intrinsically motivated to apply knowledge if they understand the reasons and the objectives of the change process (Coakes et al., 2001; Käser and Miles, 2002). Clear goals that are relevant to job scope and drive towards operational improvements enable employees to focus on the purpose and the appropriate mechanisms for applying knowledge in a particular context. It is proposed that,

P1: A greater understanding of change goal increases individual readiness for the knowledge application process in the PSFs.

Nonetheless, the way change is introduced could affect readiness for knowledge application, even if the change goal is made explicit. For example, changes could be pull-based or push-based, affecting how employees will perceive and receive change. This finding is aligned with Holt and Vardaman (2013) recent recommendation to incorporate nature of change when assessing change readiness.

Literature outlines various change approaches, including push-based versus pull-based change systems (Clegg and Walsh, 2004) and evolutionary to revolutionary change (Burke, 2002). In the pull-based approach, changes are instigated by those employees who proactively foresee the need to undertake changes to improve job performance. Under the push-based system, changes are commonly directed from top to bottom, which could create incongruent understanding of the purpose of such changes. Burke (2002) asserted that more than 90% of organisational change efforts are evolutionary in nature, which exerts minimal effects on the organisation's deep structure and is usually better received by the employees.

Findings suggest that a clear change goal that is associated with continuous and evolutionary improvement enhances readiness for the knowledge application process. Through this approach, the employees are able to better comprehend the goal of knowledge application and gradually phase in new requirements within the existing practices. This is opposed to infrequent, revolutionary changes that force employees to adapt new ideas in a radical way. As a result,

P1a: The relationship in proposition 1 is stronger for changes that are more continuous and evolutionary.

Further, creating change understanding by emphasising change benefits reflects Weiner et al. (2008)'s argument about providing assurance to those people affected by changes to the status quo. There is a tendency among the change recipients to feel threatened and insecure when changes are carried out as they may sense negative implications, including loss of control of their own job. The psychological feeling of safety could be increased as they perceive positive outcomes and the importance of changes to them, and are assured that changes are within their power and competency to implement (Coakes et al., 2001). This is consistent with Jones, Jimmieson and Griffiths (2005)'s affirmation that a more successful change implementation could be anticipated if employees were psychologically ready.

Nurturing readiness by highlighting the benefits of knowledge application has been experienced in all three firms studied. Apparently, those professionals were more ready to apply new knowledge as they believed their commitment would contribute positively to their job accomplishment. With some people needing to

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be convinced with detailed justification about the benefits than others, management realised the importance of designing appropriate strategies to promote merits of change and mitigate doubts raised by the employees as the process is implemented. Therefore, it is posited that,

P2: A greater understanding of change benefit increases individual readiness for the knowledge application process in the PSFs.

Nevertheless, with differential effects of changes to the established procedures, disclosure of change goals and benefits may not necessarily ensure all change recipients are ready for the knowledge application process. Eby, Adams, Russel and Gaby (2000) proposed that perceived management support shapes individual attitude towards change and preference for change. Similarly, individuals' perception on management support is important to develop the individual's belief regarding the presence of management commitment for change (Armenakis and Harris, 2002; Holt and Vardaman, 2013; Holt et al., 2009). Aligned with Holt and Vardaman (2013), the presence of support portrays management commitment that nurtures employees' beliefs about the importance of contributing to the process, increases employees' confidence in their ability to undertake risks and challenges associated with the changing contexts, and facilitates the change process itself. Consequently, employees are more convinced and ready for the change process (Ajmal et al., 2010; Berta et al., 2006; Jasimuddin, 2012; Sarin and McDermott, 2003).

P3: Greater perceived management support increases individual readiness for the knowledge application process in PSFs.

Interestingly, findings indicate that firm's archetype influences the effects of perceived management support in shaping readiness for knowledge application. Archetype reflects a distinctive configuration of a firm's system and structure that is emphasised by its values and beliefs (Brock, Powell and Hinings, 2007; Greenwood and Hinings, 1993). According to scholars, distinctive archetypes affect the firm's ability to implement and sustain changes (Brock, 2006; Brock et al., 2007). As such, consideration of a firm's archetype could improve understanding of change readiness effects on a particular firm's knowledge application process. Various PSFs' archetypes were proposed on the basis of firm's size and strategy (Brock, 2006), structure, process and interpretive scheme

(Brock et al., 2007; Mintzberg, 1979). Along with changes in the industry, scholars observed the transition from classical forms to contemporary/emergent PSFs' archetypes.

Classical archetypes include professional bureaucracy and partnership structure, with a primary task that involves applying knowledge to solve clients' complex problem. The way these firms operate is characterised by autonomous professionals, high standardised skills, low bureaucratic control, flat hierarchical structure, informal procedures and collegial decision making (Greenwood, Hinings and Brown, 1990; Mintzberg, 1979). In more recent works, Brock (2006) and Greenwood (2006) proposed PSFs typology with reference to firms' geographical size and service strategy. Apart from the classical partnership, the emerging clusters of specialists and global professional networks (GPNs) were identified. 'Specialist' represents an elite firm strategizing on a differentiated, niche service. Emphasis is given to the highest professional quality and individuals' excellence. However, its global expansion is limited by a localised and regional operation. At the other extreme, GPN consists of large firms with the aim of penetrating the global market. GPN operation is characterised by formal processes and diversified services, and is highly responsive to industry changes. In this cluster, high integration among diversified functions is essential, increasing the importance of governance and control.

ACC exhibits the classical archetype that is common for small PSFs where the owner is directly involved in the provision of professional services to clients. There is high specialisation and decentralisation underlying the firm's operation, which means greater autonomy, is given to each professional. Hence, changes required for knowledge application in a specific domain are largely determined by the key expert, with minimum intervention from the owner. This firm's archetype explains the minor impacts of management support perceived by participants in forming employees' readiness for knowledge application. The situation differs in ENG and CNS where changes involve greater coordination from a higher level. In this situation, changes are commonly initiated from the top level. Hence, perceived support from management is important to convince and prepare the individual professional for knowledge application. Therefore, it is proposed that,

P3a: The relationship in proposition 3 is stronger for firm archetype with high coordination.

Further to creating individual understanding, findings indicate that individual characteristics define the extent to which an employee is prepared for knowledge application implementation. These characteristics are categorised as individual differences. Classifications of individual differences include cognitive style, personality, and situational/contextual factors (Korukonda, 2007; Zmud, 1979). Previous studies asserted that individual differences exert a paramount effect in determining the success of new systems implementation and in shaping attitudes towards specific change and change readiness (Caldwell, 2013; Caldwell, Herold and Fedor, 2004; Herold, Fedor and Caldwell, 2007). Nevertheless, lack of research on individual differences is evident in KM literature (Stevens, 2013). Little is known regarding personal characteristics that comprise individual readiness for KM change, let alone the influences of this dimension on the KM process (Holt, Armenakis, Feild and Harris, 2007a).

Individual Differences in this study focus on the individual's capacity, skills and ability to carry out changes in knowledge application. Holt and Vardaman (2013) highlighted the issues between change initiative and individual capability, particularly for firms with highly specialised people. It is claimed that misalignment of the two aspects could affect change. Findings indicate that individuals' expertise and adaptability represent the two elements of individual differences that shape readiness for the knowledge application process. Additionally, age also defines the individual context associated with changes.

Expertise refers to a dynamic state of individuals' proficiency in a specialised domain, developed on the basis of skills, knowledge, experience and problem solving accomplishments (Goodyear, 1997; Herling, 2000). Expertise is manifested through the application of knowledge (Bender and Fish, 2000; Berta et al., 2006). With prior knowledge and experience in handling problems, individuals are capable of mastering the complexity of situations and are able to consistently provide exemplary solutions (Cornford and Athanasou, 1995). Therefore, they are more competitive and better at coping with changes (Herling, 2000; Zmud, 1979). Expertise is nurtured over time as employees learn, being

exposed to, and extensively train in a specific domain (Herling and Provo, 2000). Since expertise development involves a long learning curve, selection of people with ability and skills to adapt to changes is important for knowledge application.

In ACC, a small firm with individual specialisation, each professional is the expert in a specific service domain. The expert is essentially responsible for keeping abreast with current developments to meet the diverse clients' demands and regulatory requirements. Moreover, findings in CNS concurred that expertise is indispensable in sustaining quality of services, whereby the experts' value judgements and opinions are progressively enhanced through consultancy and evaluation experience.

P4: A greater expertise enhances individual readiness for the knowledge application process in the PSFs.

While findings indicate that expertise seems to exert intense effect in shaping an individual's readiness for knowledge application in ACC and CNS, infusing new ideas in ENG's experts is more challenging. The situation observed in ENG reflects Zmud's (1979) claim that experienced staff members with greater expertise and longer tenure have a lower tendency to deploy new application into their prevailing knowledge.

These diverse effects of expertise in shaping readiness could be associated with distinctive archetypes of the firms studied. Exhibiting the specialist archetype, ENG's experts focus on individual excellence and highest quality within the service niche (Brock et al., 2007). With rigid regulations and little changes in the service scope, it appears that the experts possess high self-confidence and are extremely self-assured in their deep rooted understanding and expert knowledge. Hence they are impervious to receiving new ideas. From a different lens, although different in size, both ACC and CNS operate in the same accounting field offering a range of services to clients. With a wider service scope as compared to ENG, changes resulting from changes in accounting regulation and clients' sophisticated needs are inevitable. These evolutionary changes reflect the constant demand for the accounting experts to be ready for knowledge application and integration. For these reasons, they are more ready to engage in the knowledge application process, in comparison to the aircraft maintenance professionals, so long as the changes

are evolving within the experts' domain (i.e., changes are evolutionary). It is posited that,

P4a: The relationship in proposition 4 is stronger in a firm archetype with multidisciplinary service.

P4b: The relationship in proposition 4 is stronger for changes that are more evolutionary.

Further, provided that changes are within their knowledge domain, younger employees demonstrate higher readiness for knowledge application in comparison to some older and more mature experts. Due to their limited experience of change-related initiatives, they are potentially optimistic about changes that enhance application of knowledge. In contrast, those mature employees who have had unpleasant change experiences may form pessimistic perceptions about the subsequent KM initiative. Thus, they may be unconvinced about the proposed process. For this reason, consistent with Abdinnour-Helm, Lengnick-Hall and Lengnick-Hall (2003), younger employees are more ready for new ideas than are mature and experienced experts.

P4c: The relationship in proposition 4 is stronger among younger employees.

Moreover, previous studies asserted that being adaptable would decrease anxiety over new systems and processes, and increase an individual's desire to invent new procedures and processes (Aarons, 2005; Harrison and Rainer, 1992; Korukonda, 2007). Ployhart and Bliese (2006) define individual adaptability as "an individual's ability, skill, disposition, willingness, and/or motivation, to change or fit different task, social, and environmental features" (p. 13). Scholars have adopted various individual differences dimensions in predicting individual adaptability. Openness to new experience, an element of the five-factor personality trait model (McCrae and Costa, 1999) is a common predictor of individual adaptability (Korukonda, 2007; LePine et al. 2000; Pulakos, Dorsey and White, 2006). According to McCrae and Costa (1999), personality traits characterise an individual's differences and are manifested through their behaviour or attitude. Previous studies suggest that individuals with a high openness trait demonstrate high adaptability. They possess strong intellectual curiosity, are more likely to adapt to new ideas and environments, and perform

better in a changing context, as compared to those with low adaptability (Korukonda, 2007; LePine et al., 2000; Pulakos et al., 2006).

In this study, individual adaptability to change dictates a different mind-set towards the knowledge application process. Those who are less adaptable tend to have negative feelings toward changes in knowledge application. Consequently, they will be less enthusiastic about participating in the process. Adaptability emerges as a crucial characteristic shaping the individual's readiness for knowledge application, particularly within the accounting field.

P5: A higher adaptability level enhances individual readiness for the knowledge application process in the PSFs.

Interestingly, findings also revealed that the dynamism of profession/inter-profession differences could moderate the way in which adaptability influences readiness for the process. Personality and trait literature suggests that an individual's characteristics result from the interplay between traits and situational/contextual influences (McCrae and Costa, 1999; Pervin, 1989). Similarly, from a person-situation perspective, Pervin (1989) asserted that individuals behave differently when influenced by external conditions, implying that differences in the profession could affect and shape the individual's adaptability.

With constant regulatory, client and technology changes over the past two decades, the accounting industry has become increasingly competitive (Brock et al., 2007). The resultant dynamic environment requires professionals to consistently absorb changes in practice. For instance, continuing professional development represents an important mechanism to nurture the enhancement of skill and practical knowledge, and to maintain professionalism in the industry. Findings indicate that professionals from both ACC and CNS were receptive to regulatory changes and clients' preferences. In ACC, despite a smaller service scope, the professionals are aware of the required modifications in the prevailing practices and adaptation to changes for survival in the industry. Similarly, for CNS, changes in the framework and service expectations are seen as part of the industry's development. Because CNS is a branch of a global firm with multidisciplinary service and a wider client range, industry changes typically affect CNS's client segment. For

this reason, adaptation to improved practice is inevitable in order for the professionals to remain competitive.

In contrast, ENG's operation concentrates on maintaining a single aircraft type for the sole client. It is apparent that professionals, particularly those with prolonged experience, were relatively less supportive of modification in the established procedures. Despite the limited service scope, risks associated with the outcomes of ENG's service are intimidating. While inaccurate consultation by the accounting firms could result in litigation for alleged malpractice (Brock, 2006), negligence in the service provided by ENG could be more detrimental and cause fatalities. Since conformance to procedures is critical in the accomplishment of maintenance operation, the experts tend to be risk averse as they foresee a limited opportunity for flexibility in performing their duties. Consistent with Malhotra et al. (2006), differences in the institutional context could affect professionals' flexibility and openness to new idea. For these reasons, the dynamic nature of the profession shapes professionals' adaptability to changes, including in the context of the knowledge application process. It is proposed that,

P5a: The relationship in proposition 5 is stronger in a dynamic profession and where changes are more evolutionary.

6.7.3 Organisational Analysis of Change Readiness

Previous literature suggests that changes at the individual level as a result of individuals' understanding and capability could collectively impose changes at the organisational level. Therefore, organisational readiness for knowledge application is as important as readiness at the individual level (Coakes et al., 2001; Lin, 2011). Two important readiness dimensions were found to affect knowledge application: Firm/Collective KM Change Understanding and KM Change Context (see Figure 3).

Firm/Collective KM Change Understanding refers to employees' collective understanding about changes underlying knowledge application. Collective understanding among the employees could be transformed into a collective commitment for embarking on the process.

Collective commitment represents the strongest motivational attitude in a team setting, and collaboration, interactions and sense-making processes among the

team members could strengthen the firm's pool of resources that support the knowledge application process (Berta et al., 2006; Dunin-Keplicz and Verbrugge, 2003; Henderson and Winch, 2008; Sarin and McDermott, 2003). In PSFs with a team-based job orientation, collective knowledge application is crucial to foster the integration of knowledge and skills for completion of engagements (Nätti and Ojasalo, 2008).

P6: A higher collective commitment implies a greater mutual understanding that increases readiness for the knowledge application process in the PSFs.

As highlighted by Holt and Vardaman (2013), complexity of firm setting determines the importance of individual or collective capabilities in shaping readiness for change. Specifically, beliefs on collective commitment are important in a complex structure where changes affect more employees within the same domain.

In ACC, each expert's job is self-contained. Each professional is granted autonomy and empowerment in decision making. They deal directly with a client requiring the service; minimum interactions occur among colleagues in completing the engagement. Thus, collective commitment in applying knowledge within a specific domain is less important. In ENG, on the other hand, shift teams are responsible for the aircraft maintenance. The composition of professionals differs for each shift, implying a great focus on individual expertise to apply knowledge within the team. Segregation of maintenance jobs during each shift requires integration of distinctive tasks performed by the team members to accomplish the maintenance procedure. Therefore, collective commitment among the shift members is crucial to enhance the team's readiness for knowledge application.

Nevertheless, exhibiting a specialist archetype, the firm provides a limited scope of service, with engineering/maintenance representing the core functional unit. Dissimilar working hours among the maintenance operators and other administrative department create less interaction between them. Communication is largely handled by shift supervisors. For these reasons, while collective commitment is important for the shift team, there is a lack of mutual understanding of KM effort, including knowledge application, at the firm level in

ENG. This situation explains some unwillingness to cooperate and engage in the process, particularly among the experienced professionals.

CNS represents a chain of a global firm with high diversification in its service scope. Its operation is supported by various functional units, exhibiting a complex firm structure. Functional autonomy, along with integration and control from the top level, is crucial to ensure operational effectiveness. Therefore, building collective understanding of KM initiatives, including the firm's knowledge application, is essential. Collective commitment is hence, important in shaping readiness for knowledge applications (Amis and Aïssaoui, 2013; Bernerth, 2004; Weiner, 2009). It is proposed that the effect is greater in a complex firm's archetype. Thus, based on the findings,

P6a: The relationship in proposition 6 is stronger in a firm archetype with high functional integration.

Additionally, situational condition that provides an appropriate context for knowledge application implementation was another readiness dimension that emerged at the organisational level. There are various aspects of situational conditions, including organisational context - conditions within a firm's internal environment that could evolve over time (Armenakis and Bedeian, 1999), organisational culture, climate and structure (Käser and Miles, 2002; Wallin, 2003). While Weiner (2009) proposed the structural dimension of change readiness to represent a firm's capability for change in KM, the present study suggested *KM Change Context* as the dimension of a firm's capability to be ready to undertake KM effort. On the basis of literature analysis, there are several reasons for expanding the structural dimension into the contextual dimension.

Structure is conventionally defined as the organisational design in terms of relationships among the work/sub-units (Pugh, Hickson, Hinings, and Turner, 1968). It is conceptualised as layers of responsibility, extent of centrality of decision making, cross functionality of operation and formalisation of procedures. These aspects of structural design influence KM strategies (Magnier-Watanabe and Senoo, 2008; Walzack, 2005). Nonetheless, findings from the current study suggest adoption of a wider conceptualisation of organisational elements, beyond the formal structure, and coordination of hierarchy and authority. On the basis of

categories derived from the analysis (see Appendix B), the dimensional element that reflects organisational capacity for fostering KM processes is termed as the KM change context (see Figure 3).

Dey (2001) described context as *"any information that can be used to characterise the situation of an entity. An entity is a person, place, or object that is considered relevant to the interaction …. (p.5).* Zimmerman, Lorenz and Oppermann (2007) claimed that Dey's definition clearly states that context is always bound to an entity and that information that describes the situation of an entity is context. Two overlapping dimensions that are common in the organisational context discussion are culture and climate. Nevertheless, with the burgeoning organisational culture and climate studies, these two terms are used interchangeably. It is important to note, however, that despite the divergences in interpretations and theoretical foundations of the two, culture and climate profoundly reflect a *social context* that characterises a particular organisation (Denison, 1996).

With regards to the current study, *KM Change Context* is composed of structure, climate and culture that are supportive of changes in the knowledge application process. The complexity of knowledge commonly requires appropriate organisational capacity and conditions to foster, coordinate and nurture the knowledge process in organisations (Berta et al., 2006; Sarin and McDermott, 2003). This idea is parallel to Wong and Radcliffe (2000)'s argument that the extent of knowledge application awareness depends on the environment in which the process occurs.

Learning context seems to be pertinent in enhancing readiness for knowledge application in the firms studied. Learning has been studied previously in KM research as a supportive climate for knowledge exploration and exploitation (Chou, Chang, Tsai and Cheng, 2005) and as an important aspect of culture for KM evolution (Lin, 2011; Mohammadi et al., 2009). The current study conceptualised learning as the contextual element underlying the organisational readiness dimension for the knowledge application process.

Henderson and Winch (2008) and Wallin (2003) indicated that strategies that foster employees' participation and engagement within the learning context

represent an effective approach that enhances knowledge application. Learning from superiors allows newcomers to better comprehend the theoretical concepts for application in practical situations, which increases their readiness to participate in the process. Further, a learning context that supports actionable practices e.g. on-the-job learning, could improve the process's effectiveness (Baskerville and Dulipovici, 2006; Hoe and McShane, 2010).

P7: A higher learning context increases readiness for the knowledge application process in the PSFs.

Moreover, as observed, the availability of a greater pool of resources in larger organisations, including PSFs, provides a better learning prospect for deployment of knowledge and new ideas for process improvement. For ACC, internal learning is limited by the availability of internal expertise. Through external courses and consultations, professionals gain new knowledge for integration and application in the services domain. Due to a less complex and limited service scope, informal mechanisms of learning, including discussion and conversation, are common. In a more complex firm structure like CNS, formal learning is crucial. Diversification of services and a wider client range required continued learning to equip employees with cutting-edge knowledge. With a diversified client base, CNS appeared to be an early implementer of new accounting standards/frameworks, reflecting high awareness for learning within the firm's operation. A structured training system is provided to employees performing different functions, depending on the magnitude of changes required. Further, informal discussion among the functional team members also represents an important mechanism to help novice employees learn from the experienced professionals. Although learning is essential for professional development, the opportunity for continued formal learning is an issue between management and employees of ENG. Employees are largely keen for re-training, yet the limited service scope may explain management's lack of emphasis on formal learning to prepare employees for new knowledge application. Nevertheless, apart from the formal learning mechanism, the majority of participants believed that informal, on-the-job learning is crucial for accomplishing engagements. This approach exposes the employees to challenging tasks in transforming theoretical knowledge into actionable solutions, which demands that they be constantly ready for knowledge application.

Moreover, findings signify the effects of change nature on the way learning context shapes readiness for knowledge application. For instance, with incremental regulatory changes in the accounting industry, CNS's professionals are able to learn from past experiences, which increase their ability to integrate their prevailing knowledge for application in the changing contexts. This is opposed to ENG's situation where changes are infrequent, due to the constrained range of services. Hence, employees require more time to understand the alternative ways of applying knowledge. With reference to the findings, it is proposed that,

P7a: The relationship in proposition 7 is stronger in a firm archetype with multidisciplinary service and changes that are more evolutionary.

Finally, *management support* appears to be another contextual element that shapes readiness for knowledge application. Previous studies positioned management support at the individual and firm levels of change readiness. In the same way, findings indicate that management support is crucial in developing readiness for knowledge application at both levels. While perceived management support could improve individuals' understanding of the KM process, portraying management support as actionable commitment is crucial to develop readiness at the firm level. Management support at the organisational level influences KM attitude and KM change readiness (Holt et al., 2007c; Mamaghani, Saghafi, Shahkooh and Sadeghi, 2010; Mohammadi et al., 2009). From this macro perspective, the presence of management support could drive collective readiness for the change process, thereby exhibiting the firm's capability to implement changes associated with knowledge application. Nonetheless, it is important to note that this linkage was observed in the evolutionary change nature, such as in CNS, where application of knowledge is embedded into the prevailing practice through a gradual change approach. Therefore, findings suggest that,

P8: A greater management support implies a better change context and increases readiness for the knowledge application process in the PSFs.

P8a: The relationship in proposition 8 is stronger for changes that are more evolutionary.

On the basis of the findings and formulated propositions, the theoretical model for the assessment of change readiness in the knowledge application process is offered below (See Figure 4). This model depicts change readiness as a multidimensional construct consisting of KM change understanding, individual differences and KM change context dimensions.
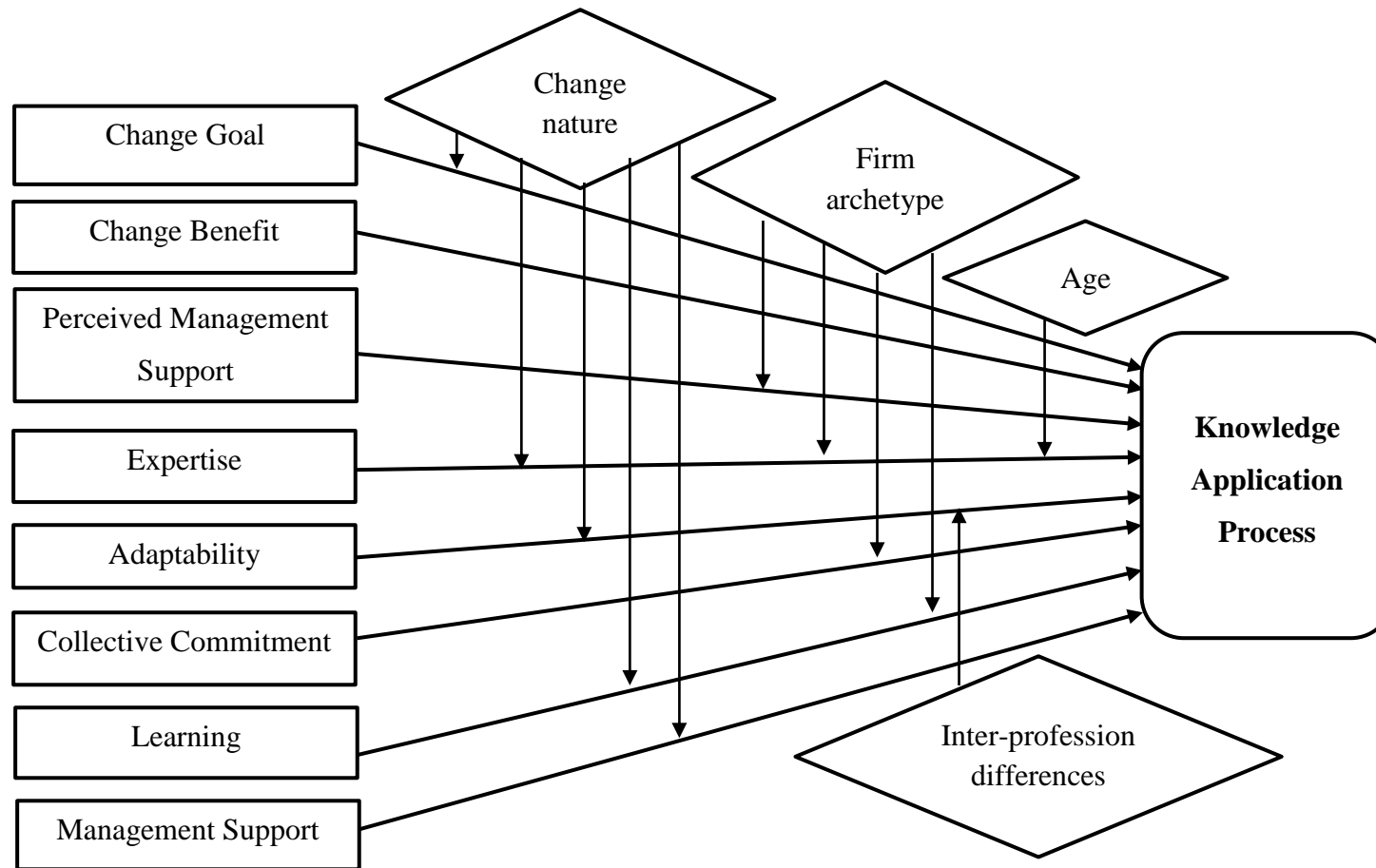
Figure 4: Theoretical Model of Change Readiness Influences on the Knowledge Application Process

Findings from this study contribute to the change readiness literature by enhancing understanding of the effects of motivation and capability in creating readiness for knowledge application. Development of KM understanding and beliefs about knowledge application could engender willingness to engage in the process. Individual characteristics and supportive context, on the other hand, demonstrate the professionals' and firm's capability to undertake the knowledge application process. The combination of these dimensions shapes PSFs' readiness for knowledge application. Further, aligned with a recent development in the readiness construct, findings explicate the importance of multilevel analysis of change readiness (Vakola, 2013), and the influence of change nature in change readiness assessment (Caldwell, 2013; Holt and Vardaman, 2013). Also, the firm archetypes provide the institutional context in shaping change readiness (Amis and Aïssaoui, 2013). Interestingly, identification of individual differences and inter-profession differences indicate the dissimilar context characterising the individual's change readiness. It suggests greater effort should be dedicated to understanding change recipients' attributes, within a particular context, transcending the typical focus on the change agent role to craft employees' readiness (Caldwell, 2013). Consequently, findings from the study offer a more *aprocessual* and *acontextual* nature of change readiness understanding from the KM discipline.

6.8 Conclusion

In explaining the phenomenon of change readiness in the knowledge application process, this paper bridges the knowledge management, change readiness and the PSF literature. This study identifies change readiness dimensions and elements in the context of the study, and extends understanding of potential interrelationships between change readiness and the knowledge application process.

From a theoretical viewpoint, the study offers in-depth understanding about the phenomenon, which potentially contributes to theoretical development about change readiness in the KM field. Specifically, the study extends understanding of interrelationships between change readiness elements and the knowledge application process. Eight main propositions have been formulated that suggest the influences of the change readiness dimensions, at the individual and

organisational levels, on the knowledge application process. Beyond complementing the extant KM literature, findings highlighted two individual characteristics- expertise and adaptability that could be crucial in shaping the individual's capability to be ready for the knowledge application process. The discovery of firm archetype, change nature, inter-profession dynamism and age influences revealed the potential effects of these elements in exerting moderating impacts on change readiness and knowledge application. However, the proposed model explicating the linkages is subjected to empirical quantitative assessments in the professional service field and other industries. The proposed model might vary, depending on different contexts in which the study might be undertaken.

From a practical perspective, findings offer many points for consideration for professionals and management teams in PSFs. Along with an understanding that KM implementation infuses changes to the workflows and affects the employees, indications of change readiness effects in shaping knowledge application could provide guidelines for the process implementation at the individual and organisational levels. Through identification of crucial elements of KM understanding and capabilities for knowledge application, a proactive strategy, rather than a reactive one, should be designed to enhance readiness for the process implementation. Additionally, findings also proposed learning and management support as crucial contexts for fostering a firm's knowledge application.

This study suffers from some limitations. The multiple case studies in only three firms and the qualitative nature of the study provide limited generalizability of findings. Further, the main data collection technique through semi-structured interviews, with limited observation due to confidentiality issues, represents another limitation for this study. The following suggestions for further research emerged from the present study:

- Future study could examine the propositions offered in this paper to prove or refute the linkages in different contexts, industries or geographic locations.
- Various KM processes are implemented in the firms; therefore, further research could assess the influence of change readiness elements in shaping distinctive KM processes, apart from knowledge application.

Findings from such studies could widen the scholarly perspective in integrating change within KM implementation.

- KM process in this research is studied at one time (cross sectional), hence as an episodic change. Changes and processes for managing knowledge could be an evolving process. Therefore, longitudinal study may offer further explanation to capture how changes and readiness evolve over time, on the basis of different phases of KM processes implementation.

- There are increasing efforts to bridge KM with various fields, including innovation management. Future research may examine how readiness for KM shapes the KM processes, and finally contributes to KM innovation in the firms.

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Appendices

Appendix A: Background of Participants

Participant ID	Position	Length of Service in Current Firm	Firm
P1	Managerial – Director	4 years	ACC
P2	Operational – Accountant	10 years	ACC
P3	Managerial –Manager	4 years	CNS
P4	Managerial –Manager	4 years	CNS
P5	Managerial – Senior Manager	4 years	CNS
P6	Operational – Associate	4 years	CNS
P7	Operational – Senior Associate	3.5 years	CNS
P8	Operational – Senior Associate	3.5 years	CNS
P9	Managerial – Technical Supervisor	10 years	ENG
P10	Operational –Engineer	1.5 years	ENG
P11	Managerial – Development Engineer	4 years	ENG
P12	Managerial – Supervisor	13 years	ENG
P13	Operational – Engineer	13 years	ENG
P14	Operational - Engineer	13 years	ENG
P15	Operational – Engineer	1 year	ENG
P16	Managerial – Supervisor	5 years	ENG

Appendix B: Main Categories and Categories Development

No.	Main Category	Level of Analysis	Categories	Occurrences
1.	KM Change Context	Organisational	Learning Management Support	11 of 16 @ 69% 6 of 16 @ 38%
2.	KM Change Understanding	Organisational	Collective Commitment	9 of 16 @ 56%
3.	KM Change Understanding	Individual	Change Goal Change Benefit Perceived Management Support	6 of 16 @ 38% 8 of 16 @ 50% 7 of 16 @ 44%
4.	Individual Differences	Individual	Expertise Adaptability	12 of 16 @ 75% 11 of 16 @ 69%

7.0 FINDINGS AND DISCUSSION

7.1 Manuscript Status

Title: *The Impact of Change Readiness on the Knowledge Sharing Process for Professional Service Firms*

Publication Status:

This manuscript has been accepted for publication in the *Journal of Knowledge Management*.

Declaration:

I conducted data collection for this study. I had full responsibility for data analysis including transcription, coding and interpretation. I prepared the first draft of the manuscript including the development of the theoretical framework. The co-authors provided feedback on the manuscript writing, proof reading and editing. The co-authors also contributed to improvement in the theoretical framework. Overall, the theoretical contributions from this study are largely emerged from data and my analysis and interpretation (see Appendix 5 for the Co-Authorship consent).

Abstract

Purpose. This empirical research seeks to understand how change readiness influences the knowledge sharing process in a professional service context. It is proposed that readiness towards knowledge sharing involves developing holistic understanding of the process through identification of individual and organisational readiness.

Design/Methodology. The study adopts a qualitative case study design involving three New Zealand professional service firms. Using grounded theory analysis, categories and concepts of change readiness that shape the knowledge sharing process were identified. The linkages among these elements offer an explanation of how readiness for knowledge sharing is formed.

Findings. Findings show that beliefs regarding knowledge sharing and individual expertise are crucial in determining individual readiness to share knowledge.

Readiness for knowledge sharing is escalated through mutual beliefs, indicating greater attention should be dedicated to instilling collective commitment for the process. A conducive organisational context represented by communication, participation and learning represents a firm's capability to promote knowledge sharing. These contextual elements are fundamental for developing organisational readiness for knowledge sharing. The theoretical model presented also highlights the moderating influences of *firm archetype, inter-profession differences, and knowledge nature* in the interplay between change readiness elements and the knowledge sharing process.

Research implications. Findings reveal elements that motivate/foster readiness for knowledge sharing from a change perspective. The propositions and theoretical framework offered could extend understanding of the phenomena and lead to further studies assessing readiness for other knowledge management processes. The study involves three professional service firms; hence, interpretation of the findings is limited within the scope and context of the study.

Practical implications. Findings contribute to the formulation of firms' knowledge sharing strategies by offering holistic insights into the importance of motivating readiness for knowledge sharing through consideration of multidimensional change readiness: individual and collective beliefs, individuals' characteristics and organisational context.

Originality. It is the first empirical study that seeks to develop theory how change readiness elements influences knowledge sharing in the organisation. To offer more contextualised findings, the study focuses on the phenomena of change readiness and knowledge sharing within the professional service industry.

7.2 Introduction

Knowledge is a key determinant of a firm's competitiveness and growth (Søndergaard *et al.*, 2007; Wang and Noe 2010; Witherspoon *et al.*, 2013). Dynamic market forces require businesses to respond quickly by anticipating changes in clients' expectations. This has resulted in businesses focusing on the intellectual capability of employees. Firms with a greater knowledge pool, supported by an on-going knowledge management process, could sustain their competitive advantage.

Knowledge sharing is an important process for managing knowledge in organisations (Cockrell and Stone, 2010; Han *et al*., 2010; Lam and Lambermont-Ford, 2010), and numerous frameworks for knowledge sharing process have been recommended (Wang and Noe, 2010; Witherspoon *et al*., 2013). However, due to the complex nature of the process, knowledge sharing is yet to be properly understood. This study examines knowledge sharing within professional service firms.

In the context of professional service firms (PSFs), professionals with longer work tenure potentially develop unique knowledge that can be translated into credible ideas and services. This knowledge is embedded within the professionals, and motivating them to share personal knowledge with others could be challenging. Nonetheless, without effective knowledge sharing, firms are unable to fully exploit knowledge possessed by existing employees. Organizations also face the risk of losing their intellectual capital when employees leave.

Previous studies show increasing failures of knowledge sharing within organizations (Laycock, 2005; Lu *et al*., 2006; Matzler and Mueller, 2011). It is likely that many failures in knowledge sharing process are a manifestation of employees' unpreparedness to share knowledge. Consequently, the current study is aimed at unfolding issues in knowledge sharing process from a change readiness perspective in a professional service context.

The remainder of this paper proceeds as follows: the literature section focuses on current research in knowledge sharing. The next section discusses knowledge sharing from a change readiness perspective, followed by explanation of the importance of knowledge sharing in the professional service context. The paper then presents the research design adopted for the study. Findings and discussion that lead to the formulation of the theoretical framework are provided, and ends with some concluding remarks from the study.

7.3 Theoretical Background

7.3.1 Knowledge and knowledge sharing

Knowledge initiates in individuals' minds. Such personal knowledge is of less value unless it is being disseminated and applied at the organisational level (Nonaka, 1994; Nonaka and Takeuchi, 1995). Knowledge sharing is a process that transforms individual knowledge into organisational knowledge (Cho *et al*., 2007). In an ideal case, the sharing of knowledge enables individuals to learn and gain more knowledge, hence enhancing employees' skills and competencies (Cho *et al*., 2007; Matzler *et al*., 2008; Renzl, 2008).

Knowledge sharing also enables individuals' personal know-how to be linked to others' knowledge, blending/combining and elevating knowledge to the organisational level. This leads to exploitation of organisational knowledge, thus positively impacting on firm performance. Literature suggests that knowledge sharing allows application of best practices, minimises cost associated with product and service development (Lu *et al*., 2006; Wang and Noe, 2010), and enhances firms' innovative capability (Ipe, 2003; Matzler *et al*., 2008). Further, the process also improves decision making and problem solving efficiency (Cockrell and Stone, 2010; Gagné, 2009), and minimises any loss of firms' intellectual capital in the long run. Additionally, knowledge sharing fosters implementation of other knowledge management (KM) processes (Han *et al*., 2010; Ipe, 2003; Lam and Lambermont-Ford, 2010; Wang and Noe, 2010; Yang and Farn, 2010). For these reasons knowledge sharing is crucial for a firm's sustainable competitive advantage (Cho *et al*., 2007; Cockrell and Stone, 2010; Lin and Lee, 2006; Matzler *et al*., 2011; Renzl, 2008; Søndergaard *et al*., 2007).

7.3.2 Defining knowledge sharing

Since knowledge belongs to individuals, the sharing process depends on the individuals' willingness to share. From this viewpoint, knowledge sharing is seen as actions and behaviours performed by individuals in making personal knowledge available to others (Ding *et al*., 2007; Ipe, 2003; Wang and Noe, 2010; Yang and Farn, 2010). From a wider view, knowledge sharing transcends an individualised process. Sharing is thus conceptualised as a transfer of knowledge

from knowledge holder to recipient, and from an individual to the firm level (Cabrera and Cabrera, 2005; Lam and Lambermont-Ford, 2010; Yi, 2009). In contrast to this single direction of knowledge flow, some scholars have claimed that knowledge sharing involves social interaction. It represents a reciprocal process among two or more individuals who benefit from the process (Bock and Kim, 2001; Chen *et al*., 2012; Cockrell and Stone, 2010; Nonaka and Takeuchi, 1995; Renzl, 2008). In this regard, sharing requires mutual exchange of knowledge, skills and experiences among individuals. Its implementation involves a dual process of knowledge donating and collecting through such activities as learning, observing, listening, asking and imitating actions (Bosua and Scheepers, 2007; De Vries *et al*., 2006; van den Hooff and De Ridder, 2004; Yang and Chen, 2007). Articulation and disclosure of personal knowledge enables it to be elevated to form organisational knowledge. This enables knowledge absorption, as well as collaborative creation and application of new knowledge towards achieving a common goal (Andreeva and Kianto, 2011; Gagné, 2009; Ipe, 2003; Lin and Lee, 2006; Wang and Noe, 2010).

Despite the interchangeable use of the terms knowledge sharing, transfer and exchange, Wang and Noe (2010) proposed that distinctive definitions should be applied to the above-mentioned processes. These scholars suggest that sharing involves the provision of knowledge, while exchange refers to the activities of seeking and donating knowledge. Knowledge transfer is more extensive, involving the contribution of knowledge by the knowledge source that is acquired and applied by the knowledge recipient. The different views on defining knowledge sharing also lead to various theoretical lenses being adopted in assessing the process.

7.3.3 Theoretical perspective on knowledge sharing, and factors influencing the process

Application of the KM concept in various fields, adopting different theoretical lenses and definitions, increases the complexity of KM assessment (Jones *et al*., 2011). In a similar way, various perspectives have been adopted in the assessment of knowledge sharing. The early approach adopted a system-based perspective with a major interest focusing on designing systems that enable dissemination of explicit knowledge within the organisation. It was later discovered that the use of

technology does not necessarily guarantee a positive effect on knowledge sharing behaviour (Lin, 2007; Lin and Lee, 2006; Søndergaard *et al*., 2007).

Realising the complexity of interrelations between system and organisational setting in knowledge sharing process, scholars have shifted their interest from system-based to human-based KM initiatives (Ding *et al*., 2007). The knowledge sharing framework has been extended with integration of hard and soft elements underlying the process, which promotes the socio-technical perspective of knowledge sharing (Bock *et al*., 2005; Lin and Lee, 2006; Søndergaard *et al*., 2007; Yang and Chen, 2007). Mixed results were found with regards to the influences of these hard and soft factors on the process. For instance, Yan and Chen (2007) propose that a firm's technical capability has a stronger association with knowledge sharing compared to the organisational cultural capability. On the other hand, studies by Lin (2007), Lin and Lee (2006), and Søndergaard *et al*., (2007), suggest that organisational factors are more influential on the knowledge sharing process than technology. These differences in findings could be explained by the various contexts in which knowledge sharing process is implemented.

Since knowledge sharing involves social interaction, interpersonal and team relations become increasingly important. In this respect, knowledge sharing has been studied using social exchange, social capital, social network, and social dilemma theories (Bock *et al*., 2005; Cabrera and Cabrera, 2005; Yang, 2007; Yang and Farn, 2010). Findings from these studies highlight issues of incentives, reciprocity, and social relationships, as barriers or facilitators in the process of transferring individual personal knowledge into shared or common knowledge.

Further, the theory of planned behaviour (TPB) (Ajzen, 1991) and the theory of reasoned action (TRA) (Fishbein, 1979) represent the common theoretical lenses that are adopted to assess the influence of individuals' attitude in shaping intention and behaviour towards knowledge sharing (Cabrera and Cabrera, 2005). Some studies have also considered the self-efficacy element of social cognitive theory (Bandura, 1986), while few other studies apply self-determination theory (Cockrell and Stone, 2010; Gagné, 2009), personal construct theory (Ding *et al*., 2007) and personality traits as possible factors influencing an individual's knowledge sharing intentions (Matzler *et al*., 2011; Matzler *et al*., 2008; Renzl,

2008). From these perspectives, individuals' attitudes, intentions and characteristics are seen as having a crucial role in determining knowledge sharing behaviour.

Despite extensive studies that have used different theoretical viewpoints to assess knowledge sharing, successful knowledge sharing is still a dilemma (Wang and Noe, 2010). Studies show that increasing individuals' willingness to share knowledge poses a great challenge for firms (Cabrera *et al*., 2006; Ding *et al*., 2007; Lam and Lambermont-Ford, 2010; Laycock, 2005). The fundamental issue lies in the fact that knowledge initiates within the individual. Conflicts of interest, knowledge hoarding, and lack of psychological understanding, are among the potential reasons for the lack of knowledge sharing (Becerra-Fernandez and Sabherwal, 2010; Cabrera *et al*., 2006; Cho *et al*., 2007; Matzler *et al*., 2008). While individuals' knowledge sharing behaviour is considerably influenced by their motivation to make personal knowledge accessible to others, the motivational perspective is not clearly delineated in the literature (Cockrell and Stone, 2010; Gagné, 2009).

Motivation for knowledge sharing is crucial to stimulate positive attitudes towards the process (Witherspoon *et al*., 2013). Chen *et al*. (2012), Gagné (2009), and Siemsen *et al*. (2008), have proposed the application of the motivational model in the assessment of knowledge sharing. Siemsen *et al*. (2008) applied the Motivation-Opportunity-Ability framework, rooted in the work of MacInnis *et al*. (1991), to assess knowledge sharing drivers. Motivation is conceptualised as employees' propensity and willingness to share knowledge. Opportunity is referred to the organisational setting and environment that enables knowledge sharing, whereas ability is the individual's skills or knowledge base from which to share knowledge. Siemsen *et al*.'s (2008) study shows that bottleneck in of any of these three elements inhibits knowledge sharing initiatives. Likewise, Wang and Noe (2010) also shows that motivation is important for knowledge sharing apart from individual and interpersonal characteristics, and organisational context and culture.

Little effort, however, has focused on understanding the antecedents or elements that form desirable attitudes towards knowledge sharing. Consequently, further

work is required to reveal factors that positively influence attitudes and intentions towards knowledge sharing. There is an increasing interest among scholars to understand knowledge sharing from a change management lens (Bock and Kim, 2001; Lam and Lambermont-Ford, 2010; Small and Sage, 2006; Wang and Noe, 2010). This study proposes that in order to motivate individuals to share knowledge, a focus on instilling change readiness towards the knowledge sharing process is needed.

7.3.4 Motivating and managing change in knowledge sharing process: Understanding change readiness

Change readiness represents a positive movement towards the implementation of change, which is shaped by beliefs and capabilities to carry out the changes. The application of this concept in the KM field was initiated by Weiner (2009) and Holt *et al*. (2009). More studies, primarily quantitative, were then conducted that examined readiness for KM, largely on the basis of organisational KM critical success factors. The knowledge sharing process is claimed to be complex and its implementation could be affected by various psychological and organisational factors (Cabrera *et al*., 2006). However, quantitative findings offer limited explanation of change readiness influences on knowledge-related processes, with even less consideration of contextual influences.

Thus, the current study aims to extend understanding of change readiness influences on knowledge sharing through a qualitative study within the context of New Zealand's professional service industry. The study proposes assessment of both individual and organisational elements that shape change readiness towards the knowledge sharing process. It is argued that when an organization is change ready, the social, structural, and psychological factors enable knowledge sharing.

7.3.5 Knowledge sharing in the professional service context

Professional Service Firms are knowledge-intensive. Strong emphasis on the exploitation of intellectual capital of professionals is crucial for the development of high quality knowledge-based services among PSFs (Fink and Disterer, 2006). Knowledge intensity and conformance to professional standards in the delivery of services are the main elements characterising PSFs' operations. Previous studies highlight that establishing a process for managing knowledge is particularly

crucial for knowledge-intensive firms (Fong and Choi, 2009). For instance, a recent study by Andreeva and Kianto (2011) reveals that knowledge intensity of the firms' operation impacted all knowledge processes, with knowledge sharing representing the most influential process. It implies that high reliance on knowledge-centred activities in the PSFs' operation requires a greater effort to foster knowledge sharing among the professionals. This process is even more important for a firms' operation that emphasises teamwork for service accomplishment (Yang and Farn, 2010). Conversely, reluctance to share knowledge could have negative impacts on PSFs' knowledge development (Lu *et al.*, 2006). Despite the critical role of knowledge sharing in shaping and enhancing a PSFs' performance, however, firms are still struggling to motivate professionals to articulate and share personal knowledge (Witherspoon *et al.*, 2013). For these reasons, PSFs offer a useful context to understand the elements that stimulate a professional's readiness to share knowledge (from the change readiness perspective).

7.4 Research Method and Design

This qualitative study uses multiple case studies, and adopts an interpretive paradigm in extending understanding of the phenomenon of change readiness influences on the knowledge sharing process in the PSF context. To protect anonymity of the participating firms, all three cases are illustrated using pseudonyms. The first case, ACC, represents a small accounting firm that employs six employees and has been in operation for more than 10 years. ACC focuses on accounting and business planning services to clients from the farming, manufacturing, construction and service sectors. These client portfolios include small to large organisations with annual turnovers ranging from thousands to seven million dollars.

The second case, CNS, is a branch of one of the leading international accounting firms, and has been in operation for more than five years following a merger with the leading international accounting firm. CNS employs nearly 100 employees handling a wide range of financial advisory and consulting services. With a diversified service range, clients of CNS consist of public and private companies, regional and local governments, non- profit organisations, and individuals.

The third case, ENG, is a mid-sized engineering firm specialising in aircraft maintenance services. ENG employs approximately 50 employees and the work experience of interviewees ranged from 1 to 13 years. ENG's main client is a leading regional airline company.

Multiple cases provide an in-depth understanding of phenomena (Stake, 2006; Yin, 2009). Sixteen semi-structured interviews, each lasting between 45 minutes to 2 hours, were conducted in these three PSFs. The interviewees consist of professionals working at both managerial and operational levels, allowing for collection of data from multiple perspectives and enhanced data source triangulation. The interviews focused on understanding participants' experiences about knowledge sharing activities in the firm and factors that they perceived important in stimulating their readiness to embark on the process. Open-ended questions were used to guide consistency of the questions asked, and probing questions were included in the interviews for clarification purposes. See Appendix A for examples of questions and probes.

Interviews were audio recorded and transcribed verbatim and subsequently analysed using a grounded theory analysis technique (Strauss and Corbin, 1990). This coding process led to the identification of concepts, categories, and core categories. The findings are presented in the form of cross-case analysis, which offers in-depth understanding of the phenomena from multiple case perspectives. This contributed to the development of a theoretical framework explicating elements that shape change readiness for the knowledge sharing process. Applicability of the findings and the proposed framework are contextually-bounded within the professional service setting.

7.5 Findings: Change readiness and the knowledge sharing process

The analysis of findings led to development of concepts and categories of change readiness elements that influence knowledge sharing. Appendix B depicts conceptualisation of these elements as constructed from the findings.

Findings indicate that knowledge sharing is crucial to ensure knowledge continuity and to minimise the possibility of knowledge loss in the firms studied. For instance,

This is a knowledge-based organisation and business and you need to transfer knowledge. Otherwise, when that person or practitioner retires or leaves the organisation for whatever reason, you will lose the knowledge. So, you've got to share it (P8, CNS-Senior Associate).

Findings revealed various change readiness elements that shape the knowledge sharing process in the firms studied. These elements appeared at both individual and organisational levels. The following section presents the findings from the cross-case analysis, arranged according to concepts derived from the analysis process.

7.5.1 Individual readiness towards knowledge sharing

At the individual level, understanding of the need to share knowledge and the benefits of sharing are critical to stimulate knowledge sharing readiness.

Need for knowledge. The major challenge in a firm's knowledge sharing effort is to encourage experienced professionals to disclose their tacit knowledge to others. This situation is obvious in the environment where new knowledge and skills are mainly created through practical experience and on-the-job learning, such as in ENG. A similar challenge is observed in the top-tier professionals in CNS who handle consulting-related engagements that require an extensive application of tacit knowledge. The nature of tacit knowledge, being inseparable from its context and the knower, makes knowledge articulation even more difficult. Although these professionals have in-depth understanding of the domain, tacit knowledge will be disclosed only in the situation context that encourages such knowledge to be shared. Most commonly, knowledge is shared only if it is believed to be important and relevant in addressing gaps, loopholes, or weaknesses in the current operational performance. For instance,

We have a lot of tacit knowledge with some people on the floor who have been in the industry for about 40 years. They've got a lot of tacit knowledge; you can't always get that information out; unless in certain circumstances that occur where the tacit knowledge would be useful, that would never come out (P12, ENG-Supervisor).

Change benefit. Understanding the benefits from sharing knowledge is another crucial element that could motivate professionals to share knowledge. Participants

of the study highlight that professionals are generally more ready to share knowledge if they are convinced that the knowledge shared will add value to the firm and, consequently, to their clients. Improvements in service quality, process transparency, and the decision making process, each contribute to the firm's operational efficiency. These are important benefits expected from knowledge sharing:

> *How I bring the information back and share it, will determine how much it benefits us and the clients in the future (P5, CNS-Senior Manager).*

> *It is about making everything a bit more transparent. Instead of only one person knows about the problem, now more people know about the problem and someone needs to fix it, or else they won't be able to use it (P12, ENG-Supervisor).*

Participants also expressed benefits expected from technology-based knowledge sharing. Recurrence of similar mistakes could be reduced, time to reinvent the wheel could be minimised, and faulty decisions could be prevented through greater access to the knowledge shared through the IT system.

Nevertheless, some professionals formed negative perceptions of the implications of sharing knowledge. These professionals believed that sharing personal knowledge could decrease their value and unique capability as employees of the firm.

> *I think some people are protective of their information. They do not want to share, because it leads to power and to make them more indispensable (P8, CNS-Senior Associate).*

Further, misalignment between the firm's knowledge sharing strategy and the individual-based appraisal system (i.e., individuals are not rewarded for collective knowledge sharing) is also claimed to inhibit readiness for knowledge sharing. This issue is more obvious in a large firm where stiff competition exists among professionals. These conflicting situations could be the result of unclear understanding of personal benefits derived from the knowledge sharing process.

> *As a professional service firm, we are quite individual, in that the performance is according to charge per hours. Individuals could be quite*

protective of their knowledge. People have a particular agenda, because we are quite individual based, so why should we share knowledge with you (P5, CNS-Senior Manager).

Therefore, a clear understanding of the importance and benefits of knowledge sharing is crucial for fostering positive perceptions about the process. Moreover, besides positive beliefs and understanding of the process, individual characteristics such as expertise also shapes individuals' readiness towards the process.

Expertise. Findings show that individuals who possess relevant expertise demonstrate higher readiness to share knowledge. Participants in all firms shared their views on the importance of expertise in shaping professionals' engagement in the knowledge sharing process. Experienced professionals with substantial expertise are capable of leading and facilitating the dissemination of knowledge concerning adaptation to new procedures or practices.

> *If you look at the number of guys here, we have a lot of guys here .... They have a lot of deep knowledge that they can transfer to the labour floor to those with the technical knowledge but does not have knowledge about our aircraft.... So, therefore you need to have the guys with the expertise (P9, ENG-Technical Supervisor).*

Nonetheless, despite their expertise, not all experts are ready to share their knowledge. A less dynamic work nature, for example, could limit sharing of expertise and affect the extent of experts' readiness to engage in knowledge sharing. Additionally, the turnover of experts weakens the firm's knowledge base, thus affecting readiness for the knowledge sharing process.

Fostering knowledge sharing is more challenging when it involves professionals at a higher level who deliver service that is largely characterised by tacit knowledge. Some of these experts resist sharing knowledge as knowledge is seen to demonstrate their influence in the firm.

> *Some mechanisms hinder knowledge from being shared. It can happen more at a director or partner level in order to get a particular client. Knowledge becomes power at a corporate level. With power, you can influence people (P5, CNS-Senior Manager).*

Thus, having expertise could positively influence the knowledge sharing process. However, readiness to share could be affected by the nature of the work performed and the types of knowledge possessed.

7.5.2 Organisational change readiness towards knowledge sharing

On the basis that knowledge sharing involves social interaction among individuals or teams, creating mutual understanding and effort at the organisational level is crucial for a successful knowledge sharing initiative.

Collective commitment to collaborate among employees in sharing knowledge at a firm's level is important. Collective commitment could be rooted in mutual understanding among professionals when engaging in the process. Findings imply that professionals are inclined to share knowledge if they perceive that knowledge exchange is encouraged among their colleagues, for example, during meetings.

> *Generally, we stop and talk or brainstorm with a collective group as near as possible. So, we form a meeting fortnightly and we sit down here to discuss about where we are, where we are going, what we can do to improve things, and things that come out at the meeting room, it is a knowledge base (P11, ENG-Development Engineer).*

Fostering mutual understanding about knowledge sharing is even more crucial in a team-based job orientation environment. In ENG, for instance, maintenance operates around the clock and involves different professionals. In this environment, fostering knowledge sharing collaboration among the professionals across different teams is necessary. These professionals are more ready to share knowledge if they believe that others are also collaborating in the process. Further, in the team setting, an individual team member's beliefs could influence collective knowledge sharing. For example, experienced professionals who are comfortable with prevailing practice could be reluctant to share knowledge and are capable of influencing other team members. By implication, their perceptions could affect the team's collective understanding, which could impair readiness to share knowledge.

> *People's reactions to changes can also be influenced by one or two co-workers. Because of personality and negativity, they tend to be resistant to change (P9, ENG-Technical Supervisor).*

However, in CNS, a large firm that experiences frequent changes in its practice and service scope, collective understanding outweighs any individual's influence in shaping the knowledge sharing initiative. Resistance or negative influences seldom affect the team's belief. This situation is supported by a strong team and a change culture, which are deeply rooted in the firm.

> *For people who are not responsible and do not share, it is a waste of time paying attention to that (P7, CNS-Senior Associate).*

> *If there are people with problems in it [the team], it does not take much complaining for others to start the change (P3, CNS-Manager).*

Therefore, collective commitment is important to foster readiness for sharing practice. Yet, the distinctive operation of a firm may result in diverse effects of collective commitment in shaping readiness for knowledge sharing. Diminishing cooperative effort among professionals, on the other hand, could negatively affect a firm's readiness towards knowledge sharing.

> *Probably one of the better times in this place's history is when we all worked together. But, it is not that much now. Now team work has definitely dropped off and hence tacit knowledge flow will decrease. You've got tacit knowledge, but they might probably not listen to you or talk to you (P16, ENG-Supervisor).*

Furthermore, findings revealed that certain organisational conditions support knowledge sharing process and represent firm level capability. If the firm is capable of undertaking the process, professionals could be more ready to contribute. This results in a sustained knowledge sharing effort. Results propose three organisational conditions: communication, participation, and learning platform, to foster readiness for knowledge sharing.

Communication, both formal and informal, enables interactions among professionals to gain understanding about new developments and changes in the firm. Consider the following quote,

> *If you are transparent and people know what is happening, then they will work more with you rather than you drag them along (P7, CNS-Senior Associate).*

Any important development of knowledge is commonly shared in a formal setting such as a meeting. Formal meetings could facilitate the exchange of knowledge not only within the firm, but also involving professionals across the branches.

> *Formally, knowledge activity is carried out through our meeting once a month if there are something new, new changes, whatever is relevant to what's going on (P2, ACC-Accountant).*

> *We have Friday morning meetings, call as Morning Prayer – more about social, leadership, information from other staff members, including from the Morrinsville branch…. Then, there is the Monday morning tea meeting, where we share around what is happening regarding workflow (P5, CNS-Senior Manager).*

Additionally, issuing of written documents is an alternative means to formalise sharing of knowledge. This mechanism enables professionals to contribute and receive consistent updates on procedural changes. When team members are able to brainstorm and come up with a new solution, written documents are useful to transfer the externalised knowledge to other teams that are separated by distance or time. Written documents therefore serve as a mechanism for capturing and disseminating the tacit knowledge.

> *We have engineering notices and basically you can find things that happened over the years based on the department's experience and this would be things that might not be in the technical publications. This is more on experience-oriented organisation. All this information will be put in the engineering notices and all records might be changing…we must ensure that we keep up with the engineering notices (P15, ENG-Engineer).*

As the firm's size increases, the use of technology-based communication is critical to enabling knowledge exchange, as observed in CNS.

> *Here, there are different ways knowledge is shared…. We have national email alerts that we can find out too. So, every time something changes, we get the email from the national office and we can find out about it too…. There are about twenty staff members at the moment in my department. So, it is very important that everyone shares the information.*

> *We discuss the important ways of disseminating information. E-mail is the main thing (P3, CNS-Manager).*

Nevertheless, knowledge sharing does not necessarily occur formally. For instance, knowledge sharing among team members or a specific group of professionals occurs naturally through informal conversation. Such informal sharing is also used for solving ad-hoc problems. The practice of informal sharing is crucial in small PSFs, with limited scope of service and expertise, such as in ACC. The Director emphasised this:

> *We have meetings once a month, otherwise, if anything comes up we discuss in the tea room and that would be an informal meeting…. Because people are busy and I know not all emails are being read, we prefer to have a group session and sit down together. We transfer knowledge that way (P1, ACC-Director).*

Moreover, informal mechanisms permit sharing of sensitive issues among the professionals. It is particularly important in a firm setting where communication between the operational level and top management is controlled largely by middle managers. This situation is obvious in a shift-based operation such as ENG. This can create communication gaps between operations and management. Additional efforts have been implemented to improve communication practices; yet, management claimed that available channels have not been fully utilised by professionals, resulting in past problems remaining unsolved.

> *With the engineering network, there is reasonably open available information, a local system that anyone can jump into. There is a lot of information written down, multiple sources, from courses to HR. We have also just started the email system to the management in order to ask why something is happening this way and they can get the answer back…. We have a pretty good system that is in place to allow open communication. It is just the people don't use it or they make it troublesome (P11, ENG-Development Engineer).*

Participation. Sharing involves knowledge contribution by firms' members. Hence, organisational conditions that foster employee participation are necessary to nurture the process. Findings indicate that inputs and ideas from employees are

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sought for the purpose of service enhancement and operation development. A lot of innovative ideas predominantly originate from bottom-up participation. Through this approach, management believes that professionals gain good understanding about firms' progress and develop their cooperation for sharing knowledge.

> *In our team, people involved share what they think, give suggestion. What is important is suggestion from people in the team…. It is important rather than being told what to do. They feel some involvement in that and they are going to accept change more (P3, CNS-Manager).*

> *Some of, probably about 40% of my workloads come from the floor. I actively encourage the guys on the floor, those people at the shop floor to come to me with problems and they know that I am going to consider any request. Just tell me what it is, and I will take notes. I always give them feedback. Generally, out of 40%, 38% are worthy for follow ups.... I believe we should do this often that way (P11, ENG-Development Engineer).*

Nonetheless, a few professionals have a contrasting view. From their perspective, they are given limited opportunity to contribute opinions and ideas for decision making, which sometimes affects their job responsibility.

While participation represents an important organisational condition that fosters knowledge sharing in CNS and ENG, the linkage is less apparent in ACC. The individual-based task orientation in ACC limits the need for participation. Hence, the influence of participation in triggering readiness for knowledge sharing could be affected by task orientation.

Learning. The ideal knowledge sharing process is where interactions among knowledge contributors and collectors permit understanding and the creation of new knowledge for application. Findings revealed that a conducive learning platform is crucial to encourage professionals to engage in the knowledge sharing process.

The availability of key experts in PSFs supports learning through internal training. Experts from various service segments are able to share their knowledge and industry updates with team members in the same functional area, including those

from other branches. In a smaller firm, however, internal learning is constrained by the availability of expertise.

> *The internal people who are competent about changes in the employment act. They will set up training and the team will go to each office to deliver training or conferences. Nationally, there are books and staffs to support. We also conduct internal training, put the team together, sometimes we put on slides during lunch time. So, it is from formal to informal procedures…. We have a continuous system; it is calendar base, roll out the courses by specific date (P6, CNS-Associate).*

Moreover, in a complex firm's operation, establishing a learning platform through databases is effective in allowing more professionals to share and learn about best practices. However, there are two concerns regarding on-line learning platforms. First, it is claimed that the approach is seen as effective only to enhance readiness for sharing explicit knowledge. Further, sharing of knowledge through databases also raises the issue of knowledge security, which exposes the firm's resources to the risk of being misused or manipulated.

> *I guess looking at both sides, from management it is about creating manuals, while on the floor it is much more about tacit knowledge (P12, ENG-Supervisor).*

> *I think there has been a move recently to try to put everything online, but then you also have to deal with security, put things online, access right when certain things go online (P7, CNS-Senior Associate).*

Informal learning, however, is vital to sharing tacit knowledge. An informal learning platform permits the development of understanding through sharing experience while professionals work together, and is particularly crucial to facilitate on-the-job learning.

> *We have two guys at 70 years of age, still working. One guy operates over there [at the hangar] and he has a lot of tacit knowledge that you can't document it. He is working with two young guys, so he is transferring that knowledge to them. Mentoring, sort of coaching, we got on-the-job training or OJT to allow them to learn how it is done (P9, ENG-Technical Supervisor).*

Conversely, for some experienced supervisors, this informal mentoring, which has not been formalised as a structured learning platform, is seen as less effective for knowledge sharing. The approach is claimed as impeding readiness for knowledge sharing.

> *Myself, I believe that mentoring is an appropriate tool to disseminate some of that tacit knowledge…. I still think formal mentoring is a good thing to do. You can always have one person that you can talk to. Whereas, if you are coming on a rotated shift, you will need to meet new people over a period of two weeks or so. You are not going to be comfortable talking to them, I think you need to make people comfortable in the company and that's making communication a bit easier because you have someone to talk to (P12, ENG-Supervisor).*

7.6 Discussion

7.6.1 Multidimensionality of change readiness and the multilevel knowledge sharing process

Findings from the study are aligned with the multidimensional conceptualisation of change readiness. This comprises of beliefs and understanding, as well as capability, in shaping a positive attitude towards knowledge sharing (Holt *et al*., 2009; Weiner, 2009). The need for knowledge, change benefits, and collective commitment, represent the dimensions of knowledge sharing beliefs and understanding. Expertise, communication, participation, and learning, reflect the capability dimension of change readiness at the individual and firm levels. Therefore, as suggested in the literature, knowledge sharing requires the interplay between individual, interpersonal and organisational elements (Lu *et al*., 2006). Figure 1 depicts the multidimensionality of the change readiness construct.

Figure 1: Multidimensionality and multilevel characteristics of change readiness

Furthermore, Figure 2 illustrates proposed linkages between these multidimensional change readiness elements and the knowledge sharing process
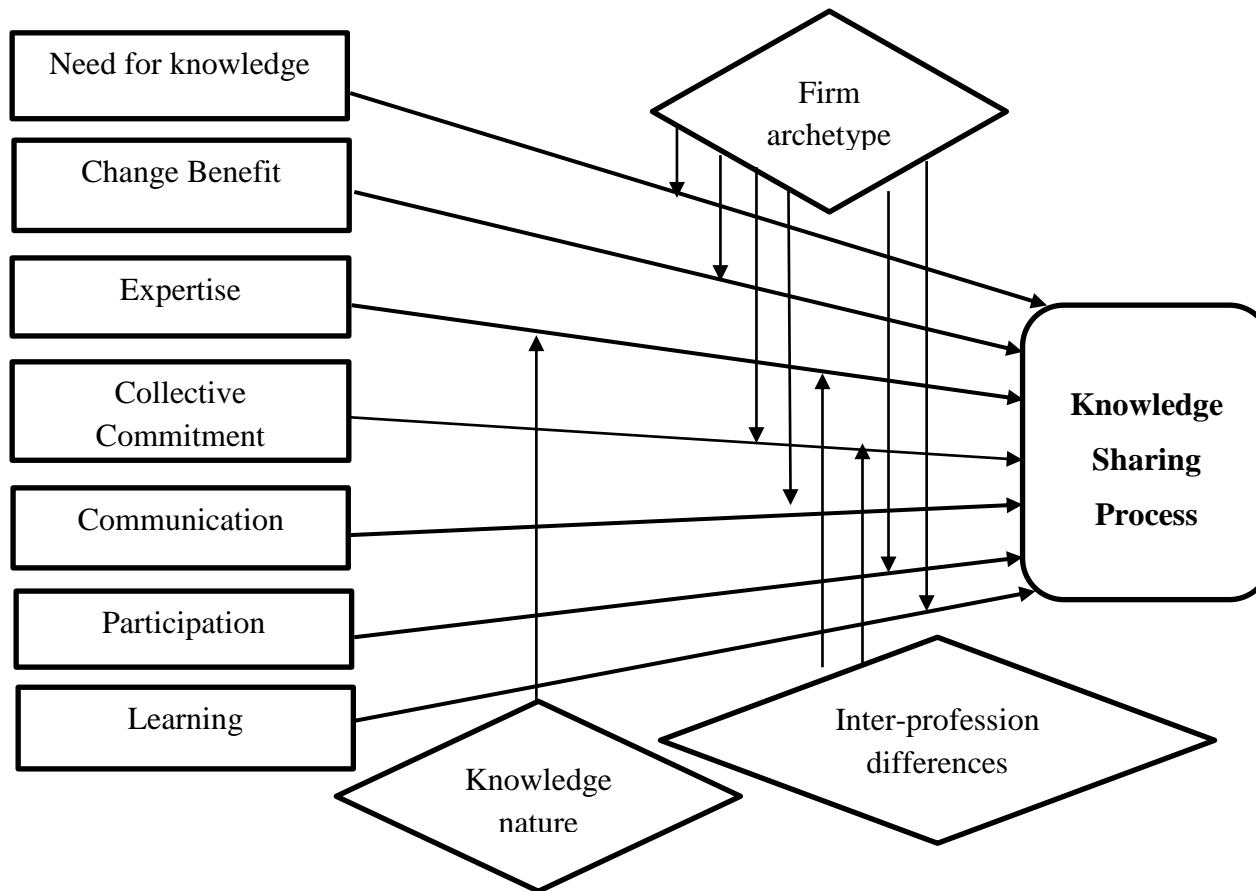
Figure 2: Theoretical Model of Change Readiness Influences on the Knowledge Sharing Process

Knowledge sharing in the current study is the process that enables exchange of knowledge, skills and experiences among professionals. Findings from the study reveal that knowledge sharing is a multilevel process, involving cross interactions among individuals and teams. Hence, this study addresses the need to include a multilevel analysis of knowledge sharing as suggested by Lin (2007), Wang and Noe (2010), and Matzler *et al*. (2011).

The following sections discuss the multidimensional elements of change readiness and their influences in shaping readiness for the knowledge sharing process at individual and organisational levels in the PSFs' context.

7.6.2 Motivating readiness through individual and firm knowledge sharing understanding and beliefs

Previous studies acknowledge the importance of creating beliefs about knowledge sharing among individuals (Bock and Kim, 2001; He and Wei, 2009; Siemsen *et al*., 2008). Motivating readiness through positive beliefs and understanding about the process is an effective approach towards nurturing intrinsic motivation to share knowledge. In comparison to extrinsic motivation such as financial rewards, intrinsic motivation is proven to be more effective in sustaining knowledge sharing behaviour (He and Wei, 2009; Small and Sage, 2006; Witherspoon *et al*., 2013). Individuals could be intrinsically motivated to perform a particular behaviour if they believe that their knowledge is recognised to be valuable for their career advancement (Witherspoon *et al*., 2013) and useful for others to learn. Additionally, if their own or their organization's social norm expects them to share knowledge, then their readiness to contribute increases (Small and Sage, 2006; van den Hooff and De Ridder, 2004).

Aligned with previous studies, findings from this study indicate that professionals are more ready for knowledge sharing if they perceive the need to contribute to the process. If professionals believe that articulation of their knowledge to others is useful and needed, they are motivated to engage in knowledge sharing. Encouraging these professionals to externalise their tacit knowledge is difficult, unless they are convinced that their knowledge contribution is crucial and significant for solving problems and recommending improvements in the firm's operation.

Proposition 1: A greater understanding of the need for knowledge increases individuals' motivation for knowledge sharing in PSFs.

Nevertheless, differences in firms' settings influence knowledge sharing. In this study, firm setting, conceptualised as firm archetype, refers to structure, systems and values that characterise a firm's operation (Brock *et al*., 2007). ACC represents a PSF with a classical archetype, in which its professionals are provided with high autonomy in handling a specific niche area. Each professional is fully responsible for making decisions within the niche area with less interference from others (Brock, 2006). This autonomy of professionals means a lesser need for sharing domain-related knowledge. Due to low interdependency among professionals in completing engagements, the need for sharing knowledge at ACC is less crucial from their perspective as when compared to CNS and ENG. For these reasons, the findings suggest that,

Proposition 1a: The relationship in proposition 1 is stronger for a firm archetype with high inter-dependency among employees.

Further, the literature claims that perceived benefits from the sharing of knowledge could motivate employees to engage in the process (Lin, 2007; Lin and Lee, 2006; van den Hooff and De Ridder, 2004; Witherspoon *et al*., 2013). Both tangible and intangible benefits are identified as motivators for knowledge sharing. Nevertheless, perceived tangible benefits are claimed as inadequate and provide only short-term incentives to stimulate readiness for the knowledge sharing process (Ipe, 2003; Lin, 2007).

Findings from the study indicate that understanding of knowledge sharing benefits stimulates professionals' readiness to engage in the process. Aligned with the literature, professionals put greater emphasis on intangible benefits that positively affect their job-related processes and, eventually, deliver value to their clients. Such benefits, including improved service quality, efficient service delivery, and effective decision making, all derived from the knowledge sharing effort, encourage these professionals to exchange knowledge with colleagues.

Proposition 2: A greater understanding of change benefit increases individual readiness for the knowledge sharing process in PSFs.

Nonetheless, despite the benefits of sharing, findings highlight concerns among some professionals with regard to negative implications from the process. These professionals are less ready to share knowledge if they perceive that their effort would offer less benefit to them personally and causes loss of power. This conflict of interest seems to arise from unclear understanding about implications of sharing knowledge. As mentioned, the adoption of appraisal systems in PSFs that emphasise individuals' performance creates a competitive culture among the professionals (Lin and Lee, 2006). This approach is incongruent with collaborative effort that is necessary to promote readiness for knowledge sharing. This suggests that,

> *Proposition 2a: The relationship in proposition 2 is weaker in a firm archetype emphasising individualised performance.*

At the organisational level, successful knowledge sharing requires collective action and shared understanding that strengthens social interaction and influence among employees (Lin, 2007; Yang and Farn, 2010). Individuals are inclined to share knowledge if they believe that their colleagues will act similarly (Cabrera *et al*., 2006; De Vries *et al*., 2006; Lu *et al*., 2006). This reflects the importance of relational capital in knowledge sharing, which suggests employees' readiness to share knowledge could be influenced by their relationships with others (Cabrera and Cabrera, 2005; Yang and Farn, 2010). Moreover, in PSFs that emphasise team work, two factors that represent team quality - team members' attitudes and abilities - are crucial in influencing a knowledge sharing attitude (Ding *et al*., 2007; Lu *et al*., 2006). Lack of commitment from other colleagues could decrease an individual's motivation to share knowledge, inhibiting readiness for knowledge sharing (Laycock, 2005).

Findings indicate that developing a congruent understanding of knowledge sharing could encourage professionals to collectively contribute to the process. Professionals are more ready to share knowledge if they believe other colleagues are also committed. Conversely, incongruent understanding will result in lower effort that limits knowledge sharing effectiveness.

Proposition 3: A greater understanding of collective commitment to share knowledge increases organisational readiness for the knowledge sharing process in PSFs.

Additionally, developing understanding of collective commitment for knowledge sharing could be influenced by the firm's archetype. In ACC, despite high job specialisation, informal knowledge sharing among professionals regarding industry progress is common. Low bureaucratic control could also promote collegial decision making, hence enhancing readiness to share knowledge. Nevertheless, each professional's concentration in a specific niche minimises interactions by colleagues from other service domains. Therefore, although understanding of collective commitment motivates readiness to share knowledge, the effect is less apparent in ACC. In CNS and ENG however, completion of clients' jobs depends on the joint performance of responsible departments/teams. With this team-based functional structure, understanding other team members' commitment in sharing knowledge would have greater impact on influencing a professional's readiness to engage in the process.

Proposition 3a: The relationship in proposition 3 is stronger in a firm archetype emphasising team-based orientation.

Although collective commitment is important in shaping readiness for knowledge sharing, particularly involving team-based settings, findings indicate that motivating collective understanding among professionals in the team could be challenging. The challenge lies in the fact that the nature of different professions may moderate the way collective commitment shapes readiness for knowledge sharing.

In comparison to ENG as a specialist firm needing minimal changes in the firm's operation, CNS's multidisciplinary service scope requires its professionals to cope with clients' evolving needs and frequent regulatory changes in the accounting practice. This implies that the application of new knowledge created through knowledge sharing is necessary to enable them to respond to changes. Due to the consistent need to exchange/share knowledge, most professionals believe that collective commitment is crucial in enhancing their readiness to engage in the knowledge sharing process. Therefore, dynamic changes underlying the

accounting profession enhance collective commitment to share knowledge. This implies that,

Proposition 3b: The relationship in proposition 3 is stronger in a firm operating within a dynamic environment.

7.6.3 Enhancing knowledge sharing readiness through an individual's differences

Individuals' differences, represented by differences in one's ability, could be an important determinant of successful knowledge sharing initiatives (Lin, 2007). Unfortunately, there is little empirical research dedicated to assessing aspects of individuals' capability that contributes to their sharing of knowledge (Cho *et al*., 2007). Past studies focus on knowledge self-efficacy as an important perceived ability that may increase the individual's self-confidence and motivate greater willingness to engage in the knowledge sharing process (Lin, 2007; Lu *et al*., 2006; Siemsen *et al*., 2008; Witherspoon *et al*., 2013; Yang and Farn, 2010).

Findings suggested that expertise is a reflection of individuals' self-efficacy to engage in the knowledge sharing process. An individual's expertise represents an individual's proficiency in a specific knowledge domain. Cho *et al*. (2007) and Chen *et al*. (2012) propose that expertise influences an individual's knowledge sharing intention. In a similar way, findings highlight the importance of individuals' expertise in shaping professionals' readiness to engage in knowledge sharing. Expertise that they possess gives the confidence to disclose their know-how, and in leading others to share knowledge. These experts would be referred to, and their opinion used, to resolve issues arising within a particular domain in the firm's operation. In an ideal situation, those experts should demonstrate higher readiness to share knowledge. Therefore:

Proposition 4: Greater expertise enhances individual readiness for the knowledge sharing process in PSFs.

Nonetheless, findings show that professional dynamism could affect the way expertise shapes readiness for knowledge sharing. As stated in proposition 3b, motivation to contribute knowledge could decrease over time in a less dynamic environment. A stable environment might be less challenging for experts, due to infrequent changes in the work performed. They may assume that other colleagues could develop their own expertise through routine jobs performed with minimal

advancement in the operations. Hence, there is less pressure to share knowledge. Therefore:

> *Proposition 4a: The relationship in proposition 4 is stronger in a firm operating within a dynamic environment.*

Moreover, types of knowledge possessed by professionals also affect the way expertise shapes readiness for knowledge sharing. In CNS, the dilemma mostly involves professionals in managerial positions who are competing to be engaged in a major client's project. These professionals are considered experts who possess vast tacit knowledge through experience. From their perspective, knowledge tacitness and expertise increase their value in the firm. Consequently, explicating and externalising their tacit knowledge to peers or subordinates could diminish their merit as an expert and decrease their personal influence. Therefore:

> *Proposition 4b: The relationship in proposition 4 is weaker where a high level of tacit knowledge is involved.*

7.6.4 Fostering knowledge sharing readiness through a firm's change context

In addition to individual understanding and characteristics, the literature suggests that institutional factors/characteristics also influence knowledge sharing (Bock *et al*., 2005; Cockrell and Stone, 2010; Lin and Lee, 2006). These characteristics are: organisational structure (Søndergaard *et al*., 2007), culture (Cabrera and Cabrera, 2005; Witherspoon *et al*., 2013), and climate (Bock *et al*., 2005; Lin, 2007; Lin and Lee, 2006; Yang and Farn, 2010). Structure, culture, and climate could be categorised as the *organisational change context*. This provides a platform for social interaction, and for the sharing of knowledge, skill and expertise. In this study, organisational change context is found to consist of communication, participation, and learning, and these elements foster readiness for the knowledge sharing process.

In the knowledge sharing context, the nature of communication, intensity/frequency, quality, and style, determine the context for sharing knowledge (De Vries *et al*., 2006; Lin, 2007; Witherspoon *et al*., 2013). Formal, informal, or a combination of communication types, are applied in firms to facilitate the process. The communication type permits a consistent knowledge flow in the firm, hence reducing uncertainty and chaos. It also improves the

feasibility of disseminating work-related and managerial knowledge among the professionals. Hence, the professionals could be more ready to share knowledge as they are able to channel their ideas and opinions to the appropriate person in the most effective way. Therefore:

> *Proposition 5: Appropriateness of communication context increases organisational readiness for the knowledge sharing process in PSFs.*

Aligned with the literature, (Gagné, 2009; Ipe, 2003; Sudharatna and Li, 2004), a preferred or appropriate medium that fosters knowledge sharing in each firm differs depending on the firm's archetype/setting. In ACC, we found little hierarchy, less bureaucratic control and a lack of process formalisation underlying the firm's operation. In such a setting, an informal communication mechanism is preferred to encourage the sharing of knowledge. In contrast, the complexity of operations, as exhibited in ENG and CNS, where emphasis is placed on the team and interdependency among employees, requires richer communication mediums for achieving communication purposes. From social capital theory, Cabrera and Cabrera (2005) propose that if completion of a task requires a group effort, a greater cooperation and collaboration from team members is crucial. Thus, high interactions among the team members through an appropriate medium could motivate greater knowledge sharing.

For ENG, maintenance service is performed in a teamwork setting involving diverse team members in each shift. The nature of the firm's operations demands another formal sharing mechanism, which is mainly through the use of written documents to ensure accurate updates and knowledge are shared effectively among teams.

In CNS, due to the complexity of operations and with more professionals, internally diversified functions and multidisciplinary service, communication mechanisms that permit high integration are essential. The establishment of on-line communication could complement the formalised means of sharing knowledge. Accessibility to these applications enables the pool of knowledge and updates to reach a wider group of users. This encourages more professionals to contribute in the knowledge sharing process. Following the above discussion, it is proposed that,

Proposition 5a: Formalised means of communication are more important for multidisciplinary and complex operation of PSFs.

Participation refers to the extent of opportunity to contribute in the decision making process. Although literature discusses the importance of participation in fostering knowledge sharing, there is little empirical evidence of the relationship (Han *et al.*, 2010). Active employee participation improves the quality and effectiveness of knowledge sharing (Cabrera and Cabrera, 2005; Lin and Lee, 2006; Witherspoon *et al.*, 2013). Participation also enhances ongoing collaboration, in which employees are given opportunity to share their views and ideas that affect their jobs (Laycock, 2005). From a motivational perspective, previous studies have examined the indirect effects of participative decision making on knowledge sharing intention and behaviour (Gagné, 2009; Han *et al.*, 2010). For instance, Gagné (2009) found that a job design that reflects an individual's autonomy and allows participative decision making positively influences knowledge sharing intention. Likewise, Han *et al.* (2010) suggests that employee's participation could increase their psychological ownership and organisational commitment, which indirectly contributes to positive knowledge sharing behaviour. Participation in decision making also implies sharing of power in the organisation that could mould positive cognitive, attitude and willingness to contribute in knowledge sharing.

Likewise, findings indicate that an organisational context that permits employees' participation could nurture knowledge contribution by professionals. Participation provides the opportunity for employees to contribute ideas to organisational decision making, hence increasing the sense of belonging. Professionals also feel appreciated as their opinions are valued by management. Consequently, participation enhances the organisational commitment and motivates professionals to share knowledge with colleagues. Therefore,

Proposition 6: Greater participation increases organisational readiness for the knowledge sharing process in PSFs.

Moreover, the effect of participation on knowledge sharing readiness is more apparent in larger firms such as CNS and ENG. The autonomous professional, as seen in ACC, implies that decision making for the niche area is largely handled by the specialised expert. Therefore, participation from other colleagues concerning a

particular service domain is less important, although informal collegial discussion is still practised. In both ENG and CNS, these firms' operations rely on the professional service quality provided by the shift team and the functional unit. In this archetype, opportunity to participate in the team's or functional unit's decision making is crucial, as it could motivate readiness for sharing knowledge within the particular group. Therefore,

> *Proposition 6a: The relationship in proposition 6 is stronger in a firm archetype emphasising a team-based orientation.*

Learning context is important in knowledge sharing initiatives (Lin, 2007). Successful firms encourage both individual and collective learning (Sudharatna and Li, 2004). Establishing a conducive learning context enables employees to learn and reflect, thus providing an environment that improves their capability to share, create and apply new knowledge (Yang, 2004). Therefore, the establishment of an organisational context that fosters learning could enhance readiness among professionals to engage in knowledge sharing. Previous studies suggest that both formal and informal learning platforms (Ipe, 2003) are necessary for the knowledge sharing process. In line with the literature, findings from the study indicate that learning platform provides a context that enhances readiness for knowledge sharing. Therefore:

> *Proposition 7: Availability of learning context increases organisational readiness for the knowledge sharing process in PSFs.*

Further, the findings suggest that the suitability of formal and informal platforms for learning depends on the firm's archetype in which the knowledge sharing process occurs. It is revealed that PSFs employing key experts in the field are more capable of establishing a formal learning platform, such as formal training. CNS, for example, is a large firm with multidisciplinary services and a large number of employees in each function. Most training is handled by the firm's functional key experts. The structured formal learning platform through an on-line system enables CNS to engage their clients on the basis of standardised procedures.

In contrast, ACC is a small firm with limited experts. The firm relies on external trainings provided by regulatory bodies or larger firms as a formal learning

platform for its professionals. Moreover, limited service scope and high individual specialisation implies a lesser need for establishing specific training across the service domains in the firm. ENG, on the other hand, is a specialised firm where most learning occurs through on-the-job practical experience. An informal learning platform is more suitable to encourage sharing of knowledge, particularly tacit knowledge among the professionals. This explains the infrequent formal training in the firm, since most effort for transferring knowledge occurs during informal interactions among the professionals on the maintenance floor. On the basis of these arguments, it is suggested that,

> *Proposition 7a: A formalised learning platform is more important for a firm archetype with multidisciplinary service.*

In summary, the current study assesses the motivational factors in knowledge sharing by looking at how change readiness shapes positive attitudes and intentions towards the process (Wang and Noe, 2010; Witherspoon *et al*., 2013). Extending suggestions by Witherspoon *et al*. (2013), findings from this study reveal that the internalised beliefs of change readiness, which consist of the need for knowledge and change benefit, influence individuals' attitudes towards knowledge sharing. As previously mentioned, scholars consider knowledge sharing intention as a reflection of willingness/readiness to share knowledge among individuals (Ding *et al*., 2007). Additionally, findings also show the importance of the interpersonal element, particularly concerning the development of mutual beliefs, in stimulating collective commitment that shapes readiness for knowledge sharing. Moreover, findings support the need to consider the organisational environment in facilitating the knowledge sharing process. In this study, establishing an organisational context that is conducive to communication, participation in decision making and learning, is vital to enhance readiness for knowledge sharing at the organisational level. Findings from the study offer a holistic understanding of how change readiness influences knowledge sharing, and comprises individual and organisational beliefs and capability.

7.7 Conclusion

The current study aims to understand how change readiness shapes the knowledge sharing process. From a theoretical perspective, this study contributes to the existing literature of knowledge sharing from a change readiness perspective. The proposed theoretical framework (Figure 2) represents an integration of several theoretical perspectives, and offers a theoretical basis to understand change readiness as an influencer in the knowledge sharing process. Seven main propositions are developed that indicate the influences of change readiness elements in shaping the knowledge sharing process. Change readiness is enhanced if there is a greater understanding of the need for new knowledge, understanding of the change benefits, realization of the collective commitment, greater expertise, greater participation of employees, and when the appropriate communication context is used and learning context available. Further, findings highlight the potential influences of firm's archetype, inter-profession differences, and knowledge type in moderating the strength of the linkages of these change readiness elements and the knowledge sharing process. The assessment of this phenomenon in the professional service context reveals that consideration of the institutional context is important to extend the understanding of the complex nature of knowledge sharing process.

However, all empirical studies have limitations. The qualitative nature of this study limits generalizability of its findings to other industry contexts. Therefore, further work is needed to refine and verify the proposed framework in distinctive theoretical and practical contexts that enhance generalizability of findings to a larger population. Also, the framework could change depending on the change nature experienced by firms in the process of knowledge sharing as suggested by Holt and Vardaman (2013). Moreover, a combination of different data collection techniques may offer a richer explanation regarding the phenomenon.

Despite such limitations, the findings presented here offer important contributions for practitioners and researchers interested in extending understanding of readiness for knowledge sharing. From a practical viewpoint, a holistic consideration of individual and organisational elements is essential for developing understanding and capability for the knowledge sharing process. The findings

could provide guidelines for management to design and implement a holistic knowledge sharing strategy for their firms. Focus should be given to instilling professionals' beliefs on the need for knowledge and benefits of sharing, whilst promoting collective commitment among them to contribute in the process. Further, professionals with relevant expertise exhibit a greater potential to become part of knowledge sharing champion within a particular knowledge domain. Development of appropriate communication, participation and learning contexts represent crucial readiness elements for fostering knowledge sharing at the firm level. For these reasons, a successful knowledge sharing initiative could be expected if professionals and organisations are psychologically and contextually prepared for the process implementation. Consequently, it minimises the possibility of knowledge sharing failures.

This study provides a platform for future researchers to test the suggested propositions, perhaps using a larger survey study of PSFs. Findings from the study promote a balanced approach for exploring the phenomena of change readiness in the knowledge sharing process with consideration of both individual and organisational elements. Likewise, findings could provide a basis for further examination and quantification of readiness elements' influences on the process. This study adopts a traditional view of change readiness lens in the assessment of knowledge sharing and emphasizes the internal readiness aspects of PSFs and their people. Future study may consider a different theoretical lens such as assuming an organisation as a complex adaptive system where external factors and interactions among agents may also influence firms' capability to adapt to changes in knowledge sharing. Finally, the proposed framework and discussion in this study could serve as a model for extending the assessment of change readiness influences on other knowledge management processes.

Note:

1. An earlier version of this study was presented in the International Conference on Business Management & Information Systems 2012, Singapore, 22-24 November.

7.8 References

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Appendices

Appendix A: Open-ended questions and probes

A. KNOWLEDGE MANAGEMENT (KM)

1. Can you tell me what Knowledge Management (KM) is for this organization?

What are the important knowledge areas for this organization?

2. How does knowledge related activities [knowledge sharing] are currently carried out in this organization?

As a firm, how knowledge is managed [shared] in this organization?

B. CHANGE

1. Did the organization experiences any changes in the way knowledge is managed in this organization?

Can you recall a specific change in the way knowledge is managed and walk me through your experience regarding the changes?

2A. How ready the employees were when the changes in KM [KS] are introduced in this organization?

How ready are people and the organization when it comes to acquiring and implementing new knowledge?

Would you like to share more about the experiences that the company has, especially related to the employees' reactions to the changes?

No Experience (Alternative)

2B. Based on your experience, *how ready are people and the organization* if changes in KM processes are implemented in this organization? Why do you think so?

3. What are the factors that you think important or expected to be important to support changes in KM processes in this organization? Why do you say so

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Appendix B: Conceptualisation of change readiness concepts

Core Category	Category	Concept	Concept definition
Individual Knowledge Sharing Understanding and Beliefs	Individual Change Understanding	Need for Knowledge	Perceived importance and relevancy of knowledge for sharing.
		Change Benefit	Perceived positive implications from knowledge sharing to professionals and firms.
Firm Knowledge Sharing Understanding and Beliefs	Firm Change Understanding	Collective Commitment	Perceived mutual understanding and effort among professionals to share knowledge.

Individual Knowledge Sharing Capability	Individual Differences	Expertise	Degree of an individual's proficiency in a specific domain that represents personal capability to share knowledge.
Firm Knowledge Sharing Capability	Firm Change Context	Communication	Nature of medium for social interactions among professionals to share knowledge.
		Participation	The extent of opportunity to contribute knowledge by professionals in the decision making process.
		Learning	Nature of platform for knowledge donators and collectors to interact and develop understanding about knowledge being shared.

8.0 CONCLUSIONS, LIMITATIONS, IMPLICATIONS AND FUTURE RESEARCH

General conclusions and highlights of findings

The overarching questions of this thesis are concerned with analysing the ways change readiness shapes the various KM processes.

This thesis presents research done on three PSFs in order to analyse the way change readiness elements shape KM processes in the firms studied. This thesis therefore contributes to the theoretical development of the impact of change readiness in KM processes. A qualitative study, using an interpretive approach, was adopted in the assessment of the phenomena.

This study generated several important findings.

First, as presented in Chapter 2, this thesis proposed that the implementation of KM processes induces changes in organisational practices and philosophies; hence affecting employees' beliefs and understandings of those processes. The thesis therefore advocates that change management is an important aspect for consideration in KM strategy formulation. In particular, this consideration is crucial for managing change and preparing employees to contribute to the various KM processes. Based on review of the extant KM, change management, and professional service literature, change readiness construct was conceptualised as consisting of psychological and structural dimensions. This conceptualisation led to the development of the initial conceptual framework for the thesis that was published in the *Journal of Knowledge Management*. The initial conceptual framework was then expanded and modified as a result of the empirical investigation.

Second, within the context of professional service industry, findings reveal that knowledge acquisition, knowledge application and knowledge sharing represent

three crucial processes for managing knowledge. On the basis of findings and discussions in Chapter 5, 6 and 7, this thesis suggests that change readiness elements do shape those KM processes through distinctive linkages. Specifically, findings indicate that promoting a successful KM processes implementation from the change lens requires blending/combination of multidimensional elements of change readiness. Moreover, findings show that these change readiness elements exist at multilevel, which requires analysis at the individual's and firm's levels.

This study also extends the classification of change readiness dimensions into KM Change Understanding, KM Change Context, and Individual Differences. KM Change Understanding reflects professionals' beliefs and understanding of KM processes at both individual's and firm's levels. The KM Change Context and Individual Differences represent firm's and individual professional's capabilities to carry out and contribute to the distinctive KM process.

Discussion of linkages among change readiness multidimensional elements and knowledge acquisition, application and sharing processes are presented in Chapter 5, 6 and 7, respectively. Specifically, in relation to the proposed research objectives in Chapter 3, findings from the thesis indicate that:

(1) For the knowledge acquisition process, an individual's comprehension and understanding of the need for knowledge and perceived management support characterises the professionals' KM change understanding. The individual's expertise and adaptability reflects the professional's individual differences, while learning and communication are the KM change context. Existence of the above-mentioned multidimensional readiness elements shape the knowledge acquisition process in the PSFs studied.

(2) For the knowledge application process, primary influences of readiness for knowledge application are derived from the individual's KM understanding of change goal, change benefit and perceived management support. Firm's level of understanding of the knowledge application

process is moulded by a collective commitment of those professionals involved in the process. The individual's expertise and adaptability represents the individual differences dimension of change readiness. Further, learning and management support reflect KM change context dimension for knowledge application. All these multidimensional change readiness elements shape the knowledge application process in the PSFs studied.

(3) For the knowledge sharing process, the firm's KM change understanding and KM change context shape readiness for the knowledge sharing process. The firm's KM change understanding is represented by professionals' collective commitment, while communication, participation and learning form the firms' contextual elements. Readiness for sharing knowledge at the individual's level is derived from the understanding of the need for knowledge and change benefit, as well as the differences in professional's expertise. These change readiness elements of KM change understanding, KM change context, and individual differences, mould readiness for the knowledge sharing process in the PSFs studied.

In summary, findings underline that knowledge acquisition and application processes are more individual-oriented since readiness for both processes are influenced primarily by the individual's elements. Knowledge sharing on the other hand reflects an important firm-level process; for this reason, readiness for knowledge sharing is mainly affected by the firm's level elements.

Interestingly, findings from this study also reveal moderating effects of firm archetypes, inter-profession differences and demographic characteristics (job tenure and age) of professionals on the change readiness influences on those KM processes. Additionally, the effects of change nature moderate linkages between change readiness and knowledge acquisition, while knowledge nature moderates change readiness influences on knowledge sharing. Consideration of these

moderating elements thus offer in-depth understanding of multidimensional change readiness influences on the respective KM processes.

Findings from the thesis argue that the above-mentioned change readiness elements, if properly addressed, could enhance the successful implementation of each KM process. This will minimise failures associated with the implementation of KM processes, particularly in the professional service context. Findings from the thesis thus contribute significantly to the growing research in KM.

Nevertheless, similar to other scientific studies, it is acknowledged that this study has several limitations. Limitations of the study are discussed below:

Limitations of the study

Since the thesis aims to assess the phenomena of change readiness influences on KM processes in the professional service context, there are several limitations that might limit applicability of findings.

The study limitations include:

1. This thesis involves the assessment of the phenomena of interest in professional accounting and engineering service firms. Although these distinctive firm archetypes offer interesting contextual understanding of the phenomena, future studies may benefit through inclusion of other types of firms or industries.

2. This thesis focuses on studying the phenomena in the context of professional service industry. While the qualitative nature of study offers in depth understanding about the phenomena and contributes to the theoretical development, there is limited generalizability of qualitative findings to other contexts.

3. The thesis comprises a cross sectional design where the phenomena was studied at one time, hence change readiness was presented as an episodic

change. Changes and processes for managing knowledge could be studied as an evolving process in a longitudinal study.

4. The current thesis primarily focuses on the internal aspects (individual professionals and organisational contexts) triggering change readiness for KM processes. External and macro factors influences are given limited consideration in this study.

5. The thesis analyses influences of change readiness on only three KM processes, which are knowledge acquisition, application and sharing. KM represents a large study domain; therefore, there are vast classifications of KM processes that are yet to be studied.

6. The current interest of the thesis concentrates on understanding the influences of change readiness on KM processes. Nevertheless, little is known about the impacts of such linkages on KM outcomes. Research on KM is commonly interdisciplinary in nature; therefore extension of study to assess KM outcomes may provide additional understanding and insights.

Implications and contributions to the body of knowledge

Despite limitations mentioned above, findings from this thesis contribute to the body of knowledge. This thesis could potentially provide insights into managerial practices of KM processes.

Findings from the thesis offer a comprehensive and extended conceptualisation of the change readiness construct for application in the KM field. A comprehensive definition of change readiness is offered which proposes a holistic understanding of readiness as a multidimensional and multilevel construct. While the initial framework proposes the psychological and structural dimensions of change readiness, theoretical frameworks derived from this thesis outline the conceptualisation of change readiness into three dimensions: KM Change Understanding, KM Change Context, and Individual Differences.

In order to address gaps in the extant KM literature, this thesis argues the equal importance of embedding change readiness at the individual's and firm's levels in KM processes. Prevailing problems and conflicts of KM initiatives, as discussed in the literature, could be due to a simplified assumption of the individual's change readiness influence on the firm's KM.

Further, this thesis proposes various change readiness elements that are identified under three distinctive change readiness dimensions. KM Change Understanding consists of four aspects: individual beliefs on need for knowledge, change benefit, change goal and perceived management support, and the aspect of collective commitment. KM Change Context is represented by: learning, communication, participation and management support. Individual differences on the other hand are reflected by: professionals' expertise and adaptability. Also, the thesis presents various influences of these multidimensional elements on each KM process.

Findings from the thesis could be applicable particularly for firms from a similar setting or industry. In summary, findings proposed the need to intensify efforts to enhance readiness at the individual's level for knowledge acquisition and knowledge application processes. Additionally, a greater effort should be dedicated to increase the firm's level readiness for the knowledge sharing process. Likewise, findings from the thesis offer insights on how readiness should be modified by considering distinctive firm archetype and inter-profession differences, change nature, knowledge nature, and demographic factors that moderate linkages among change readiness elements and KM processes.

Therefore, theoretical frameworks that are derived and developed in this thesis offer guidelines for firms in improving KM success through instigation of change readiness towards KM processes. Consequently, findings from this thesis could contribute insights into minimising failure rates of KM initiatives through increased readiness in the process for managing knowledge. Findings from the current thesis are particularly relevant in the discussion of KM processes within the professional service context.

Possible areas for future research

This thesis suggests that the integration of change management in the KM research is neglected. Nevertheless, with the increased awareness and acknowledgement of the importance of change readiness influences on KM processes implementation, it is recognised that further research is needed. Future studies could consider:

1. Studying the phenomenon in different organisational contexts and industries. Diverse findings may be obtained for studying KM processes in different nature of operations or industries. Other KM processes may be found significant in the different nature of operations or industries.

2. Quantitatively testing the proposed relationships of change readiness elements and KM processes (as suggested in the three theoretical frameworks). Results may indicate levels of significant influences of those change readiness elements on the respective process. Further, measurement of moderating effects of firm archetype, inter-profession differences, change nature, knowledge nature, and the demographic characteristic, could offer quantitative evidences of those linkages.

3. Initiating a longitudinal study that may offer further explanation on how changes and readiness evolve over time. Such studies could consider evolving nature of change readiness during different phases of the KM process implementation.

4. Attempting to assess external aspects that encourage firms to be ready for implementing KM processes in order to remain competitive. The findings from such studies may reveal important external forces and how firms should react and cope with these external influences. For instance, as mentioned in Chapter 7, interesting insights may be gained by studying a

firm from the perspective of a complex adaptive system to changes beyond the firm's boundary.

5. Examining the issues of change readiness influences on other KM processes such as knowledge creation, knowledge codification and knowledge protection. Extension of assessment to other KM processes may offer bigger pictures of understanding numerous ways change readiness shapes the various KM processes.

6. Extending the proposed theoretical frameworks to include KM outcomes. There are increasing effort to bridge KM with various fields including information management, organisational learning, strategic management and firm innovation. Future research may benefit by examining how readiness for KM shapes the KM processes, and finally contribute to KM effectiveness or firms' innovativeness.

APPENDICES

Appendix 1: The Interview Protocol

INTERVIEW PROTOCOL

Overview:

I'm pursuing my PhD study in Knowledge Management. In conjunction to that, this interview is conducted as part of the data collection process for my PhD research.

Objectives:

The aim of this interview is to gain considerable insights into the basic issues being studied. Specifically, the objectives are:

1. To identify the practices of knowledge management processes in professional service organisations.

2. To assess the influences of change readiness on the implementation of knowledge management processes.

3. To examine the effects of knowledge management processes on the overall knowledge management effectiveness.

Procedures:

The interviews will be conducted at the organisation, which has been contacted through e-mails and phone calls. These organisations have expressed their interest and agreement to participate in the interviews.

The interviews will involve managers and employees of the organisation. They are seen as the most appropriate people who involve in the decisions and understand the overall processes of the organization, which include knowledge related activities.

Participants for the interview consist of multiple managers and employees from each organisation. Each interview session is expected to be completed in approximately 1 hour. The interview will also be recorded using audio recorder device. Consent form will be provided to the participant and the return of signed consent form will be treated as participant's agreement to participate in this study. The information gathered during the interview will be kept anonymous to protect individual's and organisation's anonymity.

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Interview Guide

This document provides the guidelines about the questions to be asked during the interview. Minimal changes in the questions might emerge during the interview session to align with the flow of the interview.

A.   BACKGROUND INFORMATION

Interviewee: ....

Job

Position: ....

Name of

Organisation: ....

Year of

Establishment: ....

Number of

Employees: ....

Interview Date:

Interview Time:

B. KNOWLEDGE MANAGEMENT (KM)

1. Can you tell me what Knowledge Management (KM) is for this organisation?

What are the important knowledge areas for this organisation?

2. How does knowledge related activities are currently carried out in this organisation?

As a firm, how knowledge is managed in this organisation?

C. CHANGE

1. Did the organisation experiences any changes in the way knowledge is managed in this organisation?

Can you recall a specific change in the way knowledge is managed and walk me through your experience regarding the changes?

<u>Experience</u>

2A. How ready the employees were when the changes in KM are introduced in this organisation? Were they ready for the changes or were they just do it?

How ready are people and the organisation when it comes to acquiring and implementing new knowledge?
Would you like to share more about the experiences that the company has, especially related to the employees' reactions to the changes?

<u>No Experience (Alternative)</u>
2B. Based on your experience, how ready are people and the organisation if changes in KM processes are implemented in this organization? Why do you think so?

How ready are people and the organisation when it comes to acquiring and implementing new knowledge?

3. What are the factors that you think important or expected to be important to support changes in KM processes in this organisation? Why do you say so?

D. How does the implementation of the KM contribute to the overall operation of this organisation? Could you say something more about it?

E. Do you have any final comments about KM processes in organisations, AND the effects of change readiness on KM implementation?

DEBRIEFING & REFLECTIVE

THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION

Appendix 2: Within-case analysis

CASE 1- Knowledge Management and Change in ACC

Introduction

ACC is a small sized accounting firm located in Hamilton, New Zealand. The firm has been established more than 10 years ago by the former director and was acquired by the present director four years ago. The firm employs six people consisting of the director, three accountants and two administrative staff members. The firm offers accounting, taxation and business planning services and serves client from various sectors including farming, manufacturing, construction and services. These client portfolios include small to large organisations with annual turnover ranging from thousands of dollars to seven million dollars.

Two participants, the director and one senior accountant, were in the interview sessions. The senior accountant was selected by the director to represent the employees' perspective in this research, due to vast experience working in the firm for more than 10 years. The accountant had been working with the former director and has experienced diverse changes in the firm's operation over her time with this firm.

Employing a small number of employees, changes that have taken place regarding the way information and knowledge are managed in ACC have substantially affected the employees. When the director introduced changes in the workflow that affect KM processes, particularly with the utilisation of a technological platform to improve the existing processes, mixed reaction was experienced.

From the director's point of view, organisational factors are more important in supporting the implementation of KM initiatives in this firm. Nevertheless, from the employee's point of view, human related or individual factors could be essential in enhancing people's readiness for KM initiatives. These differences are detailed in the following sections.

Defining Knowledge Management (KM)

From a management point of view, knowledge management is seen as a mechanism to provide necessary information that enables employees to perform their job effectively. The director mentioned:

> Knowledge management for me is keeping people informed, so that they could perform their jobs properly. (P1)

Both explicit and tacit knowledge are managed in this firm. Even though most of the tasks are procedural-based, manuals have not been consistently updated. As a result, most knowledge remains with the experts and less is being made explicit.

> Well, we do write up instructions. Employees are provided with the instructions on how to do that and the oral procedures on how to do that. We have office manuals, but it is quite out-dated. We might improve it, so that if people are having difficulties they would get better informed. (P1)

Although the firm employs a small numbers of employees, these people had experience in various industries such as construction, trading and services before joining the firm. The director asserted that each employee creates a niche in their area of expertise. Their expertise and experience, which are developed over time, serve as the main knowledge base for the firm.

Processes for managing knowledge

Findings from the interviews indicate that ACC focuses on the process of acquiring, applying and sharing of knowledge. On the basis of the interview, it was discovered that these processes are carried out through both formal and informal methods including monthly meetings, manuals and documentations, training and courses, daily conversation and discussion.

Being a small firm, the firm mainly obtains new knowledge from external sources. There are three major sources of knowledge acquired by the firm: knowledge from clients, knowledge brought in by new staff members from their previous

employment as well as knowledge gained from external training attended by the staff members.

Knowledge about clients is acquired during the initial meeting with the client and developed throughout the job engagement. For instance, when a new client comes in, there will be a meeting with management to discuss the services required by that client. All related information about the client, including the client's business, industry and required services, will be recorded in a standard form and will be kept in the client's file. Other customised requirements such as tax and goods and services tax (GST) will also be discussed. From this process, knowledge about a particular client, including business background and specific requirements, is gathered. Since the firm serves clients from various industries, the process of gathering knowledge about the client's business is important to ensure that the firm meets the obligation for the services expected by each client.

In terms of the internal source of knowledge, both interviewees agreed that despite the limited number of employees in ACC, the employees developed their expertise according to their area of specialisation. They also have vast industry experience from their previous employment. Hence, pooling of knowledge among the internal experts facilitates the internal process of obtaining knowledge.

> The advantage is we have experience from different backgrounds and knowledge from different industries. Knowledge employees bring in from other places, wherever they come from; they might have do things better. (P2)

> Each person handles different part of the operation, so they have knowledge about the area. We have experts in certain areas. If you have any queries, you can send email to that person to have a chat. If there are issues probably about the client, you can chat with that person. (P1)

Further to that, most knowledge is also acquired through staff's participation in training. According to the director, both internal and external training are available for the employees.

We sort of have regular training, for example for tax issues and changes. We do have training where we raised issues, for instance the client's issues. We cope during the training internally. (P1)

On the contrary, the employee claimed that internal training is a dilemma for the firm due to the constrained expertise. She stated:

At this stage, there is no internal training since we don't have the speakers for that. It is something that we might need to look at soon. (P2)

Nevertheless, all employees have a link with outside bodies providing training relevant to the staff member's area of expertise. The staff members are usually bombarded with many e-mails from outside providing information about the available training. This implies that the firm has good relationships with the external bodies, thus is able to keep up with the latest developments in the industry. Moreover, management actively encourages the staff members to attend any relevant training with the aim of strengthening the firm's knowledge base.

We all have links to the outside courses and we have preferences for the courses.

If it looks interesting and we need to know, we will choose any course that is relevant for the development of small practice operations or clients. We approached the manager and so far he never says no. (P2)

According to its urgency and relevancy, new knowledge acquired will be applied by the staff in performing their jobs. It will be reflected in the amended work procedures, with support from the staff member who had attended the course or those who have expertise in the area. For example:

Some people are more specialised in the area, for instance banking, cash manager, ACC or tax. They can talk about it, so you probably go to that person for advice. (P1)

> We all know that a particular person attended the course. If any related issue comes up and you know the person who went to that course, you can ask that person. (P2)

The staff members who attended the training are responsible for identifying important knowledge to be disseminated within the firm. The person is expected to read through the materials received and focus on the relevant contents to be applied in the context of the firm's operation.

> Every course has a report and you are provided with the materials. The person who attended the course needs to bring the materials back to the office, read through the materials and highlight those areas that are relevant. Then, bring up to the next meeting or straight away tell others. (P2)

So, the acquired knowledge is expected to be shared with the other members of the firm. As mentioned by both interviewees:

> If external training is being conducted, when you come back you are expected to share knowledge and tell others about it, usually by speaking to others. (P1)

> If you attended courses, you come back and share the information from the courses attended by sharing in meetings or presentations, for example, about the changes in the legislation. (P2)

The means of sharing commonly depend on the importance and urgency of knowledge obtained. For example, if the knowledge is related to changes in the legislation or standards that are considered crucial and affect the clients, a specific meeting will be arranged for all staff. During the meeting, the staff member who attended the training will explain or present the changes or updates to other people. Through this formal channel of sharing, all staff members are expected to receive uniform information about the changes. Additionally, if there is a major change in the legislation, for example, one that affects the majority of clients, the

development is made known to the clients through a published newsletter on the website.

However, if the changes are less urgent, informal conversation during morning tea or direct communication with a specific staff likely to be affected by the changes represents the preferred way of sharing. Hence, both formal and informal mechanisms are utilised for knowledge activities with preference for informal methods, probably due to the firm's size that permits regular face-to-face communication among the members of the firm.

> If it is a morning course, you share it in the afternoon. It depends, if it's really relevant, we will have a special meeting and discuss about it specifically. If it is relevant but we can wait, we will share it during the monthly meeting. (P2)

> We have meetings once a month, otherwise, if anything comes up we discuss in the tea room and that would be an informal meeting. (P1)

> Formally, knowledge activity is carried out through our meeting once a month if there are something new, new changes, whatever is relevant to what's going on. Informally, the very basic is, at morning tea or general conversation; it promotes sharing of ideas, which is somewhat easier. (P2)

Apart from verbal sharing, books, manuals or documents received during the training will be made available to all employees for reference. Also, e-mails are sometimes used to inform everyone about new knowledge or updates related to the firm's operation. However, it is interesting to note that, sharing through e-mail is less preferred as compared to face-to-face team discussion. As asserted by the director:

> Because people are busy and I know not all emails are being read, we prefer to have a group session and sit down together. We transfer knowledge that way. (P1)

Further, systematic maintenance of clients' records and documentation enhances the firm's understanding of the clients' needs. For instance:

> We also have niche and files notes. We know what the clients do, what businesses they are in and what systems they are using. So, we have a quite well based history about the clients. Because we probably know our clients quite well, we transfer and pass knowledge about the clients quite well. (P1)

According to the director, once the client's details are recorded on the file, it will be passed on to the administration staff for processing. The file is then forwarded to the responsible staff who will be handling all the records for that specific client. Information that is documented in the client's file will then be uploaded onto the database by the administration staff. By having the soft copy records about the client, all staff will be able to access the client's file through the database, which permits sharing of knowledge.

In summary, the main mechanisms used for managing knowledge in ACC include external training sessions, staff meetings, informal conversations, group discussions, e-mails, manuals (office manuals, reference materials) and computerised records (database and accounting software). However, the director admits that some of the content in the office manual is quite out-dated. For this reason, most changes in the procedures are handled on an ad-hoc basis, through informal communication, and the staff members are expected to update their own reference file which contains written up instructions.

Due to the small size of the firm with limited staff members employed, most knowledge activities are carried out informally with minimal effort to formalise the KM processes in ACC. Nevertheless, to leverage positive outcomes from KM, improvement in the current practice could be made through assessment of aspects that affect employees' preparedness for KM changes.

Influencing changes on the processes for managing knowledge

According to management, there has been no major change performed since the firm was taken over about four years ago. Most changes were considered minimal, focusing on continuous improvement, and were carried out informally. However, a major transition was implemented involving modifications in work processes and the information system usage, which was carried out soon after the firm was taken over. The director realised that some employees were not happy with the transition; however he believed that the transition did not cause any major problem to the employees.

> There was always a pretty small change, no major changes; it is incremental, except the one that I've said before, when a new system was introduced about three years ago. Things get along pretty well. Like other organisations, some people will embrace change very well and others might not like it. It is about nurturing people as well. (P1)

On the other hand, from the employee's point of view, the transition had brought huge effects to the firm's operation. Consequently, different reactions from the staff members were noticed during the transition:

> When the new director came on board, when he came in, he performed some changes. Everybody was 'freaking out' because they have used the old system for so long to do the job, and it was quite hard to change. (P2)

Due to different understanding of the change effects between management and people at the operational level, no formal initiative was carried out to address the concerns raised by the affected employees. Hence, the new system implementation was carried out only with the support of informal mechanisms.

From the firm's experience, both director and employee agreed that changes that have been introduced in the firm have received different reactions from the employees. Some people can embrace change very well, while others react in the opposite direction. For this reason, it is important for management to nurture change understanding among the members of the firm in shaping their beliefs about the significance of the proposed change.

Although the director admits the importance of being aware of the employees' concern, the benefit of change for the firm is a priority for management.

> You can't please everyone at all times. You've got to see where your organisation is sitting. Just make sure if people have got concerns, those concerns are raised. Some people are happy with it, but other people are not. But it is important to bring the organisation into the future. I mean changes are needed; they might be good and speed up the operation. (P1)

Additionally, it is asserted that the transition process became easier if the staff members received explanations about the purposes of the changes and gradually experienced the benefits from the changes. For instance:

> Once they know how easy it is and talk about it and are communicating on how it works, experiencing the advantages and have found that it is really good, there will be no more issue for that. (P2)

In a similar way, management claimed that people will be ready for changes if they have an understanding about how the changes could improve the current situation. In other words, the goals for undertaking the change should be made clear to the staff affected by the changes.

Further, both management and employee have a similar view on the importance of establishing a clear goal for the change. The clarity of the change goal could provide employees with certainty in order to accomplish the change initiative. Additionally, a proposed change should focus on improving the current situation and lessening the burden to complete the task. As he mentioned:

> I thought sometimes we need to explain how change could make life easier and to make things better. If you are making changes, they should make life easier. There is no point of making changes if it is harder. (P1)

The importance of articulating specific change goals and benefits is also seconded by the employee.

Here, each person covers a different role, so you need to explain what would happen to them as a result of the changes and focus on benefits about it for each of them. (P2)

The goals need to be made known to the employees, so that they have the opportunity to decide about the idea of change and provide feedback regarding the changes. Consequently, any concern raised by the staff members must also be discussed.

Perhaps we are happy with what we are doing now. If the staff members have ideas to get things better, in clients' meeting for example, they can have a chat with me about the idea. We will look at it and see what we can do about it. (P1)

In addition, the decision to change must also be made based on the evaluation of the firm's current performance. This is intended to determine the need for the proposed changes to be carried out in the firm, including its long term effects.

I mean, what you are trying to achieve in the long run. People will decide. See in the long run, people will think to buy in or not. (P1)

Apart from the development of change understanding among the employees, findings indicate that consideration of the firm's conditions and the employees' characteristics is also crucial. Management should provide an appropriate context for the changes and at the same time evaluate the employees' capability to implement KM changes. On the basis of the findings, the important contextual factors for ACC include employees' participation in the change processes, communication flow between management and the employees and opportunity to learn about the changes.

In the first place, it is important to ensure that changes proposed are able to address people's needs and concerns, so that the change to be implemented is seen as relevant. The employee suggested that one way of making change relevant to the employees is through encouraging opinion and suggestion from the bottom

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level of the organisational hierarchy. This effort is significant in the situation where the changes are proposed by new management with limited knowledge about the firm's existing operation. Essential input includes opinion on whether the change is relevant, needed and in the employees' favour, based on their experience working in the firm before the firm was taken over. For example:

> Management handled it [change] in quite a good way. One thing that should be done differently, is to know from the people here and to hear from people here about what to do rather than telling them what to do, in order to make people feel a lot more comfortable. (P2)

Besides minimising employees' vulnerability in relation to the change effects, allowing people to participate and give feedback about the proposed change implies that the employees' contribution towards the firm's improvement is being appreciated.

> He [the director] needs to draw knowledge from the existing people. Some of them are at the age of retirement. So, being heard will make them feel a lot more informed with what is happening. It's about mutual respect. (P2)

Some staff members have been working with the firm for quite a long time, so have extensive experience with regards to the firm's operation. In conjunction with that, a newcomer introducing changes presents some challenges. Therefore, by getting down to the bottom level (operational) and listening to the staff members' opinions, it is expected that management could better capture ideas or problems about the changes.

> Management would benefit if they knew ideas or problems from the people. It is about consultation. The director comes in and wants to change everything, all at once without knowing about what really happening here. It's great, but just not knowing about the changes, it makes people fear. (P2)

Consequently, an effective communication structure, which provides clear explanation about the goals of the proposed KM change, could help the staff to be more ready for the changes. Further, the employee stressed the importance of developing good rapport between employees and their superiors. It is advocated that socialisation among management and colleagues outside the workplace could enhance the communication process. Interactions in such an informal environment with less pressure and fewer barriers could help people to better understand the change situation.

Besides, opportunity to learn and gain knowledge about the proposed change enables the employees to be prepared for the changes. In ACC, apart from attending external courses to obtain new knowledge, learning is commonly accomplished informally.

For example, it is surprising to know that formal induction is not provided for new staff members, nor is any particular program designed to assist employees in coping with the changes. Rather, the employee asserted that informal conversation and learning are more appropriate for them, due to the small size of the firm. It includes encouraging an open door policy that facilitates learning, by which employees can exchange ideas and views while performing tasks.

> There was no specific program to assist employees to go through the changes. Again, this is a small practice where you see the people every day. You can ask about the changes and we don't need any system or program for that…For a new employee, it is mostly pretty much in the book but, we will not just leave them. There is no formal induction program for new employees, but everybody helps each other. You know what they need to know, so you just let them know and guide them…We promote an open door concept here. Again, as a small practice, we really know each other. (P2)

Additionally, individual characteristics could also explain different reactions from the different groups of people toward the proposed change. The director admits

that an individual's attitude and awareness are among the important factors at the individual level that could determine the staff's willingness to embrace or reject change. As mentioned:

> I think the important aspect to consider is the attitude. You know everything that you do in your life. The issue is do you want to embrace change or not. Probably, we got people from age 35 to 68 years old. Are they willing to change or not, that is the issue. (P1)

The employee claimed that those staff members who had been working for a longer period at the firm were comfortable with the existing procedures, thus had more issues relating to the changes.

> Some people have no problem and I supposed ones who adapt and like changes have no problem. Without talking about ages, those who have been here longer are more settled; they have more concerns about the changes. They are happy with the current style, so it's quite hard to change. (P2)

Also, according to the employee, those who prefer change and have a background knowledge related to the proposed change would have less of a problem in adapting to the new system. Moreover, since each staff member has their own niche, it implies that an individual's familiarity and knowledge also determines the ability to cope with the changes. An employee with necessary expertise, for example, would be more excited about the changes, viewing them with anticipation and the proposed change would be perceived as likely to benefit the whole firm.

> Again, I've been here from a firm that used pretty up to date practice. When I came here, I felt back a decade. The former director didn't really worry about change and was not bothered about making changes. We had a very out-dated system. Now, everything is very up-to-date. When the new director came on board, he performed some changes including upgrading the accounting system that we used. I keep up with information

technology (IT), so it helps; it was easier for me to cope with the changes. (P2)

Moreover, the existence of a change champion with sufficient knowledge in the niche area is also vital. This staff member will be an expert and referent who facilitates other colleagues' adaptation to the new procedures or practices. Consequently, collective cooperation among the staff could ease the process of adapting to the changes.

> I have a niche here, so everybody can refer to them and make additional notes to get info to get the job done. They also can refer to one person and help one another. (P1)

> When you introduce changes, generally there are couple of people who can understand very well so they are 'go to' people for anyone to understand this. (P1)

> It is a small office. If another person has any issues, you can help colleagues with their question. (P2)

Hence, both organisational and individual factors are important to mould employees' reaction to the proposed change related to knowledge management processes. Apart from that, another factor that is found to be imperative in shaping reactions to KM changes is the approach adopted for managing the change process.

> Talking about management, it comes down to managing the transition. They really need to look at others affected by the changes. They are excited with the changes, but not everybody is going to be. (P2)

> From what I have learnt about change, it is all about how it is presented. Management should look at it from that person's perception and trying to understand what they want. If you can focus on people's concerns and help them to focus on what they want, it could reduce their fear of change.

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It is already half of the battle and people will be more accepting of change. (P2)

You also need to focus on goals. People could be a bit more relaxed with the changes, based on the way it is presented… They just want to know which directions to go. (P2)

Explain to them the benefit for each people, there will be no dramas. By the end, they are all excited… Compare old and new stuffs to make them more comfortable, because they are not losing out. (P2)

As a final point, the way change is presented to the staff members or change approach could also influence people's reactions to the proposed change. Different people might perceive change differently; thus, various ways of introducing KM changes in the firm could result in diverse levels of change acceptance.

Summary of Case 1

Findings from case 1 indicate that as a small firm, the need for knowledge management in ACC focuses on satisfying the current job requirement; with limited endeavour of generating and utilising knowledge for long term strategy such as diversifying the services offered.

In conjunction with that, the processes for managing knowledge in ACC are centralised on obtaining, sharing and applying knowledge obtained. With its limited expertise and human resources, the firm depends primarily on external sources of knowledge to strengthen its knowledge bases. The firm also depends heavily on individuals' expertise in a niche area, which could escalate the risk of losing intellectual resources if the existing experts leave the firm. Sharing of knowledge is commonly informal, with minimal standardised procedures and programs for undertaking the processes for managing knowledge.

To conclude, although knowledge management changes in ACC is considered infrequent; the foregoing changes have improved ACC's operations and

simultaneously enhance the staff members' knowledge and understanding about their clients' businesses and industries. Nevertheless, a continuous improvement in the way knowledge is managed in this firm is crucial to ensure sustainability of the firm's knowledge, in muddling through with high turnover possibilities faced by the small businesses sector.

CASE 2 - Knowledge Management and Change in CNS

Introduction

CNS is among the big five leaders in the accounting industry. The firm provides advisory, assurance, consulting and tax services. The operation of the Waikato office is also supported by a branch in a nearby town. The total number of employees working in this firm is about 90 people with six partners.

Being among the leaders in the industry, the firm provides services to a wide range of client businesses including public and private companies, regional and local governments, non- profit organisations as well as individuals.

Six participants were interviewed in the study: three interviewees from the managerial level and an equal number from the operational level.

As an established firm with strong industry focus, vast knowledge and experience in the industry provides an important foundation for the firm's competitiveness. Hence, the organisation has established its own KM program. Besides KM processes implemented according to the distinctive functions in the organisation, KM programs are also carried out at regional and national levels. Additionally, the firm also provides training and courses for small and medium practitioners in the accounting market.

Due to its nature as a branch of a larger organisation, frequent changes in the operation, including KM processes, are considered necessary and part of the strategy to improve the operations. Consequently, changes are generally well accepted and embraced although there are few concerns and challenges in the implementation of various KM change initiatives. The following sections present the findings gathered from the interviews regarding views on knowledge management and knowledge management processes, the influences of change on knowledge management implementation and knowledge management outcomes in CNS.

Defining Knowledge Management (KM)

From the interviewees' point of view, knowledge for this organisation is mainly concerned with managing clients' information. This management activity encompasses the processes of using, controlling, storing and sharing client information among the people who are involved in the processes.

> KM: I think this relates to clients' information. Knowledge, how it is used, controlled, stored and shared, how are people involved in that client information. The whole reason why we exist is for the client. So, managing that information, sharing it and using it in a way that is valuable to the client, for us are vital. (P5)

Apart from that, the process of managing knowledge also reflects the establishment of a platform to record the procedures and processes concerning the compliance tasks, which represents the major operation of this firm.

> We obviously have plenty of knowledge that we stored and computer systems that we used. It depends on what tasks; you're accessing the knowledge for. We have processes and procedures which we follow in relation to the engagements that we've completed. (P4)

Hence, both internally generated and externally acquired knowledge are considered important for the firm in order to provide and improve its services to the existing and potential clients. As claimed by the interviewees:

> There are two levels of KM for this firm. Knowledge management is about internally managed knowledge and the firm as a whole nationally is about a unified client system which is a resource for us. It should be treated as an asset rather than a database. (P6)

> How I bring the information back and share it, will determine how much it benefits us and the clients in the future. So, with that kind of information, being knowledge is vital. (P5)

It is also found that the nature of the job among people at different levels in the hierarchical structure reflects different types of knowledge to be managed. At the operational level where most tasks are procedural, the process of managing

knowledge focuses on the management of explicit knowledge. Within this compliance-related scope, procedures are documented for references in a standardised format.

On the other hand, at a higher level where consulting jobs are involved, mainly knowledge exists as tacit knowledge in the form of opinions and is based on experience dealing with clients in the industry. In consequence, difficulties of managing this kind of knowledge arise as this industry-oriented knowledge is held in an intangible form by the top tier persons such as partners of the firm. As mentioned by one of the managers:

> In our area, focusing on services, most management of knowledge is probably explicit, with work we are doing. We have a lot of processes and procedures, which is great when new staff comes in as well. Probably at higher level of work, it is not so much documented, because it is more of opinion, consulting, dealing with clients. With more opinion, consulting with client, it is more important to learn from experience and it is intangible, so partners have a lot of knowledge. (P3)

> We do try to write it down, but for high levels job and consulting, we do not. You know, this is what happened. So, the majority of the work that downstairs the staff are doing is documented. (P3)

In a similar way, the interviewees also claim that the combination of standardised procedures and experience is important for completing the assigned task.

> Well, it is a combination; there are some processes but predominantly, knowledge and processes that we do on a regular basis. The key things are documented in the report. But, with knowledge you can't capture everything in the report and write it down. You keep in the people who are involved in that. (P4)

> I think with knowledge we have in two forms. You've got explicit which is written down, anybody can go look at that, it necessarily makes sense to them. But anyone can access it. Then, you have tacit knowledge and that is the knowledge that you want to try and make as explicit as possible because,

especially in service, we have a lot of employees and they are incredibly valuable because of the tacit knowledge they have. (P7)

As a result, a good balance of both tacit and explicit knowledge is considered important for the firm's operation, depending on the job performed by each person.

Processes for managing knowledge

KM activities in this firm are accomplished in the form of meetings, processes and information systems. Being a large firm that provides services to clients with a wide range of business backgrounds, gaining knowledge from different sources is vital for the firm. As claimed by one of the managers:

Yes, we collect information by acquiring knowledge internationally, nationally, locally, formally and informally (P5).

Further, with many key experts in various accounting and consulting related fields, knowledge is largely generated internally either within the branch or across branches of the organisation.

A lot of our knowledge I would say comes internally, because it is such a large firm. It is not only in Hamilton, but also from the branch in Auckland. We have experts in various areas and we are usually the first one to know. (P3)

So, when new legislation comes out, we sit in-house, and with our company network, we have specialists in different areas, yeah. (P3)

CNS also implements a specific mechanism to assist new entrants in gaining knowledge from their superiors. For instance, new employees are assigned to work with an experienced higher ranking employee for a certain period of time. During this period, the new employee could gain as much knowledge as possible in relation to his or her job function, department and the firm as a whole.

The practice of a 'buddy system' for new employees is seen as a good mechanism for learning by the employees. It is claimed that this system permits effective acquiring of knowledge between an experienced employee and the new entrant. This process is important since dialogues between buddies usually involve transfer of tacit knowledge. As claimed by two of the employees:

> Each new employee working with the company will be provided with a buddy system. The buddy is usually two levels up from you. You can ask any questions to your buddy. (P6)

> When I started here, I received what they call a 'Buddy', someone senior probably about two levels up, and this is someone who you can go to and ask all sorts of silly questions; a lot of it is you receiving all tacit knowledge. It is like who I proof my readings to. (P7)

Direct communication between new entrants and their superior not only enhances the understanding about the explicit procedures, but it also builds good relationships that essentially facilitate the process of acquiring tacit knowledge.

> A lot of it is you receiving all tacit knowledge. It is like who I proof my readers to. (P7)

In addition, knowledge about the industry is also acquired from external sources through the interactions with other stakeholders. For example,

> Informally, knowledge is acquired in a way of going for coffee with people, clients, suppliers, to know what is happening in the marketplace, to build relationships and to share things around. (P5)

Apart from that, having contacts with other professionals through involvement in professional bodies is another mechanism to obtain industry-related knowledge. This mechanism provides advantages in terms of expanding the network and increasing the professional knowledge of the individual.

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Professionally, in New Zealand we don't have to do CPD. So, it is not necessarily a requirement for the accountants. But I personally join the professional bodies, I receive e-mails and magazine, updates of what is happening, keep informed with the network and thinking around. Knowledge gets down to individual, if not the organisation, to update knowledge because we are knowledge workers. I think it is important to keep it current. (P5)

Moreover, being in a knowledge intensive business, the ability to create and utilise knowledge provides competitive advantage for the firm. It is claimed that the process of generating/creating knowledge is highly encouraged in this firm. For example, best practices are developed continuously by teams in the different departments.

We've also got a research team, which deals with information that comes out and they can work out something. For example in tax, we have a team which is dedicated to research and making submissions to the government, a little thing the entire tax team will update and produce when the law changes. (P7)

Knowledge creation is encouraged here. Share new knowledge with the team. We are quite a long away from the head office. So, we share from day to day about things in our area. (P8)

The main reason for this process to be performed internally is availability of experts in the various areas that enables knowledge enhancement. Vast experience held by the team of experts and high individual knowledge value provides a foundation for the continuous process of knowledge innovation in CNS.

The base is from your education, professional development and then it comes from your on-the job experience - something that you gained by doing the work. (P8)

It is based on experience as well. In our area [compliance] for example, a decision about the best way of doing things is obviously more at the management level. It is kind of reviewing and testing different ways of doing things and the end product. They will decide the best one to use and we are happy with that. Reviewing the initial one, testing and it is a constant change. It is constantly evolving. It is not a problem. You are not going to stay forever and need to improve along the way.(P3)

Sometimes we don't know the changes until we come across them, as long as it is adaptable. (P3)

Additionally,

We have quite meticulous review processes for everything we do for clients' reviews. And myself as a manager, I review the client's report for the first and second review. It is quite a meticulous review process before everything gets sent to the client. And through the review processes, it involves constant processes of improvement; what we provide to a client, it does not stop there, it is a gradual process of improvement. (P4)

Further, the process of enhancing the existing knowledge is also facilitated through provision of training for and discussions among the employees.

We have internal training, which I guess the idea behind the training is to get everybody within corporate finance for us here and for the Auckland team, the knowledge that they have in doing engagements in one team. (P4)

Knowledge is created when we do something new. So, we do something that has not been done before. We work out on the job; that is, we work out what the answer is. (P4)

We also have monthly meetings and seminars where we discuss these changes and also discuss certain issues within a certain area. It is done internally. (P7)

You can have technical expertise that you can read from the books; you also need to know what the industry does, that you need to pick it up all the time, so that some of the knowledge is growing. (P7)

Apart from relying on individual and team expertise to improve the existing knowledge by blending with knowledge gained, new ideas or improvements are documented for reference. Although there might be different elements involved in making decisions for specific client consultation, basic knowledge acquired could be utilised and exploited to satisfy the current requirements.

The other aspect is when somebody is doing something quite often; the final report of the evaluations will be available on the database for others to look at. This morning the president was looking at something which is new to us, and we referred to a report from Auckland that has something similar and we understand what are the issues are in doing what we proposed to do. (P4)

Sometimes there are no standard procedures, so you need to make your own notes; they may become knowledge that you share around. Someone such as a new staff member and if he or she wants to know the background, he or she will go and look at it and then find how I did that. (P7)

As a large firm with established KM information systems, information and knowledge is documented manually as well as in the various computerised systems. The initiative for documenting knowledge permits accessibility for authorised employees at branch and national levels.

So, we used to take part in a quality assurance system, that has procedures and processes we need to use in our area. We do refer to that. And we also over the last couple of years developed an internal internet, the national system; we have work papers in there, which all national offices are using with standard format and instructions. So, a lot of compliances are explicit, because it is not too much. (P3)

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There are various systems that cater for the need to record internal processes and procedures, current client records as well as information and knowledge about the potential clients. As mentioned by the participants:

> Client database information system: we have a database about existing relationships with clients. We also have our system on the intranet; it gives me what's happening in the organisation, quick links to companies or other people, if I need to know information about legitimate company, directors, ownership details... It is quite useful to know whether they are legitimate or not. We need to engage a new client, so need to quickly get information. (P5)

> First, for our business recovery team, it [KM] is about the database, a system with a standard legislation database. It contains both internal and external information…. When clients call to ask about a particular issue, we can directly access the database. There are many databases here and master files. (P6)

The process of recording knowledge resources on the systems is regarded as one of the learning mechanisms for employees to learn from the best practices that have been developed.

> The reports which are included in the database are something that you can access back and review. (P8)

> We also have a learning style where we try and put materials on the database so anyone else can go and have a look. (P7)

> For tax, we do have a database and that contains a lot of research that people have done on a specific act or legislation. We have a normal type of database and it has been a ground for research on a particular topic or provided advice for our clients and I think it may be very helpful for our people, for both training and learning, or even find it useful to the client.

So we go through it and we pick up everything the client requested and that someone can refer to. (P7)

Further, the type of knowledge that is able to be recorded by a particular department or function largely depends on the nature of the job performed. For instance:

Yes, most of the compliance work is processing, thus documented. But, more consulting which top tier people do in consulting, it is not much documented. (P3)

So, those processes and procedures are documented obviously. And in doing a new engagement we go back to the procedures. And since the procedures are being used on a regular basis, so actually you do not really refer back to it, but it is documented somewhere if you need to refer to them. If you are a new staff you may need to refer somewhere. But we are doing it on a regular basis; we do not need to refer back to those procedures. (P4)

Although most knowledge documented is procedural based, there are also some guidelines for decision making being recorded to a certain extent. The guidelines provided show the effort to make some of the tacit knowledge more explicit for future utilisation. As mentioned:

When we are doing assignments, we have quite a few different sources of information, so we do refer to procedures that are relevant. We keep records of a lot of past prior engagements we've completed, so we do the evaluation of business processes based on what we have evaluated before. We have sources of databases to store all the previous evaluations of business that have been completed. So, we evaluate how we can go with the databases. (P4)

Nevertheless, individual understanding on utilising the recorded knowledge is essential for effective knowledge application by the employees in the near future.

Some people will give you a piece of work and you recognise that it is something that you have done, and half of it will apply to the situation and because the person is taking the template, the person thinks that is right, but they haven't probably read the entire information. They think it is right, but it is not, you still need to think and you can't just rely on someone having done that pile of work. (P7)

As a consulting firm, utilisation of existing knowledge to accomplish an assigned task is considered essential. In conjunction with this indication, applying fundamental knowledge related to a standardised regulatory obligation is common. However, in certain conditions, skills and experiences are necessary for employees to employ the knowledge to meet with the different clients' operations and requirements. Although the firm operates within a regulated accounting industry, there are subjective decisions to be made as part of the consultation services. Hence, expertise that is developed from the previous engagements influences the ability to apply the fundamental knowledge in a diverse situation. The idea regarding the importance of knowledge application in this firm has been proposed by several interviewees:

So, the more important aspect of knowledge for me is the knowledge of having done things in the past. The evaluation is extremely subjective and judgemental basis. And the more evaluations you have done, more capable you are in doing the evaluation. (P4)

The type of work that we do here is a lot of requirements and obligations to be fulfilled. So it is about not breaking the duties. Main knowledge is about the application of the legislation, which is standard procedures, standard legal, but we can change a little bit. You have to know where to use it and make amendment to it. (P6)

Well, our knowledge is in a mixture of both explicit and tacit. In tax, because everything you do has to be catered for a specific company or specific situation and at a specific point in time, relating to the law that

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exists at that time. You may have write up for one person, I mean if someone else tries to apply it, they have to apply their own tacit knowledge that needs to change, to make them applicable. (P7)

In other words, since the client's requirement and business background could be varied, the ability to utilise existing knowledge in the different contexts is crucial.

In this firm, to ensure employees are able to expand their expertise, proper learning opportunities are granted by means of formal and informal learning. Learning could be in a formal context such as providing specific training. On many occasions however, employees learn informally when performing the job assigned to them. This process is accomplished through discussions with the team and observations from the former engagements.

Whoever on the team and whoever is doing that particular job will do it on the basis of what they have learned from Auckland branch. We do not have formal training necessarily on every issue or something that is new for us. We only have training for something that is really relevant to us. There are an unlimited number of possible engagements that we do where there is no formal induction, but the situation is you're working out as you go along. It is not possible to do training for everything; training takes place while doing your work. (P4)

There is a lot of on the job learning. You can have any university degrees and if you've got no sort of common sense, you will fail. You have to be far ahead of them, for on the job learning. I've been graduated with a degree and start realising how much more to know. You may learn theoretically the best way to do it, but we can get you numbers to provide you with how you do that. But, there is no one way of doing it, there are multiple different ways, and you will be asked for a better way and you have to know from the routines and you go for the better way. Most of them you can do in a better way. (P7)

Also, as the tasks performed in this firm are specialised according to the engagement, dialogue among members within the function represents an effective way for applying knowledge. In other words, team members' experience of dealing with a previous engagement could facilitate the utilisation of the same knowledge in a different situation.

> For tax, knowledge is also from external sources because we don't create the law. The law is created by the government; we will be looking at, for example, when there are changes in the law. We will receive information from IRD, where they released the issue paper. We also have information from the government, and our team will review those and discuss them with the professionals and IRD and try to understand how it fits our client with the matter. Try to discuss the changes so that we can make it as workable as possible. (P7)

Further, knowledge that is gained, generated, captured and utilised in this firm is also disseminated within the firm as well as across the branches. Various ways of sharing knowledge are practiced in this firm. For instance, the main mechanism for disseminating knowledge is through formal meetings at organisational and functional levels.

> We have technical breakfasts, one this morning to discuss current issues. We have weekly meetings as well; if anything comes out, could be ongoing things to improve, new things to improve, so the whole team is here and it is really a good way to share that knowledge, and obviously, not the documented knowledge. (P3)

> We have Friday morning meetings, call as Morning prayer- more about social, leadership, information from other staff members including from the Morrinsville branch. It is quite useful. Then, there is the Monday morning tea meeting, where we share around what is happening regarding the workflow. It is specifically about work. (P5)

Every Friday morning we have a session where we share news from all departments. We can discuss informally at the end of the meeting session. We also share the company experience, to influence others by giving on example. We can discuss together on how to go ahead with the changes. I think communication is important. (P6)

Likewise, informal discussions are common among the teams or branches across locations to stimulate the sharing of knowledge.

In our team, we have conversation and discussion on daily, if not hourly basis to update about the information received.... We catch up once a month with colleagues at Wellington, Christchurch and Auckland about new development. (P5)

The availability of key experts working in the firm provides the advantage to carry out internal training. During the training, experts from a particular area will share their knowledge and industry updates with team members in the same functional area, including those from other branches.

For example, the internal people who are competent about changes in the employment act. They will set up training and the team will go to each office to deliver training or conferences. (P6)

Formal training is also needed for sharing when there is an actual requirement when the legislation changes. (P6)

Moreover, informal learning activities are also encouraged in CNS for transfer of knowledge among employees. Besides focusing on the operational procedures and processes, other issues related to the clients and the industry is also being shared. For instance:

Sometimes we put on slides during lunch time. So, it is from formal to informal procedures. (P6)

We have discussion at our office at least. Even if the staff does not get involved in the assignment, they might listen to the discussion and they can get something to add to enhance the process. They pick up more about what you're talking about and learn new things as well. (P4)

During informal conversation, we exchange information with others to know about client's financial background for example. We might have outstanding fees involved with that client. With that information, we can go to the credit controller to check about the client and do aggressive invoice collection. It helps us to know the information about the client and what it means to our client. It depends on us understanding the implications of the information that we received. (P5)

Hence, it could be said that, technical and expert knowledge held by an individual has significant value in both direct and indirect knowledge dissemination processes.

I guess one way of sharing knowledge is through experience. It is job specific, so there might be somebody else who has done something new, previously there might be some relevant reports, somebody else to refer to and maybe we have somebody else who is starting. KM is about being able to transfer or share people's experience. (P8)

Well, basically we prepare reports of our judgements and all reports have reasons why we come to the conclusions. (P8)

But we are also pretty dynamic and if you are innovative and you find a way that is better, more efficient, more economical, and produces much better outcomes; you can share it and people will be looking into it. (P7)

When I started here, I received what they call a 'Buddy', someone senior probably about two levels up, and this is someone who you can go to and ask all sorts of silly questions; a lot of it is you receiving all tacit knowledge. It is like who I proof my readings to. (P7)

For other employees, sharing knowledge among the team members is common in completing the engagement. Accordingly, cooperation among the team members represents an essential element for disseminating knowledge.

> Everyone else is very experienced. So, generally they will tell you what is going on, all they suggest: we suggest you to do it this way and here is what you are doing. You won't sit down and just do it, there will always be someone who will help you. (P7)

In spite of that, it is also argued that individual-based assessment as applied in this firm has affected knowledge sharing practices among certain people.

> As a professional service firm, we are quite individual, in that the performance is according to charge per hours. Individuals could be quite protective of their knowledge. People have a particular agenda, because we are quite individual based, so why should we share knowledge with you. (P5)

It is further claimed that this dilemma could be common at the higher level, as people further up the ladder compete to be engaged in an eminent client's project. As stated earlier, people at a higher ranking perform consultation work and possess vast tacit knowledge, which increases their value in the firm. Therefore, exposure of this kind of knowledge to their peers or subordinates is perceived as affecting their merit as an expert. This concern has been expressed by one of the managers:

> Some mechanism of performance management hinders knowledge from being shared. It can happen more at a director or partner level in order to get a particular client. Knowledge becomes power at a corporate level. With power, you can influence people. (P5)

In a similar view, some employees also concerned with the effect of contributing knowledge, which from their perspective would decrease their value as an

employee in the firm. This statement is claimed without realising that value of knowledge could actually increases as it is being shared.

> I have worked in a few different places. I think some people are protective of their information. They do not want to share, because it leads to power and to make them more indispensable. So, that is probably one thing... Knowledge is basically power, really. Some people who are willing to share all knowledge that they have, making them more dispensable, really. (P8)

Since communication of knowledge is accomplished within the firm and with other branches, the use of computerised information systems plays an important role as it enables the pool of knowledge and updates to be reached by wider users.

> There are about twenty staff members at the moment in my department. So, it is very important that everyone shares the information. We discuss the important ways of disseminating information. E-mail is the main thing, so always read your e-mails. (P3)

> Sometimes if there are changes in the legislation, it will be applied through the database. (P6)

The practice of disseminating knowledge through the technology platform permits information accessibility by employees from different functional areas. Although sharing of information across functions is commonly limited, the process of gaining knowledge through the platform is more structured.

> There are some aspects about clients, it is through the database. For example, someone from auditing is looking for a potential new client and corporate finance has done evaluation for that client in the past. The things that we have done in the past, which is probably the information flow. Obviously, it is through the database, that's probably the main flow of information. The information is not for general things, but for business procedures. (P4)

However, from a contrasting view, sharing of knowledge through the databases raises the issue of knowledge safety and protection for certain employees. It is asserted that accumulation of knowledge in the databases exposes the firm's knowledge to the risk of being misused or manipulated. As highlighted by one of the employees, the concern relates to the security level of information systems used to maintain knowledge, which, if not properly established, could affect the firm's reputation.

> With the company, we do try and make as much of the tacit knowledge as explicit as possible. The firm has safeguards in place so that only the correct people get access to that knowledge. Something that is written down, what is written down, it is out for other people to see it. We've got security protocols in place, the document that goes out, the document that comes in, sharing the documents internally. There is a bit of unspoken law, which is tacit knowledge, you don't say certain things to certain people, we don't talk about your client. But, that is a common thing. (P7)

> They [all departments] have a particular database which is restricted to only certain people within that team who are working for a particular client. (P7)

> I think there has been a move recently to try to put everything online, but then you also have to deal with security, put things online, access right when certain things go online. (P7)

In conclusion, CNS as a large service professional firm has established various processes for managing knowledge including the process of obtaining, developing, utilising, capturing and disseminating its knowledge. While various systems that have been established could be considered as effectively managed the explicit knowledge in this firm; efforts to manage knowledge still hold some challenges, particularly concerned with tacit knowledge. Still, the findings indicate that CNS has invested enormous efforts and continuous improvements in its current KM processes despite the challenges. These challenges could be addressed by

understanding various factors that influence employees' willingness to participate in the KM programs introduced by management. The following section presents the findings from the assessment of factors that influence changes in the ways knowledge is managed in CNS.

Influencing changes on the processes for managing knowledge

As a branch of the industry leader, CNS has experienced many changes in its operations. Changes in the regulations, clients' portfolio and leadership are constantly occurs in this firm.

> Accounting firms went through a lot of changes in the past five years. We've merged, a lot of things, changing all the time. We are quite well ingrained to be ready for the changes now. (P3)

This situation does not only physically impinge on the employees, but also affects the firm's resources and procedures. Consequently, the changes have also shaped the knowledge flow and processes in this knowledge intensive firm.

There are numerous factors that influence people's reactions and preparedness for the changes in the way knowledge is managed in this firm.

Due to the fact that changes in the processes and regulations are evolving in this industry, the management team believes that developing an understanding about the proposed change is important to help affected employees better understand the ways changes affect them. In order to develop understanding among the employees, various change introduction strategies have been instigated.

First, the employees are made aware of the importance of the changes to be carried out. Principal reasons behind the implementation include fulfilling regulatory requirements, catering for business operation expansion, as well as meeting diverse clients' needs. Explanation on the need for such changes is also aimed at guiding the employees in the right direction for KM changes.

> Work papers are placed on the system, so you are going to use it. I think if you're not changing, you will be outdated. (P3)

One extra thing to add, for people to be aware with everything that the little change that comes out, sometimes, with so much change that you don't know what is right and what is wrong. (P7)

Second, following the explanation on the appropriateness of the changes for implementation, the goal of each KM change initiative must be made clear to the affected staff members. This is particularly vital for a large consulting firm offering a range of industry-focused services; that firm is obliged to comply with changes in the numerous sets of laws. Most of the interviewees expressed ideas similar to these:

Being able to identify or focus on the role of the changes is important. (P7)

We are well informed in advance about what is happening. We can ask questions before it comes true. Most changes are opportunity. The aims are to improve output for the whole business and at the end to gain profit. We understand the zero work papers; we understand that we are looking at efficiency, quality. (P3)

The challenges were, it involves about sixty people and you will be away from clients. They couldn't really see the direction of the changes, so didn't like it. (P6)

The change must be approved by everybody. It must be informed to everybody, so that they know what will be going on. Telling them this is what we doing and why we are doing it and this is how we are going to do it. (P8)

Next, to further convince the employees about the importance and the right direction of the proposed change for the business, the implications from the changes should be assessed and imparted. Although there is a tendency for management to focus on the benefits of change, employees might perceive the effects differently.

Preparing people to change is about thinking or planning beforehand, which might be affected, the individual and what are the strategies, what are the possible reactions. (P5)

Both gains and drawbacks from the change should be considered, highlighting efforts to support employees dealing with a new workflow. In this way, it is

believed that people are more ready for the change. Similarly, resistance for changes could be minimised.

> Informing about the benefits of change is part of the introduction to staffs before it is released. It has worked very well. I don't think there was any resistance from staffs. It is like one stop shops that you are looking for, work papers and instructions are placed on X, I think no big issues from staff. You can go there and find it. It works really well. (P3)

> Also, pay attention to details, taking out from the change and learning what the change really means. (P7)

Apart from the implications for the employees, the effects of the changes with regards to the services provided are also essential for developing employees' understanding about the proposed change. For instance, one interviewee stressed the importance of:

> Thinking about the stakeholders who are affected in the change; both primary and secondary. Considering strategy to use or change strategies, for example project management. It is being used a lot here. I'm happy to do the changes to ensure my clients get what they should. (P5)

Furthermore, since the changes are commonly introduced from the top, managers and employees considered that management change approach and support plays a significant part in assuring employees' understanding regarding the change.

> I think that support from management is important. I think it is from the top where the knowledge comes on-board. (P3)

> We, management, love change. If we don't have it, then we will try to create a little bit. Recently, I learnt quite quickly that the director prefers change and how she likes to deal with change. (P5)

> About the transition, we adapt really well now. At the beginning there was more resistance. However the partner is very charismatic... Based on the result from the survey regarding the changes, the CEO will come down and talk about the result. So, I think it is about accountability; being accountable about the changes. (P6)

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We are provided with training as well. We also have regular trainings once a month and we have trainings for the compliance team... We have another office in Morrinsville town, so the workload is a lot higher now. We are using the same practices to improve output for the whole business through training to keep everyone utilised. (P3)

Support from the management does not occur only in the form of verbal encouragement. Walking the talk, being with the employees throughout the change processes and providing appropriate physical infrastructure could prove management's commitment to change implementation.

Regulation change for example, it affects the operation...The managing partner communicated the issue well and most people are satisfied with the way changes are handled. (P6)

Management gives us training and explain this is why we are doing it. All of the managers are doing the same way. (P3)

The only issue is during the change there is support in places such as training as needed. Obviously some people do like change, some people don't like change. Probably, the organisation has to prepare to support the changes, for example provide training as needed. (P4)

Just support them, providing the infrastructure for the people to actually change. For example, they want you to get everything online, then give us the time and resources and access right it so we can put things online. (P7)

Similar to the other professional service firms, CNS provides industry-specialised services to the clients. However, diverse types of services are offered for the different functions such as advisory, assurance and tax teams. While it is claimed that performance is assessed on an individual basis, the completion of engagements commonly requires participation from the team. Hence, changes in the workflow within the function would affect the whole team in that department.

In conjunction with this indication, apart from the importance of developing individual KM change understanding; it is equally important to nurture collective understanding among the team members affected by the changes. Collective understanding results in cooperation among the members to contribute efforts, which, in turn, accelerates the process of change implementation. As mentioned by the participants:

> Our procedures here got routine, we all worked as a whole team. When change comes in we usually end up with the whole team in our area, it usually affects what we are doing...So, it is very important to have a really good team and culture and we did very well. So, when change comes in, it will be well accepted. (P3)

> For accounting firms, we are in organisations with individual thing; if the organisation changes but the individual doesn't change, we still require change and the service there will be mismatched. So the client will be taken by someone else. (P7)

> One thing that helps me first to deal with the change is to team up and shift the way that everyone gets along... Everyone else is very experienced, so they will tell you when you ask hey this is how do you do this, do you think this is a good idea. So, generally they will tell you what is going through that all they suggest, we suggest you to do it this way and here is what you doing. You won't sit down and just do it, there will always be someone who will help you. (P7)

Finally, it is also asserted that collective understanding influences preparedness for change in a positive manner; while resistance or negative influences seldom affect the team's belief. This situation is supported by a strong team and change culture; they are deep-rooted in the firm.

> If there are people with problems in it [the team], it does not take much complaining for others to start the change. Say things that they don't agree with and they will be away from that and stick on their ways, but nothing takes consideration anyway. (P3)

> For people who are not responsible and do not share, it is a waste of time paying attention to that. (P7)

Previous discussions drew attention to the importance of shaping change understanding among the employees by expounding the reasons for change, change goals, change benefits and implications, showing continuous support for change implementation and encouraging collective understanding among the teams. Additionally, the management should be aware of the essential aspect of providing appropriate contexts for changes in KM to be carried out.

On the basis of the interviews in CNS, the contextual factors that are perceived important for implementing knowledge processes include communication platform, feedback opportunity, learning horizon, and the alignment of the firm's overall vision with the change goal.

The establishment of an appropriate communication context is crucial for exchange of change information within the firm. An effective communication system facilitates individual and collective change understanding through the transfer of information about the content and effects of the changes. In most cases, the participants agreed that KM changes in CNS are well understood as ordinarily information about the changes is released beforehand.

> Changes are, for instance circulated around the entire office to make sure everyone is aware of that. (P4)

> We are well informed in advance about what is happening. We can ask questions before it comes true. Most changes are opportunity. (P3)

Also, it is asserted that communication reduces uncertainty, addresses chaos and prepares employees to be ready for the changes. Consequently, communication improves the change process through better understanding about the proposed ideas.

> So, lots of question and answer time with partners. Most of the change is pretty much mentioned before it happens. If change happens before we know it,

probably we have more issues... I think we all can cope with the changes pretty well as long as people are informed. I think it is about communication. (P3)

The important thing to be prepared for the frustration is to communicate. (P6)

Transparency: if people know that change is coming, but have no idea what it is, either they will think that the change is great, but I think most of them will probably think the worst. Reduce the degree of uncertainty because it creates different levels of soundness. If you are transparent and people know what is happening, then they will work more with you rather than you drag them along. (P7)

In a large firm like CNS, communication about the changes between management and the employees is commonly carried out through various mechanisms including during meetings, circulation of notices and sends off the e-mails. For example:

Here, there are different ways knowledge is shared, for example, accounting firm is subjected to change in tax rules or accounting standards. We have national email alerts that we can find out too. So, every time something changes, we get the email from the national office and we can find out about it too. (P3)

With the introduction of system X, we have lots of notice that it is coming. (P3)

We also receive e-mails from management informing about the changes in the organisation. (P6)

I guess it [change] is being known by formal procedures. We have a meeting about it. (P8)

Nevertheless, some employees prefer face to face communication involving people who are responsible for introducing the changes and those employees affected by the changes.

Being in a big firm, you need to keep face to face communication. Being accountable about the changes and the information [about the changes] should come from the people and not through the e-mails. (P6)

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Besides, it is also found that management of CNS encourages ideas and opinions from the employees for improving KM processes in the firm. For instance, feedback from the affected employees and teams with regards to the changes is generally well received by the management.

> You may discuss with these people. We have a special group. They discuss with us. For example, we put on the work papers we're using, it was decided that it is the best one, simple, more efficient than the one that that we are using. (P3)

> Consultation: if there is a big project here, we will have a little team working on that. The team will communicate to us because some people see it as a huge change...In our team, people involved share what they think, give suggestion. What is important is suggestion from people in the team. (P3)

On the contrary, one employee claims that in certain decisions, employees' opinion was not obtained even though the changes introduced could affect the employee's job responsibility.

> Engaging employees, it is not necessarily true. I have not been necessarily included in this business sales development, and it affects me and my work. I don't think that I've been informed about that. (P8)

Further, in the circumstances where opinion and feedback are obtained from the employees, continuous communication among the members will be reflected in process improvement and result in better change outcomes.

> We know the program. It was introduced to all staff members and we were encouraged to give feedback... We've got some feedback on the work papers, on how to improve. It is a pretty good place now. It is better now. (P3)

> You will be sending e-mails and you can provide feedback on what could be doing better about the changes. (P6)

> I've mentioned transparency and knowing how the decision was made, preparing your staff or talking with them about it and also asking for feedback. It might be a great thing at a higher level, but it is not really going to work. The employee is the one who is actually going to tell you their concern about the change. (P7)

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Through this mechanism, management believes that the employees would have a good understanding about the change and would appreciate being involved in the change planning process. The involvement is seen as part of the encouragement for them to cooperate during the implementation process.

> So, they feel part of the team. It is important rather than being told what to do. They feel some involvement in that and they are going to accept change more. (P3)

> I guess having the employees involved in the process means that they are more willing to accept the change. So, rather than saying you do this from tomorrow, you have been involved in the process. Getting them to do more work to evaluate rather than jump into new areas that probably help to improve their readiness for change. (P4)

Moreover, availability of information about the changes and opportunity to participate in KM change process do not necessarily ensure that the KM processes can be accomplished effectively. Another important factor that should be considered is the provision of adequate learning opportunities within the firm. In CNS, formal learning by means of training for different functional areas is continuously executed. The extent of training would depend on the nature of the change itself, which reflected the depth of need for learning. Likewise, informal learning contexts are also highly encouraged within and across the branches. The wide learning horizon in this firm is agreed by most of the participants.

> There is training, a whole range of training including technical, accounting and project management. I see training as a learning process for other people. (P5)

> Equipping everybody with necessary resources such as training people is also important. (P8)

> We do send staff for student training. In a lot of cases, training is run by the company itself for the whole the country, for outside people as well. So, we are pretty lucky to have that knowledge. (P3)

In terms of how the firm manages the changes in the procedures, they are quite formal generally. Whatever change is going to happen, we will give you training on these dates, depending on whether it is a firm wide change or just a typical or task specific change. (P7)

I've also experienced some changes during the implementation of the recovery database and changes in the legislation. For instance, there are new ways of doing recovery actions. We make case law notes that are remitted to the Auckland office and proceed with changes to adopt. In this case we have to do training... We have a continuous system; it is calendar based, rolling out the courses by specific dates. (P6)

Also, a number of the participants expressed their concerns regarding present deficiencies in making the firm's vision explicit. It is proposed that revealing the firm's vision could direct attention towards the firm's aspirations and its relation to the proposed changes. Consequently, it could ensure that the operational processes are congruent with the firm's overall aim.

Strategy: you need to tell me about the vision. If I've got the vision, any changes, I can see how it is going. I know where we are going. I don't really find any vision here. Although it is implied, the strategy is to grow and make money, but beyond that I don't know. I know there is a desire to be an iconic firm. I've seen some information around. I see strategic vision from other organisations, but I don't think that we have it here. It is not formally stated. I feel there is not enough information about where we are heading to. (P5)

I think the vision should be clear, the timing and mechanism, for example the expertise. Also, the direction of the entire firm. (P6)

In addition to the organisational factors that are discussed above, findings from the interviews make evident the significance of individual characteristics in shaping people's reaction to the proposed KM changes. Each individual accepts change differently. Thus, understanding individual characteristics is essential for management to design appropriate strategies and to prepare employees for embracing the changes.

Look at individual with different strategies, from organisational perspective; they should look at different strategies for different people. Know your team and who your people are. Some people like to be provided with directions. Other people are freezing about how they deal with changes. (P5)

Among key personal characteristics for consideration includes an individual's change attitude. One aspect for assessment is the ability to be flexible and adaptable in the changing condition. Working in a large consulting firm with diverse clients' state of affairs requires creativity for problem solving and decision making skills. These skills could be developed if a particular employee is able to make the best use of his or her knowledge in order to correspond to different requirements.

In our industry, consulting, you must be able to change, be flexible and adaptable to changes. Otherwise, you are lagged behind. Therefore, I think we rely much on the ability to maintain relationship, being flexible and adaptable. To cope with the changes, we have to have this mind set about change. (P5)

Attitude: some people personally accept change better than others. Yeah, I mean some got the balance. At the end of the day, it is important that everyone got that attitude, being aware with what is happening. So, it is important for us to go on-board. We are lucky that more than half of us here got that attitude and usually change is well accepted. (P3)

For this reason, changes that occur with regards to the way knowledge is managed could provide advantages to people who are adaptable with the changes.

Flexibility, if you are not flexible, you won't be able to change. Keep an open mind; think about what the change might offer. You might even change better. (P7)

One example that I want to use is the transition from tax to business recovery. So, I went from doing tax work with tax databases and the tax team, I was on the third floor down to the second floor, a completely new system. I'm still using the same operating system, but the databases with different types of work we're

doing; different clients that you deal with, you meet with different contexts, different people and different teams, also different floor and area. (P8)

Another example is you are promoted from junior associate to senior associate. You do different kinds of work. You do more reviewing, you do more coaching. You also have to be more mindful, power of economics work, you have to be aware that you've now got all this knowledge, and we expect the work to be faster, to work harder. (P8)

I think in KM processes in accounting, it is important to treat KM as an asset and resources especially in the big company, where changes happening in the external market. Regulation changes, for example, affect the operation, so you should be alert to continuing resources to ensure its perpetuity. (P6)

CNS has established various systems for maintaining knowledge and reactions to such changes are varied. Among them:

X system was introduced three years ago. The main thing is our compliance work papers for settling the accounts. Every office uses the system and it did take a little while for transition to get everyone happy. (P3)

I've also experienced some changes during the implementation of the Y recovery system and other changes in the legislation. For instance, there are new ways of doing recovery actions.... About the transition, we adapt really well now. At the beginning there was more resistance. (P6)

The findings imply various elements that explain individual's ability to be flexible. One essential element is the individuals' values and beliefs that mirror the ability to view change positively.

I think that individual as a knowledge worker, we need to go out and find information about new knowledge. I personally think that as individual you need to find out what is happening around you and not living in a cocoon. (P5)

The thing is I'm a very changed person, I love change. I'm doing it while people are still adjusting to it. (P5)

One more thing, don't be afraid of change, try to embrace it, because if you resist it, that will never get easier for you. I guess that is more a personal thing. If I'm not enjoying something, I won't put my heart on it; but if I can put myself on it, I will enjoy it. If I'm enjoying something, I will get it done faster. (P7)

Further, being flexible also reflects the willingness to accept the changes with an open mind. This positive attitude could be nurtured if the affected employees could accept change as part of the challenges for improving the existing knowledge processes.

Being open to change, it is a flexible learning and mind of accepting that there is more than one way of doing something. Of course, you are going to make mistakes when you change, anyway. If everyone is grumpy, up tide, rush, and can't take the joke, I think it is not going to work. But if you are happy and supportive, and be flexible, it may be a little easier mind and even stronger of to carry on and after all, that is it. (P7)

Being open minded, I guess. Open minded, willing to adopt new procedures and processes. (P8)

Even though being flexible is regarded as an important quality for surviving in the industry, findings demonstrate that not all employees are able to cope quickly in diverse situations. As an example, it is mentioned that:

I'm not sure if there is so much encountered to that. Sometimes they have been doing things for so long. You know, someone is not really happy with what he is doing. They will not be happy to go through the changes. (P3)

Consequently, in the absence of this characteristic (flexibility), changes that are introduced could be a burden to that individual and consequently could affect his or her job performance.

If you are ready for change, you will adapt quickly, and you can carry on and continue productive with your job. If you are not changed ready, you will be left behind and you are not been productive while everyone is departing. (P7)

Moreover, findings from this case study also imply that an individual's capability to cope with the changes could be influenced by his or her expertise related to the substances of the change. Changes introduced would commonly provide challenges to the people affected; particularly if they are unfamiliar with the modifications in the procedures and applications. Therefore, having knowledge and expertise in the relevant areas could facilitate an individual in utilising his or her existing knowledge in the varied conditions.

For instance, as found in CNS, changes in the use of technology for KM processes are less preferred by the matured staff members, as compared to the younger employees. The reason provided is that the former generation has limited experience dealing with the technology applications; while the latter group is exposed to and has ample knowledge about technology utilisation.

> And a lot of our staff members in a particular area are younger and certainly the ways we are changing are towards a technology-based, which staffs are comfortable. So, it works quite well. (P3)

> I do think some resistance to a certain level. It is age-related from my perception, different level with different perception. To learn something new might take even longer or even more. The only thing is technology. I was brought up in the early days when computer was introduced. (P5)

In other words, individuals who are proficient with the change requirements have the advantage, by which, knowledge possess by them could enhance their change efficacy, thus support a smoother change effort.

> I think if you have a lot of skills and you face with the change, you now have all the backgrounds and you are going to learn a whole bunch of new skills that you can use in between. (P7)

> The only issue is during the change is support in place, along with people with the information and knowledge, to be able to go through for the first time, being able to do something new, which is difficult. (P4)

Additionally, other individual characteristics such as age, gender and risk attitude could affect the ways individual adapts with changes. These factors are claimed to be influenced by structure of the firm and nature of the industry in which the firm operates.

> You know that accounting firm has a very deep structure and things are well-embedded. National hierarchy is where the decision is being made. When you go to the higher hierarchy, partners make decisions and sign the engagement letters. Those partners are generally male, older and they are risk averse, so it affects decision making. (P5)

Further to that, in the context of CNS, individuals with expertise in the relevant change processes blend their knowledge and skills together; and they lead the change effort. These people will be the point of reference for others who are affected by the changes. Accordingly, they, as the change champions are responsible to plan and provide the right direction for the changes.

> Another factor is that they are quite proactive for the change. There are a group of people who are responsible for the change. If you have any questions relating to the changes you can go to this particular people. (P7)

> We have a special group and also got person in-house working on it...But for a group change, there might be the involvement of one or two people as change drivers, a lot of champions in the area and they will inform the knowledge to us. (P3)

> When they are changes in a particular area, we have change champions in that area. For example, in the farming industry, so people who are very good in that area, they share their knowledge with the rest of us and it is going quite well. We all do as change champion. We have some common goals and get everything done on time, yeah. (P3)

As a result, an individual's expertise deficiency with regards to a certain changing process could be overcome through coalescence of expertise among the members of the firm.

Apart from the elements that shaped change understanding at the organisational and individual levels, findings from the interviews in CNS highlighted another imperative element that influences responses to the changes. This element refers to the nature of the change itself, which could alter people's reaction; even in the presence of elements that shaped change understanding as discussed earlier.

One aspect of the change nature is the latitude or size of the changes introduced. In comparison to a massive change at once, findings indicate that employees are more comfortable with a gradual change. The reason given is that, with gradual changes, employees are able to learn and adapt accordingly.

> You know, it is not an overnight, one day doing the evaluations about how people sell business. We do gradual changes. If we are told to do all new sorts of business tomorrow, I don't think that we are ready for that; to do something which is totally different from what we do. (P4)

> It depends whether change is important or not and latitude of change. (P5)

> It depends on the characteristic of change as well. If it is not a major change, I think we are all fine. We are ready. The organisation is constantly changing now, so I think you've got to be ready. (P8)

Another aspect is the frequency or occurrence of the changes. It is asserted that constant changes that are carried out in the organisation could prepare employees to be more receptive and adaptable with the changes. In this sense, employees are able to cope as they are familiar and have similar experience dealing with the changing situations; compared if changes are rarely been carried out. For example:

> We're used to experience changes that happen on a regular basis. So, that is the normal way we used to do things. They keep changing. A lot of things are changing all the time. I mean, if we haven't have changed for years, it would be quite a shock. Probably, one more difficult change was possibly because we haven't change too much before it, for quite a long time. (P3)

We know what should be doing next, so it is constantly evolving. If staff members are ready, changes are often, it can make introducing change is a lot smoother and transition is faster. (P3)

I think it relates with experience that individuals have with previous change. If they have bad experience, they will see change as bad. Good experience leads to a good reaction. (P5)

Nevertheless, it is also argued that numerous changes that are carried out in organisation could affect the effectiveness of the change initiative and misguided the employees; unless a proper direction is provided.

Something which is redundant, because the change came out yesterday and there'll be change some more. You have to be aware of everything that you changed, that someone could be overwhelmed. If the key people decided that it is a good change, adopted and run with that, then consider the staff and reflect the changes. (P7)

In summary, findings from the interviews in CNS highlighted the importance of developing change understanding at individual and organisational levels to facilitate changes in KM processes. Further, the findings also suggest the crucial aspects of considering individual and organisational contexts to enhance people's positive reactions towards KM changes. The continuing section provides explanation on the outcomes of KM implementation on CNS's operations and its employees.

Summary of Case 2

Being among the leader in the accounting industry, the processes for managing knowledge in CNS are more structured and advanced in comparison to ACC. There are various formal programs and platforms that enable the processes of obtaining, creating, applying, and sharing knowledge. Since knowledge management processes are perceived important for the firm's long term competitiveness, concern regarding protection of knowledge that is managed formally, has also been raised by some of the interviewees. Nevertheless, being a

large firm with a strong hierarchical structure, which stems from the partnership structure itself, the processes of managing knowledge in this firm, is attached to functional groups, with unapparent cross functional interactions through knowledge processes.

From another view, the firm employs experts in different areas; thus its knowledge base is strengthened through its internal development of expertise. Due to the fact that modification and enhancement in work processes are recurrent in CNS, there are also dedicated teams that facilitate the changes resulted from the adaptation to the processes. Hence, development of the firm's strong knowledge foundation, availability of groups of experts and formalised means of implementing KM in CNS accelerate employees' preparedness for KM changes and support the firm's KM implementation.

The implementation of KM processes has benefited the firm in improving its operational effectiveness and efficiency, enhancing the firm's knowledge foundation and developing intellectual capability among the members. More than that, CNS incorporates and recognises knowledge management not only as part of the firm's strategy for survival within the industry, yet also to create knowledge synergies for attaining long term competitive advantage. Eventually, it is affirmed that:

> Without knowledge management, you will be an accounting firm, but with knowledge management, you will be one of the best firms. (P7)

CASE 3 - Knowledge Management and Change in ENG

Introduction

ENG is a mid-sized engineering firm providing aircraft maintenance services to the leading airlines company in New Zealand. Fifty employees work for this firm.

The firm operates in the aviation industry, where safety is a paramount consideration in relation to the services it provides. Therefore, procedures for accomplishing the maintenance tasks are considered complex and adherence to the standard operating procedures is compulsory. Since the tasks performed at the operational level are highly procedural, a complete and proper documentation is crucial for the firm's operation.

Eight participants were involved in the interview sessions conducted at this firm. Four participants represented the management and supervisory team, while the remaining participants consisted of a group of engineers in charge of the maintenance operation. The participants have vast experience in the service industry, with one to seventeen years of experience working in ENG. The selection of participants with diverse experience and tenures enables data to be gathered from multiple perspectives within the firm.

While the administrative function operates according to the normal business hours, maintenance jobs at the operational level are mainly accomplished during nightly shifts. Further, the nature of maintenance operation requires different team members to work together every day in order to complete the tasks. This situation demands that management design processes that allow synchronisation of information and knowledge flows between managerial and operational levels, as well as among the shift teams. In conjunction with that, management claims that efforts have been dedicated to improving knowledge-related processes in this firm.

Nevertheless, the procedures and processes were not made explicit to the employees as a specific KM program; instead, these processes are embedded as part of the operation to develop learning organisation culture. As a result of this

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approach in KM implementation, contradictory opinions regarding the effectiveness of KM were expressed by the interviewees. While the management team considered improvement is achieved in the way knowledge is managed in ENG, findings indicate that some of the participants, including experienced supervisors and employees perceived that the existing processes are only effective in capturing explicit knowledge; effort to formally obtain tacit knowledge from the experienced staff members still represents a crucial challenge for the firm.

Defining Knowledge Management (KM)

Knowledge in the context of ENG's operation consists of technical knowledge and expert or corporate knowledge. Technical knowledge is particularly documented and exists in the form of explicit knowledge. At ENG, employees gained technical knowledge from their formal education, by referring to manuals and references, as well as by attending training provided during the initial period of employment at the firm. While building of technical knowledge is more structured, the development of expert knowledge requires accumulation of experience working in the aviation industry over time. In other words, expert knowledge represents a large portion of tacit knowledge, which is actually gained only when the employees perform their job and learn through the experience.

> Expert knowledge, someone who has the tacit knowledge that is being brought up over a period of time; what we called deep knowledge and experience. Technical knowledge, yes a lot of guys for example, we have a lot of guys with basic technology who have done the courses and training, so they have the technical knowledge, but they don't have the experience. (P9)

> Knowledge here is from experience and your thoughts. For younger engineers, they are mentored internally and trained externally. So, that is the path of knowledge for the young. For new people coming that have got aviation experience, they are also mentored but to a lesser degree until they got trained in a course for a specific aircraft type. And then they will have oral examinations and stuff like that, to ensure they picked up the things. (P11)

Most of the things on the aircraft really, we do courses on the aircraft called the technical training course for the aircraft. What you've got here is that you've got the basic knowledge of the aircraft, but the in-depth knowledge you will get by actually working on the aircraft and physically doing the work. We called it corporate knowledge; it is what we gained from the industry by working in the industry, we got a lot of valid information I guess. It is maybe not the knowledge of the aircraft but knowledge about say the past damage, how long it is going to last before breakdown; those sorts of knowledge you've gained from being in the industry from working. It is not something you get in a day or a year; it might take years to gain that sort of knowledge. Predominantly it's being on the aircraft and being familiar with it. (P12)

The above participants' views imply that, apart from the requirement for technical knowledge, the more important consideration for knowledge initiative is the enrichment process of expert knowledge among the staff members.

One manager, who is among the champions for KM in the firm, explained that effort for KM in ENG has been focusing on comprehensive initiatives for documenting and transferring information, and informing employees about the procedures for the maintenance operation. He also asserted that documentation of procedures accelerated dissemination of knowledge in the firm, and at the same time, enhanced pooling of tacit knowledge.

The course document: supervisors have to go through it and make the guys aware of the stuff; awareness of knowledge management about tacit knowledge. So, knowledge management is about informing people about all these procedures and the environment, while education is about transferring over this stuff. (P9)

However, some participants are more concerned with the effort to encourage systematic externalisation of tacit knowledge possessed by the experienced staff members. This type of knowledge is gained only through on going on-the-job learning that tells them how to implement the procedures in the most practical ways.

I guess looking at both sides, from management it is about creating manuals, while on the floor it is much more about tacit knowledge. It is what they see, know and do. It is all tacit knowledge, apart from technical specific knowledge that they gained formally through training or manuals. (P12)

Processes for managing knowledge

As a professional service firm, management realised the importance of establishing KM plan, hence few programs and courses for managing knowledge have been implemented at managerial level. There are various ways of managing knowledge in ENG, focusing on obtainment, invention, dissemination and documentation of knowledge practices.

Since ENG provides service for the country's major airlines, the need for change in the processes for managing knowledge are identified internally, or proposed and supported through the major airlines' KM programs.

We have the opportunity through the correct channel to tell them that we have found something that we think we need on training. It would be through your shift supervisor or when you see the middle manager. So there is opportunity to tell something about courses or something that should be brought to everybody's attention. We have that. (P14)

For us, a lot of them are taken from big brother, which is the airlines company. A lot of stuff they consider we need to know to keep moving for a large organisation; they supply that knowledge to us by sending us to seminars, courses, for certain individuals in human resource (HR) or our department. That knowledge is unique for what we are. They will say we are in this direction; you need to come with us in this direction, so we have decided that you need to have this exposure, to have this level of course or this level of seminar. Of course they are running courses for experts in that area. However, big brother is always watching down here and they know if we've missed something, so we need to pick it up anyway. (P11)

In ENG, knowledge is gained through formal and informal mechanisms. The formal mechanism for gaining knowledge is commonly achieved through

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technical training about the maintenance operation, particularly for new entrants. This form of internal training provides exposure to the employees regarding the operation of a specific aircraft type maintained by the firm.

> First of all, they get exposed to the aircraft for a period of time before they could attend the course. So that they are familiar with the aircraft, the operation through on-the-job training and what we do then is we put them in a formal course to give them the technical knowledge about the system. Therefore, they've already got some sort of prior knowledge to get the deeper knowledge. (P9)

> When I first arrived, they put me through an aircraft course, for four weeks I think, which runs here with the supervisors and that is how you get to know about the specific type of aircraft. The engine course was about the same thing but purely on the engines. Every now and then you might sit in the course like health and safety sorts of courses, depending if you need to do so. (P10)

> We've got training, courses and stuff like that. They are conducted both internally and externally. Training is what we do as engineers. When we came here there was training about the engine; courses were also conducted about the system and so on. (P13)

Further, employees are also required to attend repetitive training every two years in order to keep up-to-date with changes in the aviation maintenance operation.

> We do re-currency training, where we pass on information and knowledge every year through re-currency training. That re-currency training is based around the aircrafts. For example, things that come out about the aircraft for the last few years, those sorts of thing. So that is on-going re-currency training, everyone does re-currency training every two years. It is the aviation requirement that re-currency training happens and we do it. (P12)

> In terms of requirement for training, we need to retrain every two years, sort of refreshing a bit because knowledge is about you can learn something but it

doesn't mean you can retain it forever. So, it is sort of refreshing your knowledge over the years. (P15)

Besides, knowledge is also gained from training that is offered externally, either by the major airline or the suppliers. For instance:

We organise our own training in the organisation, except for engines, where we send them to Sydney for the engine training over there. (P9)

We are pretty much covered on our knowledge of aviation, but looking forward for managing that situation, you need more courses and more people-based courses. And the big brother, they offer for selected people to attend different types of courses, which will be exterior from the company group.... Everything is done quite fairly, so there are plenty of opportunities for training within our group [managerial] to a certain level. For exterior, there is a course available if we can consider that can actually go on. So, there is the process in here as well. (P11)

We also do some internal and external courses as well. When we talk about the aircraft training courses, we run one internally and that is just conducted once for everybody...we go overseas to do courses, and there are some externally. (P12)

Management acknowledges that formal courses could provide employees with technical knowledge about the aviation operation. However, another significant consideration is the continuous development of knowledge through on-the-job learning. This process of obtaining practical knowledge is performed naturally, whereby the employees gain tacit knowledge through their own experience by doing the job and working with others. Through this process, the employees will be better informed on the purpose and importance for accomplishing the job in effective and efficient ways, resulting from on-going learning as well as interactions with the experienced team members.

So, we always try to increase our deep knowledge probably through not only telling how do you do it, but why you do it as well. So, therefore the objective is how to do it with all the screwdrivers [on-the-job training]; the classroom is about the formal training, for why do they do it. (P9)

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I was given the initial training when I came here. Knowledge that I acquired initially helped me a lot in understanding about the aircraft. So the training gives me basic ideas how to carry out my task and whereabouts to do the things related to the aircraft. Based on that and the technical publications, memos and notices, I use both sources of information. The first information was to help me to get to the point I wanted and the second information was to elaborate what is needed to be done and how things need to be done. That couples with the experience, the more I do the more I get used to the job. So, these processes build up my performance. (P15)

Knowledge is gained from manuals or verbal communication or self-taught. All are about self-teaching. For example, how we run the engines out there will be self- taught, based on what has been learnt once upon a time. How I achieved it right now is developed, based on more that I'm doing. (P16)

You look at the booklet generally on how to do it, and then just do it and you develop accordingly. Generally, I'll tell people that you need to read the books and manuals first to learn how to do it faster. Then you need to learn how to do it generally. (P16)

In ENG, various mechanisms to support employees learning about new knowledge are in place, which reflect management's understanding of different individual preferences in obtaining knowledge.

I supposed they agree here knowledge is about the result... Some people you can't teach, they have to learn from the book. When I chat with them, they will show me the book about that. Whereas I am more hands on, most of the guys are not hands on as you can see, we can't communicate. Because I want to just get on and do it, they want to read paper... Some people don't, some people want to systematically work through. That is how they gain knowledge, I think. (P16)

Moreover, although most of the tasks performed at the operational level are standardised and documented, there are situations where employees have to deal

with uncommon problems. In the absence of internal experts, knowledge for solving the problem is gained from external bodies such as the supplier.

> Non-standardised procedure, yeah it is quite a lot. At the moment we have problem with the aircraft that has crack on its tail which is risky. It seldom happens. So, there is nothing in the manuals that explains how to deal with the cracks, so we have to get an opinion from the manufacturer of the aircraft and they will tell us what to repair, what we are going to use for that. So there are few other things that happen occasionally that we haven't seen before, like if its broken and it is not in the manuals, then we email to the manufacturer and they will inform us what to do. The supervisor on the shift is usually responsible to get the information; during the night shift we have a supervisor in charge. (P10)

Further to that, recruitment of expertise from overseas is another crucial strategy implemented in ENG in order to accelerate the process of obtaining industry knowledge. This strategy is claimed to be the best alternative for overcoming the problem of insufficient local expertise. As mentioned by management:

> Part of the strategies, we have people from overseas, who already had that knowledge. So, we will see if there is a knowledge deficiency that we can't find within New Zealand; we will go through and employ people from overseas. For example, there is someone from South Africa who worked in the similar environment to ours. So, when they come here, they've already got some expertise and experience. We try to grow on our own, but you know sometimes people are not available and it takes time to build the experience up; so therefore we try to bring it in externally from off shore. So, we have a South African and we also have a Fijian here with us as well. Because they've got engine experience that we required. (P9)

Additionally, the nature of the firm's operation which handles a single type of aircraft could be a hindrance factor that deters the effort for gaining knowledge among the employees. Some employees believe there is no real pressure for them

to attain new knowledge since they have been capable of handling the particular type of aircraft for the past few years. In this situation, the nature of the firm's operation could influence individuals' commitment to attaining new knowledge. Employees who are aware about self-knowledge development will take their own initiatives in gaining and keeping up-to-date with the latest industry progress from media and journals.

> We are not really exposed to the latest development in the industry that much, because we've only got one type of aircraft and they are getting on for ten years old now. We just sort of focused on that aircraft. The only way to keep up with stuff like that is we have magazines delivered. They have all kinds of new technology for airlines; it is unless you think it interesting. (P10)

> The company encourages individual to up skill, but it depends on individual really. There are few older guys who have been working here for about 15 years, and they are quite happy with what they do at the moment. They are not worrying about up-skilling anymore and they are more likely coming from the bottom, unlicensed. I want to get licensed, so they are not motivated. (P10)

> Gaining knowledge here is more on a personal basis, because the company's responsibility is mainly on providing technical knowledge about the aircrafts' operation. Once you gained that knowledge it is delivered back to the company based on the work that we do. Apart from what we are given here, it is really up to the individual.... Apart from what we operate, because aviation is a broad aspect, we learn about other different sorts of aircraft and other technological advantages through what we either see in the media or documents or by reading articles. (P15)

Further to attaining knowledge, another important aspect for managing knowledge involves the process for developing new knowledge in the firm. The process is

supported by various informal and formal mechanisms, and it is a continual effort following the initiative for obtaining knowledge. As agreed by the participants:

> Their knowledge is acquired by experience and teaching. First of all, you give them education; we do a lot of training here. So, therefore we go through and give them the education, and then we go through and give them the experience and on-the-job-training. Hopefully, from that new knowledge is being created. (P9)

> We mainly develop our knowledge internally. (P13)

> Most of the knowledge is internally developed as you go and based on the courses that the company arranged. (P14)

For instance, the formal effort for producing knowledge is dedicated to the development unit, handled by an experienced development engineer. Most commonly, new knowledge is generated internally through planning for improvement programs as well as when employees are dealing with exceptional problems while performing the routine maintenance.

> Currently I'm working on modifications on the aircraft with the intentions to make the aircrafts fly lighter and more fuel efficient. So, most of the tasks are trying to improve the efficiency of the aircrafts. (P11)

> For example, you come across something that you haven't seen before like the defects; we will straightaway change the way we are looking at things and improving it. (P9)

From management's point of view, the process of producing knowledge in the firm is planned and accomplished through a structured process, in particular during management team meetings. During this process, the team's collective knowledge is mutually considered in creating solutions for problems faced by the different functions in the firm.

From management's side, we have bi-monthly meetings, not based on where we are but mainly for greater performance. So, we sit there and because we are also in a small geographic location, we do see each other pretty much most of the day. Generally, we stop and talk or brainstorm with a collective group as near as possible. So, we form a meeting fortnightly and we sit down here to discuss about where we are, where we are going, what we can do to improve things, and things that come out at the meeting room, it is a knowledge base... Maybe one guy with a problem would talk with others in the group, so generally it is a solution-based meeting. So there are rules to follow as part of the course of actions to take. We may not come out with the perfect answer at this level so we have to go the next level, brainstorming for things like that, or need to go down that path. Then we'll be talking in the next meeting and often we end up with the solution in coming meetings, which usually produces priority depending on the priority of that problem, so generally we come out with the answer. (P11)

In a similar notion, knowledge created at the operational level is also viewed as a team-based activity. The process is commonly carried out on the basis of on-going efforts among the supervisors and employees, for the purpose of improving the maintenance task. It includes discussion about drawbacks in the existing processes and systems, which then leads to proposed improvement by the staff members on the basis of resource availability.

What we do basically if we need to change, probably we look at the system or we look at the resource aid, we discuss and sketch it and then we will find the short cut of what we thought it was. We still sketch it because not everything is in the book. We have the manuals but if something is not in the book you need to work it out. Or you find someone like a technician who knows or is familiar about it and discuss about something which is not working. You go through everything it could be, it might be easy, it

might be not. You pool together and the idea will come. It may be silly but it normally works. (P16)

Moreover, contribution of ideas from the bottom level including maintenance operation is highly encouraged. For instance, the manager of the development unit acknowledged the cultivation of innovative ideas for adoption, which are predominantly originated through bottom-up participation.

Some of, probably about 40% of my workloads come from the floor. I actively encourage the guys on the floor, those people at the shop floor to come to me with problems and they know that I am going to consider any request. Just tell me what it is, come and tell me and I will take notes, I will follow up with tracking down and looking for more information or reasons for not doing it. I always give them feedback. Generally, out of 40%, 38% are worthy for follow ups. It is a pretty high rate and that 2% that isn't probably could be because it is cost-related and not very suitable at this stage. Often the reason is the costs, which are not really worth spending and we need to consider other alternatives. But, I won't 'shallow' them, I would say it might be researched again. There must be a good reason why he has raised up the issue initially... It makes my job a lot easier too because I can start researching for things that they've proposed. I believe we should do this often that way. (P11)

Management asserted that contributions of ideas that facilitate development of new knowledge in ENG results from constant interactions among the different levels of the firm's hierarchy. These interactions are enabled through effective communication mechanisms that support knowledge flow between the levels for achieving continuous improvement in the process.

We received good and better feedback when we encouraged from the floor. I am not sure how the other managers do that but I'm pretty sure we are aligned with each other fostering that practice here. Otherwise, the

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workers are just not happy with us. That is why we need to communicate bottom-up rather than top-down and being open. (P11)

During the process of developing new knowledge, staff members contribute their own knowledge and share ideas from their own background, rather than solely relying on the manuals and documented sources. In conjunction with that, continuous utilisation of employees' experience and creativity plays an imperative role in the success of the knowledge production process in ENG.

Some knowledge is gained through your experience, something that is not in the publication or technical publication, but through your experience. Maybe best practices; there is a way of achieving something by doing not something written in the publication. (P15)

Generally, it is based on experience. Most people come out on their own solution based. What we are doing is solution based and because we have past experience in this area. So you draw from everyone's past experience.... So, there are a lot of values created by having those meetings. It is a good learning curve, to let everyone know who we are going to see for expertise during the normal working days, rather than waste your time looking for something by yourself while probably you don't know the answers. (P11)

We have another course running here; the inspection course. Again, we are using the supervisor's expert knowledge to run the courses and to develop things as well. So, most of the courses are handled by the supervisors... We have practical courses to explain how to do it. We have the expertise, so we design the course ourselves to ensure the guys follow correct instructions. (P9)

In addition to the generation of new knowledge, application of existing knowledge and experience in varying situations is also essential for ENG's operation. Although most operational routines are standardised, some unusual difficulties could be found while performing the maintenance tasks. In the situation where

solutions for the problems are not available in the suppliers' manual, staff members are encouraged to work together in developing appropriate solutions. Since the shift team is responsible for the nightly maintenance tasks, pooling of knowledge from the team members is applied in diagnosing the problem.

> When we get a lot of equipment comes in, a lot of knowledge is transferrable to that. So they already have some sorts of base knowledge that they can transfer to the equipment.... They will brainstorm and someone will try to utilise someone else's expertise to the system or fault diagnostic to certain problems. This is an informal process that we encourage. (P9)

For new entrants or amateur employees, application of technical knowledge obtained from training and courses is realised through practical involvement in the maintenance process. Hands-on experience is considered crucial since, technically, problems are found and solutions are derived when theory learnt from the courses is put into practice. Consequently, staff members' ability and skill in applying the practical knowledge could be enhanced over time through the learning process.

> I think for the courses, a lot of it is personal knowledge, learning how to start with the engine course and come back and they have been given information on the engine, a lot of engines. Then, they will come back and put that into practice or by doing the job. (P12)

In certain circumstances, however, an individual's expertise is indispensable to solve problems found in a new situation. Most commonly, experienced supervisors will be assigned the task to solve the problem, on the basis of their proficiency in applying knowledge that they have in handling similar conditions in the past. This situation implies that the firm depends on the experts' tacit knowledge for application in dealing with an exceptional operation.

> For tasks that you want to start and, for example, if there is a defect that we can't fix over a period of time, we will get one of the engineers and say could you target this, this has been for a period of time, this is the type of

defect; and if anybody has an idea or some thoughts with that defect we will go through some diagnostics that we have recorded. So, we have the history of what has been carried out previously and we have guys who manage the shift, who still work with the aircraft as engineers, and they will go through them and collect the data that they know about that problem, to try to assist with the diagnostic solving. (P9)

Knowledge that is gained primarily from profound job experience and extensive background in the industry is essential in facilitating decisions to be made, through utilisation of past knowledge that suits the current operation. One of the experts stated:

There are a lot of things with the aircraft, even the aircrafts are different, and the recent model is the basic aeroplane and a lot of aircrafts that most people worked here are quite sophisticated. So it is easy to come out with the answer and to apply something sophisticated on something that is basic, so it is quite simple. (P11)

Also, management of the firm realised the importance of the externalisation and internalisation of knowledge among the employees. It is common to see that knowledge is shared through direct interactions between new and experienced employees. As an example, a new entrant will be assigned to work with experienced engineers at the beginning of his employment. During the process, the employee is expected to absorb knowledge by working with different experts before joining the nightly teams.

Actually what happens is, when new employees come in, they will be assigned to work with the experts for a couple of weeks to help them out. Knowledge that you have will be passed along to them. Generally about two weeks to work with the experienced engineers. (P14)

From management's point of view, this is an effective practice for imparting knowledge from the experts to inexperienced engineers.

Yes, for example a lot of guys are contractors, but the guy that we put over there [at the working area] is already 24 years here, and the other guy has been here for 22 years, another guy has been working here for 13 years. So, they have a lot of deep knowledge that they can transfer to the labour floor, to those with the technical knowledge but do not have knowledge about our aircraft. Therefore, we can transfer or make it accessible to them. It is about transferring tacit knowledge that they have about the aircraft to those contractors; how do we do this, you come and show them. (P9)

Nevertheless, view from the operational level highlights assigning the new entrant to work with the different experts at the beginning of his period of employment could undermine the process of sharing knowledge.

I still think formal mentoring is a good thing to do. You can always have one person that you can talk to. Whereas, if you are coming on the rotated shift, you will need to meet new people over a period of two weeks or so. You are not going to be comfortable talking to them, but if you are working closely with someone and you have certain rapport with that person and you can talk a bit easier. I think need to make people comfortable in the company and then making communication a bit easier because you have someone to talk to. (P12)

While standardised procedures are documented, transfer of tacit knowledge is highly anticipated during mutual accomplishment of the maintenance tasks.

So, therefore you need to have the guys with the expertise. For example, we have two guys at 70 years of age, still working. One guy operates over there [at the hangar] and he has a lot of tacit knowledge, that you can't document it. (P9)

Basically, when you leave from this company you will take out with you knowledge that you have for 5-10 years when you were here. They hopefully pass the information to others when they work with them and that is all. It is like when we see somebody is doing something that is not

right, we will tell them or if you don't understand you can read the manuals. Most of the tacit knowledge is shared verbally. (P14)

Further, problems and changes that are discovered during the maintenance process are commonly resolved through the exchange of ideas and discussions among team members and the supervisor. Besides daily shift meetings, informal discussions are commonly occurring that enhance sharing of knowledge in the firm.

Everybody is exposed to general understanding so that if the problem gets tough, then we ask the expertise to find through the problems. What they do is they will sit down in the crew room and discuss those issues. We try a lot of what we called 'work call effect', where they talk about issues or problems that come out. (P9)

We also share information with others when we have a cup of tea with other colleagues or when we are doing the work. (P15)

Quite often with certain defect, in a start-up meeting, we discuss around the defect, and what is the best way to go through and fix it. Supervisors will be in the meeting and they already know this. (P9)

Formal platforms for communicating and sharing of knowledge in the firm are maintained through supervisors' daily meetings and weekly shift meetings. The supervisors' meeting is a platform for management to discuss problems and issues discovered during every night shift. Additionally, the weekly shift meeting, involving both managers and operational staff members, allows dissemination of information from top to bottom as well as feedback to be received from the operational level.

That [supervisor's report] is the main communication mechanism used between day shift and night shift. Because we don't see the night shift well, sometimes they don't know that the night shift exists, so the only way to get information is through the supervisor's report. (P12)

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Most of the guys work at night and I will come during the night once a week; talk to those guys. You need to keep reinforcing and informing them, because you come with different groups of the guys. Supervisors also, we also have a lot of supervisors' meetings and those guys are in charge of the shifts and the aircraft of the shift. We will go through and make those changes and make sure supervisors are aware. During supervisors' meetings we talk about issues, where we are going, what is happening out there, discuss those issues and we come out with the consensus that this is the way we want to go and we go through it. (P9)

Due to the discrete nature of operations among shift teams and the main office, supervisors play an important role in ensuring correct and adequate information is delivered to the shift teams. Information about the operation that is applied for action becomes important knowledge for the teams in accomplishing maintenance tasks.

There is no formal procedure to transfer information. That is primarily because most people who work here are working at 110% of the total capacity, anyway. So, they know what the expectations are, I mean you don't come back and sleep. You have been away and when you come back you've got fifty emails and you're already behind, so to get the information out, some are on an ad hoc basic. This is safety orientated, so the safety guides are available electronically and the hard copies are stacked around the place. And it is also during the supervisors' meetings, which is on the second Monday; here we give a lot of stuff for the supervisors to pass down to the people. (P11)

We have periods where maybe people on the night shift might be seeing something abnormal and fix it, but the person who comes on a couple of nights later might not be aware of it, because it is just something that got noticed that you've fixed it and you don't really pass the information on. So, there have been quite a lot, even would be between the supervisors. My supervisor might say something on the night shift that I don't know,

because I was four days off. The next supervisor comes on and sometimes he will be told by someone on the shift that this thing happened. (P12)

Additionally, knowledge discovered during the operation or gained from the courses attended is also communicated informally among the staff members. Participants emphasised verbal communication as the main mechanism for sharing knowledge in ENG.

> Generally, people will be sent to courses externally: the ones run by big brother, it is not individualistic courses; they are group-run courses. So it is rare to see one or two people from here attending the course, and you will find that all the managers will attend that course or seminar. The knowledge that comes back is spread out to people below them, so it is not solely belonging to that one person when they come back, it is running around. You will see everyone brings back and people will tell the stories. People who attended the seminars will bring back what they've got from there. You don't necessarily bring everything back, but what they think is interesting; sometimes they might bring something different than what you thought they would get from the course. (P11)

> They probably share a little bit from the training course, but it will be just verbal. Those courses are designed to help them in their learning; it is not for the company. They just store knowledge personally to help the company achieve the job. Probably they will share with people working with them closely by just talking. They won't share everything, you know it is not like writing down anything; it will be all verbal communication. They also have training manuals with them, so they will come back with written materials as well, which I guess could be used by others. (P12)

> During the break, we sort of talk among ourselves and we end up talking about some of our work or something like that, that is brought up in the meeting. Just have to talk to your mates at work and that is pretty much that. (P10)

Any change or knowledge that is passed on is all verbally. If somebody working with you then you can impart the knowledge. Alternatively, through the computer library, manuals or engineering notices, Everybody has the access to these channels. You can also get the information from individuals, find it or ask others. (P14)

Since nightly shifts are handled by different teams, daily synchronisation of information is essential for the maintenance operation. In conjunction with that, information that needs to be disseminated between night shift and day time operation is commonly recorded in various documents. For instance, sharing of new or modified job procedures is formally communicated through the issuance of engineering notices.

Engineering notice is a formalised means to inform about the changing of procedures to the engineering guys. (P16)

If there's anything goes wrong, it will be sent out in engineering memos through the emails that tell us in future to do this way, don't do that way. The engineering memo will be sent to everyone who is doing the job... Usually what happens is, if there is a new engineering memo, it will be put on the notice board where we enter the room that we meet quickly every night before we start working. The notice board is next to our drawer, so you've got to read it, you've got it in your mind and you know how to do it next time. (P10)

Similarly, the supervisor's report represents an essential document for reporting and sharing information about the nightly shift operation to the managers.

We do have problems where people don't know things that were done. If it is a big thing, we would make everyone aware of it, which is through engineering notices or the supervisor's report. Anything important, even if we fixed it over-night and it was important, that would be disseminated out probably through the supervisor's report. (P12)

For these reasons, verbal communication in meetings, informal communication among employees as well as issuance of documents represents three important mechanisms for sharing knowledge in ENG.

> If you were working last night, you don't have to worry about the updates. You will always be working with someone who was there in the late evening, so he will let you know and the engineering memo is left on the notice board for two weeks. So you will always see it. It is also very important that the supervisor will update you; you will be getting in touch in two or three days to get run through, if you are not sure. The main sources to get an update with what is happening are through engineering memos, supervisor's update and night shift meeting. (P10)

As mentioned above, documentation of information is essential to enable sharing of information in ENG. Maintenance services performed in ENG are strictly regulated, thus the tasks are standardised and mainly procedural-based. In conjunction with that, maintenance of records and documentation of procedures are crucial for the firm. Hence, it is not surprising to discover that discussion about KM activities from management point of view primarily concerns with documentation practice.

> Knowledge management: it got processes, also having charts, notes, taking notes, to prove that you have deep knowledge and capability.... For example, here [documents] we have the processes, how we go through across a group of processes, we didn't have it before, so now people can go through and follow it. We also go through these records, we have technical reports, you need to update, and you need to do it. So this is the step by step and you have to go through it. We are capturing it, we are documenting it. It may happen that long after a period of time you might not need it. So other reports, we do it in the same way. Go through the workflow and make sure that they are still valid. We also have standard procedures. (P9)

From a contrary angle, employees viewed that documentation initiatives that are undertaken at the firm predominantly enable the capture of explicit knowledge. As a result, some participants perceived there is imbalance between the processes for managing explicit and tacit knowledge in the firm, which then contributes to deficiency in the firm's current knowledge base.

> As far as the company is concerned tacit knowledge is under down within the group if people want to learn. Tacit knowledge is sort of hiding, if you don't want to know it. So, there is no company outlet for tacit knowledge I guess as much as it could be. (P16)

Apart from that, findings suggest that documentation procedure is extensively practised in this firm, including in the forms of manuals, reports and notices. These documents contain detailed information about aircrafts' parts, operational procedures, allocated tasks and job completions.

> We have company manuals, which everybody should read at the first time coming to this company, in the first week. They need to read the company's manuals and procedures. We also have engineering notices, which are for engineers only. Basically relating to engineering things that they have done, something that on the aircraft. So, once you read that, then you actually need to sign to say that you have read and understand that. All the manuals used are basically the aircraft manuals, so that are the manuals for engineering, the tasks and so on. It is for everybody to see it, if we are doing something on the aircraft and we don't know anything or the standard, you can pull out the manuals, read the manuals and it will tell you step by step for doing that. (P14)

> We have the company manuals in the production office, you probably saw those. We do rely on those quite a lot on night shift, because we might find something which is not ordinary. So, we will open the manuals and see what the procedure is. Normally everything will flow according to the procedures. I guess we've been here for long enough, so we know what

stuff in the manuals has been updated. We got something updated, so we know what are the updates in the manuals, so most of the procedures are being covered.... We have other documents such as engineering notices, engineering memos which are written periodically if something needs attention from the engineers. (P12)

We've got manuals and we rely pretty much on them, must read them. It is all procedural knowledge... We do have paper copies but we don't use them much. It is mainly on the computer. We still have documents in paperback and we haven't put them in a computerised format and to do that we need to get authorisation from the agency. You need to have the records of aircraft and have to keep the records for about two to five years after the aircraft is not in service. They want to know if we keep the records. (P16)

Besides keeping the records of standardised procedures and job specifications, documentation practice in ENG also facilitates dissemination of information about changes and modifications in the practice.

Changes are in manuals, which are written out, you know. We have procedures and manuals and basically what we do is in accordance to that, you know. (P13)

We get notification to say that the manuals have been updated and they will ask us to read the updates to be familiar with the changes. So, employees are expected to check the manuals for updates or changes. We will get alerts to say that the manuals are updated. You can easily read the manuals for changes, because they will separate the paragraphs and they will put a line downside to show that paragraph is being changed. So there is identification in the book to show that it has been amended. We do refer to company manuals and we can see what the changes are. (P12)

The structured and required amendments carried out in the manuals are intended to ensure jobs are performed according to the revised procedures by the staff members responsible.

> There is a specific person who looks after the library, which is an automated manual for jobs that we are doing. All the flight manuals as well, all the policies and the stuff. So, if there are changes from the manufacturer, they will email us a new one and they will put the new amendments in that manual, and that is all run through the computer. So, we will look at the computers when doing our job and when automatic manuals change, we do the new ones to keep it all the same all the way. (P10)

> Probably information starts as supervisor's report level and if we think that it is more important, then we would transfer that into an engineering notice and that would be disseminated out to everybody... Maybe we have found a better way to do something, so we put it in the engineering notice and that will outline the new way of doing something per se. There is a sign page, we need the guys to read the engineering notice and then sign to say that they have read it. So it comes out periodically, depending on what is changing and what is not. (P12)

Documentation practice is also aimed at capturing tacit knowledge that is utilised or discovered in handling the maintenance operation. The engineering notice, for instance, is claimed as the main document used to record processes and procedures invented by experienced staff members which are not readily available in the suppliers' manuals.

> We have engineering notices and basically you can find things that happened over the years based on the department's experience and this would be things that might not be in the technical publications. This is more on experience-oriented organisation. All this information will be put in the engineering notices and all records might be changing. I mean, like

for this week you might find the changes. So every day when we come, we must ensure that we keep up with the engineering notices. Basically, it is based on experience; somebody might find something, if it is not in the publication it could be highlighted there, or errors - where someone might have done something that contains error it will be also highlighted there. So, it is like re-highlighting to us how we are doing things. It is continuously changing based on the department... If we go to the manual it would probably be more general, so in the engineering notice it has more specific ways of doing things. (P15)

Over here are the company manuals: engineering procedure manual, operating manual, inspection manual. These procedures are supplied by the manufacturers: the aircraft manufacturer, the engine manufacturer; most of it is supplied by the manufacturers... The engineering notice is a general notification of maybe some of the patterns of how we do something, but it doesn't get into manuals. It is maintained separately from the manuals. Once you get stuck with the procedures, you go to the engineering notices; these are self-generated things. With the procedures, we change how we tow aircraft, but it doesn't mean you need to have it. So, we in engineering unit, I supposed, change the process without necessarily changing the company's manual about how to do it in a better way. The engineering notice contains engineering issues. The engineering notice's content is generated from tacit knowledge. It is to make sure everybody knows. The engineering notice is a formalised means of informing about the changing procedures to the engineering guys. (P16)

Engineering notices also will bring up any changes from the job that we doing. Engineering notices are the main documents that record changes related to engineering tasks. All the guys are ready to apply the changes. (P14)

The contents of this document represent information that has been put into action that represents tacit knowledge, which is derived from employees' expertise.

Therefore, apart from preparation of manuals to ensure the availability of standardised procedures, the process of documentation in ENG is also intended to capture details of tacit knowledge emerging from the work floor operations.

In addition to manual documentation in the legacy files, utilisation of computerised system for keeping records has also been introduced in ENG. The computerised resources include standardised procedures and tasks performed that are intended to improve information accessibility among the employees.

> Anything I need to know about that [the job], I can look in the manuals on the computers; anything I need to know is pretty much there about how to carry out my job. There are specific procedures that I need to follow when doing my job. For the inspection of the aircraft, we will be given a task card that tells us exactly what to do and we just follow that as we go through. (P10)

> It [the new system] is more like a standardised system to do the job and everyone uses the same tool sort of when you are doing a task for aircraft; it is like a standardised task, so you do the same task. So we print it out from the system, so it is all the same, every step has the same job. So it is good in that way, to keep everything in that, you can't miss the steps out. (P10)

Besides focusing on the process of obtaining, applying, developing, sharing and documenting knowledge, ENG has also put in place a mechanism for evaluating knowledge levels among the staff members. Since safety represents the main focus of ENG's operation, continuous evaluation of employees' capability in performing service maintenance is essential. As an example, the new entrants are required to go through assessment of their technical maintenance knowledge to ensure their understanding meets the prerequisite standard. Management claimed that any flaw that is found with regards to the employees' understanding about the operation will be remedied through knowledge development programs for the employees.

After attending the training, employees are required to go through and utilise that knowledge. We have a process called 'approval'; they are required to have six months total experience. They do the course and they will be orally assessed for the competency and also assessed by the supervisors for technical competency. So, actually we go through oral assessment to check how deep the knowledge is, and also we get feedback from supervisors on technical competency. If they fall short, we have a course called 'development planner', which highlights the shortfalls for that person. Then, we sit down and we go through with them and say these are the areas that you're short, this is the hole and this is what you need to do to improve. Then we come back in two months to have re-assessment on that and if they are performing well, we will say okay, you can go. (P9)

Lastly, continual knowledge-related courses for management and employees are also designed and implemented to overcome knowledge gaps in the firm. Management claimed that the on-going effort of evaluating the firm's knowledge level is aimed at improving effective knowledge utilisation by the staff members.

We design courses, for example, to overcome the knowledge deficiencies. For example, leadership and knowledge management courses, injury courses and inspection courses. (P9)

We have practical courses trying to explain how to do it. We have the experts; we design the course ourselves to ensure the guys follow correct instructions. (P9)

The initiative for managing knowledge in ENG covers a broad range of processes including the activities of obtaining, applying, creating, documenting and sharing knowledge. Additionally, on-going evaluation of the firm's knowledge base is carried out to ensure knowledge held in the firm meets the industry's expectation. From management's perspective, the promotion of KM initiatives in ENG focuses on ensuring information accessibility for employees in performing their jobs. Hence, the major area of concern involves documentation of procedures and

workflows as well as issuance of various documents and records that are distributed within the firm. From the perspective of the operational level, however, the current KM processes are centred on managing explicit knowledge. It is thus recommended that the KM direction of the firm should be focused on transferring and externalising tacit knowledge from knowledgeable superiors to the second liners. Without appropriate and formalised means that encourage the effective transfer of knowledge between the two generations, the quality of workforce, hence the service outcomes, could be affected. This issue deserves close attention as the foregoing comments from experienced supervisors at the operational level highlight a deterioration of knowledge base in ENG.

As a final note, the divergent understanding between management and operational levels with regards to the existing KM processes require further assessment. Through such assessment, the firm would be able to focus on factors that enable synchronisation and improvement in the current KM effort. These factors include the essential need to understand elements that promote changes in the practice of managing knowledge within the firm, so that uniform understanding about KM implementation could be achieved.

Influencing changes on the processes for managing knowledge

Convincing participants about the purpose of integrating change in KM assessment represents a challenge for the researcher. During the first meeting with a key informant at ENG, it was argued that KM implementation and change management are discrete issues that require independent consideration.

> Knowledge management is not about change; knowledge management is about managing knowledge and utilising it. That is nothing to do with change. (P9)

However, after receiving explanation on the rationale and importance of assessing KM from a change lens, the key informant reflected on the firm's experience, suggesting the potential influences of individuals' change behaviour on KM participation. He stated:

Yes, you are quite right. For example, when we introduce the new system, we put up the manuals on the computer. So, the older guys will go and get the manual because the information is faster, and the younger guys will go to the computer to search for the data there. So, it also depends on how familiar you are with the changes. (P9)

In relation to that, creating KM change understanding among individuals is essential to convince the staff members about the importance of KM implementation. A reasonable understanding about the needs, purposes, advantages and existence of support for KM changes could motivate them to be more cooperative in carrying out tasks in new processes.

ENG, management claimed there are continuous efforts to improve KM practices in the firm. Management highlighted several reasons underlying the need for changes in the ways knowledge is managed in this firm. The underlying forces for improving KM in ENG resulted from internal judgments as well as from external pressures. For instance,

If we see a knowledge hole, we will go through the issues, will discuss about it and we will try to find the solution. (P9)

They [big brother] will say we are in this direction; you need to come with us in this direction, so we have decided that you need to have this exposure, to have this level of course or this level of seminar. Of course they are running courses to experts in that area. However, big brother is always watching down here and they know if we've missed something, so we need to pick it up anyway. (P11)

Internally, management stresses the essentiality of strengthening the firm's knowledge pool. One primary objective is capturing knowledge, particularly tacit knowledge, from the experts' mind and transferring it to become the firm's knowledge. Through this effort, ENG aims to overcome deficiencies in its current knowledge base, which have resulted from overreliance on individuals' tacit knowledge in handling exceptional operations.

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It has always been good processes in place, but not necessarily good knowledge management. It is still on-going; we are still looking for ways to improve the processes and to increase our knowledge management; we are looking for those knowledge holes. (P9).

It is an important part of our aircraft work, because when there is a breakdown in the processes, it was always in someone's memory. So, we want to make sure we are able to capture those processes so that we can see. Because in the past, we relied on people's memory and expertise to ensure that things happen. (P9)

Additionally, needs for change and improvement in the firm's KM are identified from benchmarking initiatives, which highlighted the different ways adopted by competitors in managing similar processes. Gaps identified from the benchmarking procedure draw the firm's attention to knowledge and work processes that require modifications. Consequently, various courses are designed and relevant changes are performed in ENG's operation to address the gaps.

When we want to implement changes in our organisation, we benchmark to challenge our own perceptions. Because we have had it before in the organisation and they have looked at that, so I need to take them to different organisations for them to view. It is only then, they start to change, and it is when learning in that change behaviour will only occur. I have to take them outside of their own comfort zone to a different environment, and challenge their own old theory. It really occurs in behavioural changes. (P9)

They are sent to our sister company, which has a similar shift system but with different processes. They go there, make observations and have discussions with someone with a similar position. They talk to someone and straight away they could see the different in work flow. They benchmark and then they could think about the challenges in their own procedures. Sometimes in organisations you can get very in silo. They

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might think that they have done a very good job here, but when you go to other organisations, you'll think that she is away, miles away. So, that is changing their world view. (P9)

Again, we have a constraint with big brother. So, big brother, we have to follow their things as well. They have written down strategies, rules and information, what is here is what it is. But a lot of people don't know we are having that information. (P11)

Hence, the internal and external forces highlighted the need for ENG to acquire new knowledge.

Those guys who are against the change, they need to look at a different organisation's environment, benchmark themselves. (P9)

Further to that, some employees admit the importance of developing new knowledge to become more competitive in the industry.

From my knowledge about this organisation, within the last ten years, the aviation industry has become more competitive and more business-minded, I think every time the management changes, there will be more innovation, try to bring something new into the business, for example, streamlining the operation. (P15)

Nevertheless, strict regulations and procedures imposed by the aviation industry regulators limit the flexibility to amend and modify the existing standardised operation, and hence have impeded the need for generating knowledge in ENG.

In this industry, it is much regulated, there is narrow corner that we walk down; you can't deviate from the simple lines, so everyone understands that there are certain rules and regulations that you will accept. So in this structured and regulated industry, you just accept it because that is how it is. It has to be that way. You don't have the luxury to say something. Everyone understands the rules; it is very rule-bounded. (P11)

As mentioned in the previous section, both legacy files and computerised systems are used for recording the procedures followed and the tasks performed. While management anticipates positive outcomes when making changes in the utilisation of computerised system, the operational people view this matter differently. For instance, there is an assertion that changes to a new system have caused an additional burden for the employees in documenting tasks and preparing paperwork. Apart from demanding additional expertise for handling the new system, it does also extend the time required for job completion.

> The way we are asked to do is actually, to do complete your task and then complete your paperwork, but we don't because we need to get the aeroplane flying over there rather than anything else. But without the task being signed off and closed, the aeroplanes don't go either. It might take about 5 minutes with the old system, but you might need about 15 minutes with the new system. We have 10 to 11 tasks every night, you know. (P14)

Consequently, there was criticism from the operational level that management should evaluate their decisions in making KM changes to ensure that there is a rational need for such changes.

> I think changes are important only if they are needed. Don't just change something because you think it should be changed. If it is working, don't change it but if it is not working then change it. The existing system and procedures is not what I want it, I don't think it is efficient. (P16)

In other words, KM changes should not be carried out if the need for the changes is not apparent or pathetic, since unnecessary changes can affect the efficiency of the existing work processes.

Further, participants asserted the need to understand the objectives underlying changes in KM processes. From their point of view, there should be reasonable reasons for proposing changes in the existing processes. The goals should be both realistic and attainable, and should minimise hassle in performing the job. Staff members would be more appreciative of the changes if management encouraged

achievement of the change objectives, despite the challenges during the early stage of change implementation. For example, management should highlight how changes in the processes would offer solutions for problematic aspects through modifications in the workflow.

> You need to come out and say what we are doing at the moment is unsustainable. We need to wake up and we need to change the way we do things... So what we are going through now is to improve the processes and ensure that the processes are simple and everybody can follow them... We are always looking to do things a lot better, so change is very important... Continuous improvement: that is why we need to do things in a smarter way. (P9)

> If you want to see it from a bigger change perspective, which [system changed] was not something unknown, but everyone fears what is going to happen... They need to know why and put it in the proper context of what you are trying to achieve. Because when you want to introduce something, the first thing they will ask you is, if there is any risk to me, if you can save me hours of work, for example... I am quite lucky because changes that I've introduced are for improvement, so it has helped. The staff here, they like it because it is easier... Make it [the change] realistic; give them improvement, something that they value. (P11)

> Sooner or later it will improve the way we do things. The problem with that is, we are here for ten hours each night, we generally leave our paper work to the last thing because our goal is to get the aeroplane back for the passengers. The paper work, most of it we will leave it, the goal is to get the aeroplane back to the hangar, then only do we do the paperwork and sort everything out. So, when you have finished working on the aeroplane, you're really tired, you don't really want to look at them [paperwork]. (P14)

Moreover, besides clear understanding of the purpose of change, employees need to be convinced about how changes in the existing process could benefit them. Feedback from the participants reveals there are different ways in which change benefits are appreciated by the employees. Some employees view changes positively, while others perceive that changes complicate the existing processes. To deal with this situation, management should be more proactive in providing sufficient explanation about the benefits of change to encourage openness towards the changes. This is due to the fact that different perspectives on the change benefits could influence individuals' change understanding; hence, shape their readiness for embracing the changes.

> There are a couple of guys here that don't like what we are doing. They may do what you tell them or they might change the way to do it. For these people, you can't just ask them to do it. We need to tell them the benefits of doing that. For example, I think you should consider how to do this because this way would be better or worse or whatever, and then they might consider. But, generally people won't do that sometimes. (P16)

> Yes, some people really liked it, some people didn't like it. Some people felt it is a lot more time consuming, some people felt it is totally different... For example, when we introduce the new system, we put up the manuals on the computer. So, the older guys will go and get the manual because the information is faster; the younger guys will go to the computer to search for the data there. So, it also depends on how familiar you are with the changes. Sometimes technology could be the barrier, because it takes longer to open the files... We are moving forward and there are a lot more opportunities as it offers more functionality, which will change the way we direct on the shop floor. So it has a lot of potential to change a lot of the ways we're doing business, with the processes. (P9)

> The new system requires a lot more paper work for the engineers to do. Apart from that I think that's alright. Pretty much, it is about more paper work. (P10)

We have the old system; it is easy but slow and inaccurate. The new system has more processes but it is far more complicated if you want to get things done based on these processes... It is about telling people how to do it, and if it is working well, we are not against it. I think it always been a debatable issue whether or not the old system is better; having some problems though, but it was good. The practice which is better will get to be used, so which one is the best. (P11)

Knowledge-related changes that were implemented by the development unit of ENG have been focusing on the operational improvement. With regards to these types of changes, operational employees are encouraged to contribute ideas in streamlining the processes that affect their jobs. In this way, the proposed changes are commonly well-received by the employees because the benefits are evident. Since the employees understand the processes and are aware that changes in the process would improve their work and consequently benefit them, their understanding about the changes is lifted. Therefore, their understanding about the benefits of the changes has encouraged them to participate in the changes by contributing ideas for improvisation, thus enhancing the knowledge creation process in the firm.

More generally in making improvement, I've tried very hard not only to improve design and functionality, but I also have tried to minimise difficulties of installing and removing equipment. So, I make the engineers' life a lot easier. What I'm doing at the moment should cut the time to change the fan from 6 hours with 2 people down to 45 minutes. It saves massive amounts of time, making life easier and speeding up the maintenance program which will save money and improve the equipment function and the use of it. I found that implementing stuff like that is very easy. Everyone loves it if you are implementing stuff that they like and that will always be great. It will benefit them with less effort and more comfort. No big issues at all... Everyone likes something that is made easy for them - more comfortable and provides them with more money. So,

anything like that, from the perspective of engineers can improve conditions, improve the environment and improve working conditions. It is well-received. From management's side, changes are accepted if it is something comfortable for them... The rumours, it usually rocks, but when the official change takes place, they can see the benefits, they will accept it. So, that is how I do it. (P11)

Nevertheless, not all KM changes in ENG were well-supported by the employees. In the situation where the benefits were ill-defined, employees were reluctant to cooperate in the change initiatives. For instance, ENG has introduced changes in the compilation of information and knowledge through utilising a new information system. Even though the prospective benefits of the new systems have been highlighted, functionality of the new system is perceived to be too complex in comparison to the old system. To explain, the employees view the new documentation process as time consuming and demanding for additional expertise due to the complicated documentation of paperwork. Hence, the complexity of the new system outweighs the expected benefits and has consequently affected the existing process efficiency.

We also have a new system in place... a very complex system compared to the old system, I guess. Probably, it is a lot more labour-intensive. It is a lot better system, but I guess we were used to the old system and it takes a while to understand the new system. The new system is more labour intensive in the sense that with the processes around in the old system, we could see everything on that screen, the defects or to order parts. But now, we need to go to different screens for different functions (raise defects, order parts etc). If there is no part in the stores, we need to go to another area to order the parts. At the same time, we need to close the previous page regarding the defects, and we have to go to another area again. Efficiently, it should give us the areas in one place. This is a different interface, we were previously using one screen, but now we are using multiple screens. (P12)

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The new system for documentation, it may benefit in the long term. From the engineers' point of view it is quite complicated. We have to follow all sort of work. It was not smooth as expected. It doubled up paper work and there is more paper work to sign. It is not like the old system. For us, it seems to be a lot slower. It set backs our work at night, it is more complicated. It is less consistent. It is designed to be simplified but turned out to be more complicated. (P13)

The new system is different from what we used to use before. It takes a long time to get everybody familiar with it. Most people until now are still stretching and learning it. (P14)

I guess it is about frustration. We were used to the system for about four years on how to do it and someone came in and introduced a new system. For us on the floor, it seems to be more paper work, a lot more work. If we used the old system, it might take us about 5 minutes to finish; now it takes a longer time to complete the information....I think, if we did it the other way, if each time we did the task, we went to the production office and did the paper work, it would probably take us another 15 – 20 minutes of our time working on the aeroplane. So, instead of an aeroplane being on the hangar at 4 in the morning, it might be there at 5 in the morning. (P14)

Another crucial aspect for enhancing employees' KM change understanding and beliefs is the presence of management support for the change initiatives. In ENG, management claimed that changes for improving KM are carried out with support from the managerial level.

Incremental, always protocol process improvement or to improve the way we do business or even improving and people on the top are part of it, supporting it. They get involved to do that and control them. (P9)

For instance, management asserted that support is provided in enhancing the employees' understanding about KM changes through provision of training for new procedures for documenting knowledge.

When we have transition we have people out there to assist them for up to six weeks. So we can train them on how to do it, what is happening; we make sure that they are well-supported before the handover. (P9)

However, from the operational point of view, there is lack of continuous support to assist employees to embrace the changes. For example, although training was provided prior to the implementation, there has been lack of monitoring effort to evaluate employees' capability in handling the new system after full transition of the system usage.

I guess there is no identification of people who are struggling. So, there might be an engineer who is struggling to understand how to use it. But if no one is aware that he is struggling, he will always struggle. Whereas, if we have targeted and we see that he is struggling, we could give better training that will help him to overcome the problem...There is no effort by management to encourage employees to externalise tacit knowledge. There is no knowledge pool and there is no mentoring or anything. (P12)

Additionally, comments and feedback about the new system were voiced by the employees as encouraged by management. However, minimal action was taken to help the employees to overcome problems with the new system.

There was feedback in the company when they implemented the new system. Both positive and negative feedback was given, but then they didn't take any action about what you needed. Once they had implemented they said there is no need to turn back. For the engineers, I think the issue was frustration with the implementation. (P15)

When they were working out the system before the implementation, they put out a monthly newsletter, to tell you about the system and when it was going to be implemented and etc. Since the system is coming, there is generally two ways communication that says we want to do this and we want to do that. And they come back to us and say no, it is going to cost us too much to get that system changed. (P16)

We have a few meetings; supervisors have meetings with management and we talk about the problems. We tell them the problems and they ask us what the solutions are. You know, I won't tell you the problem if I have the solution for it. They are a little bit of listening (attentive) but they don't really take action. (P16)

Therefore, while management asserted that employees were informed about the changes and were able to give feedback regarding the new documentation process, from the operational perspective, support from management was claimed as inadequate and less action materialised. Consequently, the employees were less convinced about the implementation of the new process for documenting knowledge.

Besides inadequate support for the documentation process, a similar situation is also perceived by the employees regarding support for obtaining new knowledge. With regards to professional knowledge, the employees agreed that management encourages individuals' initiative to acquire professional knowledge by attaining professional qualification. Even so, limited facilities and resources are provided in order to support professional development initiatives.

One thing that I would like to say here is, we have many types of engineers here, unlicensed engineers like I am. Then, we have licensed engineers who have the authority to release the aircraft. To become a licensed engineer you have to do about ten licensing exams. The company sort of encourages you to up-skill and been up-skilled as you go along, but there is no special facility like a library here to help you pass the exam. We have to do it on our own. I think it is a good idea to have it because we have a certain number of exams and certain books to cover certain exams. You have to purchase the books. There should be resources for us to help us up-skill and become licensed engineers. At the moment, it is done individually. For example, I've got my own book to do and we share between each other, but there is no official policy, so that is the way to [upgrade your knowledge]. (P10)

Apart from barriers to acquire professional knowledge, the employees also believed there is inconsistency in the provision of training to support technical knowledge acquisition. Despite requirement for scheduling re-currency training every two years, the plan has not been fully accomplished. For instance, one interviewee claimed that there were cases where employees were not sent to attend the re-currency training within a specific period. In the end, management enthusiasm in supporting new knowledge acquisition in ENG is less apparent.

> I think one thing is the frustration in terms of training and retraining. Some of the guys who have done their last training about 3-4 years ago are querying on retraining right now. I think there is no response from the management. Sometimes, something is not being done in the appropriate or efficient time frame. It takes too long. Then, it will cause frustration among the employees. (P15)

Looking from a different angle, steps were taken to overcome the above deficiencies, following the recent change in ENG leadership during the period of the study. A new chief executive officer (CEO) was appointed to take charge of ENG's operation. The new leader has put some efforts into improving the sharing of knowledge between the two levels: managerial and operational. By doing so, the new leader encourages contribution of ideas from the bottom level, yet responses have been lacking.

> So, there is the sense of if they have opportunity to voice out, they are really welcome and we encourage that. She (the new CEO) tries very hard to do that but there are still barriers there, but we do not know why because the engineers on the floor didn't say it. But she can't talk anyway, so if you don't want to talk how she can even think that there is a problem. I think she tries very hard to open them up, but it is one way at the moment, just from her, not from the bottom for now. As for the bottom, they keep their opinion. (P11)

On the basis of conversation with the operational people, the barriers or difficulties are said to exist at the middle level of the hierarchical structure. This situation could be due to the embedded mind-sets within the employees who believe there is a gap between managerial and operational level. Consequently, this pre-conceived belief hinders effective sharing of knowledge between the two levels. This belief, which results from experience with the previous leadership, is difficult to change.

> We've got a new GM, she came in and a lot of changes happened, but the middle management they don't change. I mean, the expectation on them doesn't change. Since they don't change in what they do, so therefore we're just stagnant.... If you come back in six months, I'm pretty sure that you will see the same thing. We are still doing the same thing now, apart from a different aircraft, as what we were doing in 1998 when I started.... You can give ideas that they like, make money or make things easier, I'd like to know if the ideas are adopted. (P16)

The gap that restrains effective sharing of knowledge has also caused diverse interpretations among different functional areas with regards to the change effort initiated at the top level. The absence of uniform understanding among those performing the different functions should be addressed carefully so that changes in KM processes could be carried out in the expected way.

> So, it is one of the things brought up in the email: the company wants all departments to function as one. I think if we function as one that will bring the readiness thing. If the company make changes then everyone will help everyone because right now when the company comes out with something, each department will see it from different ways, sometimes not in a positive way. (P15)

As a result, there is a crucial need to instil KM change beliefs among individuals, and at the same time, develop collective understanding involving all levels of the firm with regards to the proposed KM changes.

Collective understanding about KM changes could influence the end result of change implementation. In the case of ENG, accomplishment of tasks on the maintenance floor requires cooperation among the shift team members.

> We spend most time here together, so everybody looks out for everybody and helps everybody, so information needs to be passed around, electronically or by e mails or something. All the time everybody reads it, everybody knows what is happening and we discuss it among ourselves... It is a collective effort what we are doing now because an individual person can't do all that we need to do. Everybody will work together to achieve what we need to do. So, everybody helps everybody else. Sometimes it doesn't work that way, but it is alright. (P14)

Since the tasks are largely team-based efforts, an individual team member beliefs and perceptions of change could also influence others. Feedback from management indicates that experienced staff members have a tendency to resist change as they are used to the conventional system. They are capable of influencing other team members, particularly the new entrants who have limited understanding about the firm operation.

> We are unique because the way we work, we are doing shifts five on, four off and they are rotated. So, every night there will be some guys who are on for several nights and there will be some guys who have just joined them. They are performing strongly or they are not performing; each night the team is different. The team dynamic makes a difference. It depends on who is there and who is not there, which influences learning. Some people have high personalities where learning won't occur; where in another group they have the synergy, thus learning will occur very easily. (P9)

> People's reactions to changes can also be influenced by one or two co-workers. Because of personality and negativity, they tend to be resistant to change. They tend to have a lot of discrete knowledge, they articulate and

they are very convincing in their arguments and can be self-centred and negative. (P9)

The same situation is also observed by one new employee who is aware of the situation, but decided to be neutral in order to maintain relationships with the shift team.

If I'm looking at the team, if any change comes into play there will always be some sort of resistance or resilience to change... Other colleagues could also influence individual reactions. For example, if I come here without opening up my mind, I will base my opinion on what the older guys think. I mean, I learn to break myself from that but I also don't voice out all my opinions openly. I want to be part of the team and not somebody who is coming from the outside and working here. So, sometimes I will hold back my opinion and I don't share them because I want to be accepted by the team. That is the thing to deal with the team and I prefer to be safe... I think it is always trying to be safe, I feel just a small part of the organisation. I think they have more power and influences so it is difficult for organisational change. (P15)

With awareness about the effect of individual influences on collective understanding about changes, management tries to minimise the effect of negative influences through monitoring and controlling actions by the supervisors.

Each of the employees will exhibit different behaviours, and we need to educate the supervisors. If this is the behaviour, this is what you need to do, because those guys can hold people in a small group to ransom. (P9)

Further, cooperation among team members represents an essential element for effective sharing of knowledge to be carried out. It is important to note that the effort largely relies on the willingness of both knowledge provider and receiver in exchanging knowledge. As indicated in the case, diminishing cooperative effort among the staff members in sharing knowledge is noticed.

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Probably one of the better times in this place's history is when we all worked together. But, it is not that much now. Now team work has definitely dropped off and hence tacit knowledge flow will decrease. You've got tacit knowledge, but they might probably not listen to you or talk to you. (P16)

The gap that exists between the managerial and operational levels as well as among the different functional groups, results in ineffective interactions among the staff members. This situation could explain the low commitment from the operational floor with regards to the changes proposed by the top level.

For the department, how we operate, we do see ourselves as part of the organisation, but we also feel that we are an individual department, rather than feeling like a sort of team between departments... That is what we are working on here. We don't interact or communicate with other departments as often as I think we should. We have the engineering department, technical, administration and pilots. The administration department is further broken down into customer relationships, human resources and business. I think we always feel as if we are lagging behind the rest of the company. We only receive basic information. (P15)

Hence, developing collective understanding among the staff members and increasing cohesiveness among the different functional areas to support KM initiatives still poses challenges to ENG.

While it is essential to develop understanding and beliefs about KM changes at the individual and organisational levels, it is also crucial to assess individuals' and firms' capability to be ready to carry out the changes.

In ENG, there were diverse reactions from individual staff members when changes in the work processes were proposed. The different reactions could have emerged from individuals' personality and attitude, which then shaped their readiness for embracing the proposed changes. As the following quotes from management stated:

Sometimes they adapt very well, sometimes they don't. It relates to personality. The smaller the organisation, those personalities of people have larger effects on change in the organisation. It is based on personal behaviour; because you are very well-motivated, very well-focused, so therefore bringing in change should be pretty easy. So, those key personalities do have influence because we are a small organisation. (P9)

I think it [different reactions toward changes] is mainly due to attitude. This job is not one that you really can just pick up and put down. For the last ten years, I have been certifying aircraft in which everything I do has some lives risking on it. I had a bad day doing something wrong. But there are people who are doing maintenance who just don't really care what they are doing. So, yes it is attitude.... Attitude will bring the aptitude as far as we are doing the job. You may not have the aptitude to do it, but you've got the attitude that you want to do it. It would probably carry you a bit further than what you would be. You're probably not good in mechanical, but if you've got the attitude you will probably go far at national or international level. (P16)

One important aspect concerns individuals' ability to be flexible in dealing with changes related to the KM processes. Staff members who are flexible seem to be more adaptable in handling variations underlying the new processes. The findings indicate that some people portray resistance to the proposed changes because they are familiar and comfortable with the extant system. From their perspective, adapting to the modified processes is likely to be out of the ordinary. For example, the following participants mentioned:

In my opinion, to some extent, some people are less open to new changes. I think it comes down to how individuals view things or how individuals become comfortable doing the way they do things. (P15)

Some people appreciate changes, so they don't get so bored. Others don't like changes because they like things familiar. (P16)

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I guess it is just someone who does not like change. There are some people who like the status quo; stick with the way they do things. We have used this way and if you put something new in place, they get stressed, I suppose. They don't like things out of the ordinary. But we are now down on track and they should realise that we are using it now. (P12)

In addition to a preference for familiar processes, the ability to be flexible could be influenced also by the elements of position and power. Findings in ENG's case imply that certain individuals were reluctant to be involved with the proposed changes due to embedded beliefs about the best way works were performed. It is quite surprising to find that most of the people who were negative towards changes consisted of experienced staff members holding some positional powers. They had their own set of beliefs in carrying out their job, thus refused to change to new work processes. As stated by one manager:

Human nature: there are some people took changes [new knowledge] very quickly and get to the new methodology, but others didn't (P9).

Because we deal with a lot of expertise and expert knowledge, they have positional power. They're working on their own and they tend to think on their own; they refer to their own embedded beliefs because it has worked for them before. Then, because they have positional power or expert power, and they know what works well, trying to modify their behaviours could be very hard. (P9)

Those guys who work in their comfort zone and they retain that attitude and when we try to bring in some changes, they are quite happy with what they are doing and they don't want to change. Supervisors, yeah they are quite happy with the way they are doing things and they don't want to change because they think they are better, so apathy. (P9)

For example, some of them showed discouraging reactions during implementation of the new documentation system:

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Sadly, I think some people who have been here for a long time and have been using the old system, they have found it difficult. They are struggling. They are probably not accepted as their positions should be. (P11)

As found in ENG, while the experienced staff members have more difficulties in adapting to the new system, junior employees, particularly the new entrants, are more flexible in accepting the changes.

I remembered when I started; many changes had been implemented including the software change on store that handles the parts. For example, the company required people to do more work and use new software. Some of the engineers were a little bit resisting for the transition. I was new to the software so I didn't really have a problem. They were using the old one, but it was in the third month of transition when I came. So, I was just briefly taught about the old software and they were concentrating more on the new software at that time. So, for me I've found that the transition was easier. For them, I think because when you have been doing something, it is in your mind and when something new comes in, your mind doesn't agree with that. (P15)

Nevertheless, from management's point of view, changes are required for improvement, hence reasons for being inflexible attracted little attention compared to the need to stretch one's expertise and embrace the modified procedures.

The new information system, that is pretty good. I still see a lot of guys fighting over it.... Some people say, Oh I have to do this, but, maybe the computer system should do it, so that I don't have to do that. I think that is more that they don't want to use it, so they are making up what they don't know. The fact was the attitude of the person who doesn't want to learn. (P16)

We have about 18 aircraft with about 400 types of defects. You have to put all this information on the computer system. So, we are not going to

stop that just because somebody doesn't like it. Not many people are against it, but there are some guys who just don't want it. They are generally those who tried to fight on everything because they don't like change. It is all about the attitude, I think. (P16)

Moreover, another important consideration reflecting individuals' capability to handle KM changes is having expertise relevant to the proposed changes. For instance, expertise required for managing knowledge in ENG includes technical and expert knowledge related to the aviation operation. Expertise, in the context of ENG's operation, reflects the experience and skills that are developed over time. Management asserts that individuals' expertise is enhanced through interactions with co-workers from various industries background and job experience.

Because we are in an engineering and maintenance facility, it is quite complex and we only have a small group of guys, so it is important that we have high expertise. The way to get the expertise is experience... If you look at the number of guys here, we have a lot of guys who have been here for ten years, seventeen years, three years, and there are some other guys who have only been here for one or two years. They all come from similar industries with a lot of tacit knowledge, but are pooling up their experience on our aircraft types and business. (P9)

You need to be lateral thinkers. You are not only reactive but also you need to be reasonably proactive in the way of thinking and you need to be able to think outside of the square ... We are very reactive on how the way we operate, so you need good managerial skills and you need the people skills. (P11)

It is interesting to note that having expertise with regards to the changes introduced is claimed to shape different reactions by the affected party. Some prefer change due to the expertise that they have, but others could resist changing because of their deep understanding about the changing circumstances.

It is very easy to introduce change to the engineers because what happened is that you've got young guys who have the respect and change behaviour according to the standard. The older guys that have been around for a long time are harder to change because they know what works for them. Supervisors tend to be, they are the people who have been around for a long time and have tacit knowledge that they try to pass to the younger guys. (P9)

Availability of expertise among the experienced engineers facilitates the process of obtaining knowledge from the internal sources when knowledge loopholes are found. For example,

If I have any question I can ask along the way and supervisors will give feedback. Anything that I have in mind and any doubt can be asked about. (P15)

When you pick up the engineering notice for example, you read through it and if you don't understand what the changes are about, you then go to the supervisor and ask him about it. They will put you in a right direction explaining about the changes and the reasons why they are being introduced. (P14)

In conjunction with that, the experienced supervisors are also responsible for handling necessary courses to impart knowledge to other engineers due to their in-depth understanding about ENG's operation. For instance,

So when we see knowledge deficiency in our organisation, we will go and run the course to bring it up. (P9)

Expertise that is gained through multiple sources and nurtured over time is crucial to assist the staff members applying knowledge when performing their jobs. From the findings, it is apparent that the staff members' ability to adapt to changes, specifically in applying existing knowledge in the new context or condition, varies according to their level of expertise.

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We've got training with the aircraft, the same general training, to introduce to you what the aircraft does, what it is doing. How you do it is up to you… We modify the way of thinking on work based on the old aircraft and adapt to a new aircraft, we are supposed to. We use knowledge from the old aircraft; it is pretty similar. That is what we do but some people can't do that. (P16)

Similarly,

When we introduce the new system, we put up the manuals on the computer. So, older guys will go and get the manual because the information is faster, and the younger guys will go to the computer to search for the data there. (P9)

Expertise that was developed from experience working in other firms could also influence the way knowledge is applied by the staff members in the firm's operation, as illustrated below.

We have one guy from another airlines company, he came here and all he can do is say that in the previous company we do it this way or that way and stuff, which the company is a lot better at. The fact is his old company is a long way behind in some of their thinking, while we are way up here. He is using his experience in the previous company to support how he stays now. So, he is using his expertise. (P9)

Likewise, findings also indicate that by having necessary expertise, individual staff members could be more willing to share knowledge with colleagues. As mentioned earlier, at ENG sharing of knowledge is largely being practised informally, for example, through discussion among the shift team members. Those staff members with a lot of experience possess considerable tacit knowledge that could be transferred to other colleagues.

If you look at the number of guys here, we have a lot of guys here who have been over ten years, seventeen years, three years, and there are some

other guys who only been here for one or two years, they all come from similar industries with a lot of tacit knowledge, but pooling up their experience on our aircraft types and business. So, they have a lot of deep knowledge that they can transfer to the labour floor to those with the technical knowledge but does not have knowledge about our aircraft. So therefore we can transfer or make it accessible to them, so it is about transferring tacit knowledge about aircraft that they have to those contractors, so therefore how do we do this, you come and show them. So to put things on hands, which improves quality, process, do it right first time, productivity. (P9)

However, one participant stressed on the decreasing number of experts in the firm, which could weaken ENG's knowledge base and affecting the knowledge sharing process in the firm.

Basically the work has changed a little bit, we seem to do more work than what we normally do, and our skills don't really change unfortunately because that is the nature of this industry. People come and people go and of course changing up and down goes on....The knowledge base is still there, but I think it is not that good as it is used to be. When I first started here, the knowledge base was really high. We have a lot of licensed engineers here doing the job. (P14)

The challenge for management hence, remains in implementing a process that could encourage and facilitate a structured flow of tacit knowledge in the firm.

Myself, I guess I have a lot of knowledge up here that stays here because I need that. But, it is not something that I can certainly write down or pass it along to anybody. It is tacit knowledge which is not visible… We have a lot of tacit knowledge with some people on the floor who have been in the industry for about 40 years. They've got a lot of tacit knowledge; you can't always get that information out; unless in certain circumstances that

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occur where the tacit knowledge would be useful, that would never come out. (P12)

Further, the new documentation system introduced has advanced technological features and interfaces that affect the staff members' capability in handling documentation process. To resolve the issue, the staff members were trained to assist them in having necessary knowledge and being capable of using the system.

> With the new system, we've got people from the shop floor who went through the training and we documented the training. So, we have the expertise; after we conducted the training, we got them to train up their peers and their expertise would help them on the shop floor when they go back to work on the aircraft. (P9)

Findings from the case imply that the staff members who have expertise related to technology utilisation are more adaptable with the new documentation process. In contrast, staff members who are less technologically literate, mostly consisting of earlier generations, have more difficulties in adapting to the new system.

> I can divide the people into under the age of 25 and above the age of 45. I would expect to see 90% of those under the age of 25 would accept the system, and for the age above 45, I would expect that 40-50% of them accept the system and they are not being through the computer generation. For the younger guys, it is easier to handle the system. But for the older guys, they are struggling and they are not interested, so they are going to ask why we use it. They have to learn to move forward, so there is always going be a barrier there, I think. (P11)

> There are always people who resist change but at the end of the day we have to do it. It is obviously because the old system is gone and we need to use the new system. There are people who are probably not computer literate who have difficulties. So, if they have experience in the use of computer, then they will understand a lot better than someone who hasn't.

We still have some groups who are not used to computers and they struggle quite a lot. (P12)

Since expertise could shape the staff members' ability in handling changes in the documentation process, it is crucial for them to receive continuous assistance from the experts. By equipping themselves with necessary expertise, their understanding of the system's features and usage is enhanced, thus resulting in a more ready state of embracing changes in the knowledge documentation process.

We are quite fortunate that one of the guys on the floor with us was the one who helped to introduce the system to the company. He is very handy to help at night… We also have supervisors who are clear about the system, they help us most of the time when we have problem using the system. (P14)

As a conclusion, flexible attitude and expertise are the crucial elements that could shape an individual's capabilities in adapting to changes in the KM processes of ENG.

Apart from understanding individuals' capability to embrace the proposed changes, management should also provide an appropriate context to enhance readiness for implementing changes in KM processes. Findings from the ENG's case study highlighted various factors at an organisational level that are considered crucial for KM implementation including the availability of learning mechanisms, communication of change process and opportunity for participation in KM change processes.

Coaching a new entrant is regarded as one of the learning mechanisms for assisting employee to be ready for knowledge acquisition and knowledge application.

When a new engineer comes in we will put someone experienced on the roster to work with the newbie… so they can use that person to ask

question, which is basic information about the company that they need to know (P9)

Further, from management's point of view, formal and on-the-job training represent the main mechanisms for employees to learn about processes and procedures in ENG. Both formal and informal training are considered important to support employees' learning process in ENG operation, including in acquiring knowledge.

We educate a lot of people on tasks by on-the-job training; train them on how to do it, but that doesn't mean they understand why they are doing it. So, therefore they go through their tasks and perhaps to understand. It is where the classroom learning taking place. So, therefore they are being told how to do the job, they also understand why they are doing the job. So, that is deeper knowledge; you can train someone else how to do the task, but without understanding why do you do that, so that is shallow knowledge. (P9)

If the course is available then that person will be put on that course. There is a two weeks course. You will come back after the training, you read the manuals… It is very hard actually to get the skill from people going abroad. So what you need to do is you need to train them with what you want them to be. Somebody else works so hard spending time in training people. (P14)

The company will give the training and re-currency training to provide support and benefit the employees. I attended the training when I came in. That was my first training, the aircraft training to familiarise myself with this type of aircraft and then I went on to the work floor. (P15)

However, from a different perspective, there is an assertion from an experienced engineer that, besides a compulsory training provided at the beginning of employment, other formal training is rarely being conducted that support acquisition of knowledge in the firm.

Training is important but we are not doing it. We talked about it but we didn't do it. We don't have internal training. The big brother does it but we don't have it... If you come here for a job, you will get a week to be familiar with the hangar. You have a couple of days to read the company manuals, not the aircraft manual; the company manuals explain what we do and you may be put on night shift and off you go. If someone new comes here and he has not gone for training, he will go for the training at the aircraft college. But there is no on-going support in here. You don't have it… We bring new guys in but we don't have somebody to be with the new guys to learn, it doesn't happen. We run a training course for the batch for the two weeks thing but that is partly because it is a cheaper price to do that, but other than that there is no training. (P16)

I think one thing is the frustration in terms of training and retraining. Some of the guys who have done their last training about 3-4 years ago are querying retraining right now. I think there is no response from the management. (P15)

As a matter of fact, other participants also address their concern regarding the absence of re-currency training, which is supposed to be attended once every two years by the engineers. The participants claimed that the absence of such training inhibits learning process and lessen the opportunity for a structured acquisition and enhancement of knowledge among the staff members.

Probably for a couple of years now we have had re-currency training and it is supposed to be done every year, it is a CIAA requirement but it has not be done for a couple of years, where everybody will go for a couple of days in the classroom. (P14)

This situation, in turn, affects on-going learning support for the employees through a formal mechanism. Since individuals' need for a specific training is sometimes overlooked, the employees need to rely more on informal learning with co-workers to gain additional knowledge.

The only major change was when the new system was coming in to replace the old system. I was working as a contractor when it was coming, so I didn't receive any specific training on the new system program, where all full time employees had training. They were away for a week, I think, to learn how to use the system, while I had to wait because I was a contract employee then. When I became a full time employee, I didn't receive any training either, but I learn through the job that I am doing, so do not really have to worry. I learn what is needed as I go along or ask someone to show me how to do it. There is no formal training for me. (P10)

Learning from co-workers while performing the job is also considered crucial to support the process of creating knowledge in the firm. For instance, when the employees are working together on a task assigned to them, they commonly utilise and combine their existing knowledge to suit a new application or process. In this situation, their understanding about the operation is enhanced; at the same time the learning practice creates new knowledge for future use. The following quote delineates the importance of learning in the knowledge creation process.

There are two young guys over there, they are learning. Because, there are older guys and they are going through learning and also they got the typical technical training, other than the practical side thing, so they are learning. And processes, reinforcing good processes. You can have good learning and you can have poor learning. Learning is something that we do every day; as engineers we are always being presented with new challenges every day, so how do I go through and recombine or reconfirm or re-convey that, so it is part and parcel of their documented tasks. (P9)

Moreover, the learning mechanism in ENG also influences the way knowledge is applied in ENG. For instance, availability of training and self- learning that typify the learning mechanism in ENG is crucial to support the application of knowledge in a new context. For technical application, a higher priority for additional training will be considered, depending on the level of riskiness and complexity of the new equipment used in the operation. As mentioned by one of the participants:

Talking about complicated pieces of equipment [that results in changes of procedures], then we will carry out training and we will have certain people operate with care. If it is a general piece of equipment that they should be aware of, then just put up for general use. So, it depends on risk assessment of equipment that we carry out. It depends on how complex and how dangerous this equipment is. (P9)

Nevertheless, in a certain situation, formalised learning through training alone is inadequate to ensure rapid adaptation of existing knowledge into a new context, as explained below.

When talking about new knowledge, for example, when we introduced human factors engineering, what we did was we went for training and we reinforced continuously. You can have courses and training but that doesn't mean people will take it on board. So therefore, it can take a longer time to influence a new culture of knowledge; to influence cultural thinking that can take a longer time. So, therefore, you can go through and run the course, but it is reinforcing of that message, it takes time to become embedded. That can take a little while. (P9)

Instead, management agreed that informal learning mechanisms, particularly support for self-based learning, could cultivate application of knowledge in ENG's operations. Since experience plays an important part in knowledge growth in this type of service-oriented firms, the employees who have been working for a longer time have a better potential for applying knowledge in a new context.

We modify the way of thinking on work based on the old aircraft and adapt to a new aircraft as we are supposed to. We use knowledge from the old aircraft, it is pretty similar, that is what we do, but some people can't do that. So, that is kind of modification of knowledge. Most of us probably learn from someone else. Probably 40% of your knowledge you learned from someone else, while 60% is self-learning. (P16)

Further to that, management asserts that assigning new entrants to work with experienced supervisors at the beginning of their employment represents another learning mechanism in ENG. Under this informal mentoring practice, the new employees are expected to learn from the experienced staff members by acquiring new knowledge through sharing.

> For example, we have two guys at 70 years of age, who are still working. One guy operates over there [at the hangar] and he has a lot of tacit knowledge that you can't document it. He is working with two young guys, so he is transferring that knowledge to them. Mentoring, sort of coaching, we got on-the-job training or OJT to allow them to learn how it is done. Not what is to be done, but how it is done, so showing them what this is. (P9)

Nevertheless, from the experienced supervisor's point of view, the current practice of coaching is less effective in facilitating learning through knowledge sharing. This is due to the fact that, with rotation of shifts, the new entrant is assigned to work with different supervisors according to the shift assigned to him. The practice, which has not been formalised as a structured learning process, could also affect the effectiveness of the knowledge acquisition process in the firm, particularly with regards to tacit knowledge.

> I am quite a believer in mentoring and I think we could probably use that to our advantage and to help a lot of people... Myself, I believe that mentoring is an appropriate tool to disseminate some of that tacit knowledge. (P12)

To be specific, an experienced engineer claimed that a structured mechanism that allows for pooling of tacit knowledge in the firm is yet to be established.

> As far as the company is concerned, tacit knowledge is under down within the group if people want to learn. Tacit knowledge is sort of hiding, if you don't want to know it. So, there is no company outlet for tacit knowledge, I guess, as much as it could be. (P16)

Consequently, the existing flaws in the current practice of learning through knowledge sharing in ENG with an absence of a formal mentoring program and a formalised means of capturing tacit knowledge could impede readiness for the process of sharing knowledge within the firm.

Moreover, ENG has also experienced changes in the way knowledge is documented, with the implementation of a new information system to replace the previous system. For management, the new system resembles the old one, but with additional features. Considering training was provided during the initial period of the system transition, management was expecting only a minimal problem would be faced by the staff members in adapting to the system.

> Again, that is how we went through it - we kept people updated and we went through training programs. So by the time it [the new system] arrived, the guys knew it was arriving. Everybody considered training was occurring and when we had transition, we have people out there to assist them for up to six weeks. So we can train them on how to do it and what is happening. We make sure that they are well-supported before the handover. (P9)

The above view was also supported by the other interviewees who acknowledge the provision of the initial training.

> Everybody went through training and the middle manager was involved in bringing the system on board. There was about a week of training. We were sitting in and asking them for a week. (P16)

> We were also provided with training and supervisors would guide us if we have difficulties with the software. Then, I think after 3-4 months most of us accepted the new way of doing things. (P15)

Likewise, from management's point of view, support through training is perceived as adequate to help the employees to learn and understand about the new documentation system.

As far as we are concerned, it might take some period to use it, but the system has been implemented very well. The change though - the way we handle the change, we provide a lot of training and education… We have key strategies where we make sure that those who did the training can come to the shop floor. People can make that transition and understand that terminology has changed a bit, so people can make comparison between the two systems and can understand how the terminology has changed… We went through and checked it out; we went through testing the system. We try to make the guys ready for the changes in the system before we go through it. Checked against the processes to make sure what they are doing is correct. (P9)

From a contrary viewpoint, at the operational level the initial training was inadequate and since re-currency training was not carried out, some of the staff members are still struggling to master the new documentation process.

We did training before the system was introduced and the training was good. But we had the new system at that stage and there was no further training afterwards… Primarily, responses will be around training, whether there is enough training or adequate training or correct training and I guess no re-currency training after we implemented it. There is no follow up training sort of that. So, I guess some formal in-house training would help people who are struggling. (P12)

Additionally, inadequate support for learning about the new system leads to the argument that modifications in the system for documenting processes and procedures in ENG are considered burdensome.

We've done courses on it and trained everybody to use it. Basically, at the moment, we can write the defects and the basic stuff but to get other stuff, it is a lot harder. (P14)

From the above discussion, it is apparent that informal learning is widely practised in ENG to support the processes for acquiring, creating, applying,

sharing and documenting knowledge. However, the existing practice is perceived to be less structured, implying the need to improve learning mechanism that could strengthen the contextual foundation for knowledge processes implementation in the firm.

Apart from learning mechanisms to support KM processes implementation, communication represents another crucial aspect characterising the appropriate context for supporting knowledge processes at the organisational level. As an example, communication among the shift team members and with the supervisors facilitates the process of acquiring knowledge in the firm. At the beginning of their employment, new entrants communicate with the experienced engineers to obtain knowledge. The process continues to be practised when the employees are assigned to work with the team members through on-going discussions. Hence, communication among the colleagues accelerates knowledge acquisition among the staff members.

> When a new engineer comes in we will put someone experienced on the roster to work with the newbie… so they can use that person to ask question, which is basic information about the company that they need to know. Once they are comfortable in the company, then they can use all corporate knowledge that they have in their job. Some people can go straight away and some don't. There is some information on how people come to the company and gain tacit knowledge. It is how they use the information and knowledge depending on what they are. (P9)

> I still think formal mentoring is a good thing to do. You can always have one person that you can talk to. Whereas, if you are coming on a rotated shift, you will need to meet new people over a period of two weeks or so. You are not going to be comfortable talking to them, but if you are working closely with someone and you have certain rapport with that person, you can talk a bit easier. I think you need to make people comfortable in the company and that's making communication a bit easier because you have someone to talk to. (P12)

Management also acknowledge the importance of the exchange of ideas and opinions for generating new knowledge.

> Initially, when the idea about the program was informed some of the employees were not happy. But the way the meeting was set up was where ideas and questions were anonymous, so everyone was encouraged to contribute their ideas. That showed the management's capability to address the issue where something has changed. (P15)

> I think the way we convey the message, if you offer them some genuine improvement, even a little improvement, generally most of the people receive that well. I think that is part of the way to convey message across the people. Convey it in the correct way and totally in the correct context of what you are trying to achieve… We have frequent meetings to bring up new ideas, so everyone knows what I'm doing. If people have got questions, they can ask and get the answer... Everyone is well informed but it is not very unusual that you get someone who might be isolated about it, so you need to ensure that someone knows something about what is going on, the message is conveyed to everyone, a pretty good way of passing stuff around. (P11)

Changes in ENG's operations are informed to or shared with the staff members through various channels, including e-mails, notices, conversations and meetings. During operational weekly meetings, for example, the presence of middle managers and supervisors provides the linkage for communication between the different hierarchical levels. Information for action from management will be advised to the staff members at the operational level. Likewise, management claimed that queries and suggestions from the operational employees, which are highlighted in the meetings, are brought up to the top management's attention. The employees are also able to have direct communication with management through e-mail, by-passing the middle managers. As quoted in the conversation:

Yeah, we have personal emails and Monday night meetings; that is all. We can discuss all sorts of things about tasks that we are doing, what we need, for instance, store stuff, about that really. You can also suggest things that you don't like. You can express your opinion to the management. We have both ways of communication from top to bottom and vice versa... If we are informed about the changes, for example, through the supervisors, people could be more ready to change. (P13)

We also have engineering meetings every week, which if things come out, we talk to engineers from the night shift every Monday night, to see what problems they've got. So, that is their avenue where they can voice out the problems, concerns and needs. If they don't feel comfortable to talk in front of everyone else, then they can go and see the manager directly after the meeting and talk to him or to us, the supervisors. They can talk to us regarding issues on the floor or whatever; we will take further action if we find it necessary. There is a good communication channel, which is primarily through us, the supervisors. If they are not comfortable with us, they might go straight to talk to management. They can do that, either verbally or by e-mail. They all have e-mail access, which can be used to talk to others. (P12)

Any information from management will be sent through a supervisor or another manager; information about what is happening is passed on through them. They come on every Monday night. So if anyone wants to ask a question, or say something you can ask when the meeting is on or it is done through e-mail. (P14)

Further, the findings also suggest that information and knowledge about changes in the operation is commonly shared verbally.

The knowledge is being shared verbally. When people came through and asked what you know, so there. (P13)

From my point of view, most of the changes were informed verbally. So, management will come up and tell us what is happening. The CEO will come and talk to us if she feels that she needs to talk to everybody. The other way is through the internet, sending e-mails, which you need to check from time to time. I think that is an effective way of informing us because we work at this ridiculous hour when everyone else is at home. If the person was not around the shift, the information will be passed on verbally by others. (P14)

While verbal communication is common, some participants argued that sharing of information and knowledge mainly through verbal mechanism does not guarantee all necessary knowledge is passed to the right person at the right time. As three of the participants expressed below:

Basically, when you leave from this company you will take out with you knowledge that you have for 5-10 years when you were here. They hopefully pass the information to others when they work with them and that is all… Most of the tacit knowledge is shared verbally. (P14)

But, I guess we don't transfer that information all the time because there is so much happening. It is very hard to make everyone aware of every little thing that happens, because many things can happen in the night shift that is just too much information. If the information is passed on, it might be passed on verbally between the shifts. There might also be people who never heard about it and didn't get the information. They are working on their own at that time. (P12)

If there is problem, when we hand down to the next morning's shift, generally we will tell them what we have tried, this is what we have done and this is what we think, it is all yours. So during the night, they will inform what they have done and fixed it. We do share it but also it depends on what you want to know. Sometimes people are interested to know what

you've found, but not all. So, knowledge stops there if the person doesn't want to listen to the explanation. (P16)

For technical changes related to the maintenance operation, information about the changes is commonly shared through issuance of written documents including memos. Information about the technical changes for action is also formalised in the form of reports, notices and updated manuals. The following quotations provide support regarding the practice of disseminating knowledge through written documents.

> For me, as far as I can see if any changes have taken place, we will be informed prior to the changes. Everyone gets the email, there will usually be email sent out to everyone and, apart from the email, memo will be put up on the board. Then, there is a supervisor's report. If there is anything that we come across during the night shift, it will be reported in the supervisor's report and it will be handed over to the morning shift supervisor. Then, the information, queries or anything in the report will be read in the meeting and forwarded to the relevant people. Usually, when you come back in the evening, the feedback will be written on the form. So, these are the things with feedback, the supervisor's report and the memo. (P15)

> The important piece of information will be documented and put on the notice board. If you've found something new, that will be recorded in the engineering notice, on notice boards or e mails. (P14)

> In aircraft servicing, there is no procedure change in it because it is a regulated thing... So, some patterns we can't change. If the standard procedures change, then amendments of the procedure change will be in the company manuals.... An engineering notice is a general notification of maybe some of the patterns how we do something, but it doesn't get into manuals.... An engineering notice is a formalised means of informing about the changing procedures to the engineering guys. (P16)

However, not all changes in the documents, for example in the manuals, are being notified to the employees.

> Modification in the procedures, it is in the book. They will update the manuals...have to write back to the manual. When that goes in, I don't think there is an efficient way to tell it. It is up to you to read the manuals. There is no notification about the changes, if it is engineering manuals. So the management manuals, they will tell you up front what the manuals are and the sample of revisions, but as far as the company manuals or notices are concerned, no. They may notify the changes in the procedures if it is important enough to tell you. They may say we have changed certain procedures, but if something is minor, about the background, no. (P16)

While management asserts that both ways of communication have been established to facilitate sharing of knowledge in the firm, there is a little inconsistency among the staff members' perceptions with regards to communicating changes in the firm's operation. The pessimistic perception particularly comes from the experienced staff members who have been working in the firm for a longer period.

> Communication about changes to the staffs; I'm not sure if they send e-mails to notify about the changes. I'm not sure if I have ever seen anything like that. I think it is a good idea to have that system. (P10)

> Based on my experience, employees are informed about changes. But I think the older guys might say no because they have been here longer than me (P15).

For instance, one participant who has been experiencing the way changes are handled in the firm criticised communication practice among the different levels in ENG's hierarchical structure. He raised his concern regarding the communication gaps between managerial and operational levels that hinder mutual understanding among people at the different hierarchical levels.

One of the things that I have highlighted is communication. I think communication is really bad. The boss, she actually speaks about the things more but I still think that the communication is not good. I've been told the other day by the person who I met in the session last time, he turned up to me. It was really bad, they never answer e-mails. Some people are happy with what is going on now, they don't want to be known and they don't want to know. I like to catch up with what is going on. (P16)

We are a self-governing unit I think, really. We are official staff. But, we govern ourselves and no one from above us really. I mean, if you see tonight, the middle manager is coming, he is my boss and I am these guys' boss, he doesn't have much interaction with us. He is here but we are essentially going this way [another direction], we don't meet them. We have no connection actually. It can be both ways. I'd like to listen from you but generally it is not. (P16)

At the same time, management is aware with this contrasting view regarding communication practices in ENG. In conjunction with that, management asserted that additional efforts have been implemented to improve communication practices, including the use of online communication network. Yet, management emphasised the available communication channels are not being fully utilised by the staff members, causing past problems to remain unsolved.

A lot of engineers don't believe that they are heard, from a bigger picture, from the technical management system. So there are areas what they believed they are not heard, they are not listened to. So, there are a few of discussions and we all know all these - that the upper level here seen them as they don't exist, because they believe they don't know what is actually happening. (P11)

The mechanisms to voice out their opinion include the e-mails - the standard one. There are notes on the board; the report from last night being read out this morning, so any issues are being put on paper... We have a

pretty good system that is in place to allow open communication. It is just the people don't use it or they make it troublesome… With the engineering network, there is reasonably open available information, a local system that anyone can jump into. There is a lot of information written down, multiple sources, from courses to HR. We have also just started the email system to the management in order to ask why something is happening this way and they can get the answer back. Reason with justification or referencing, so these are the references that you can check them out. So, we are pretty open, it is in plain English and no political answers. So it is for communication; it is available if you want to do it. (P11)

Communication also plays an important role in informing the staff members about planning for implementing the new documentation system. Apart from informing about the system transition, the staff members were also notified about availability of training prior to implementation. By communicating about the plan to change to a new system beforehand, management was expecting that the staff members would be more prepared for the introduction of the new process for documentation.

When we plan to purchase new technology, it is on the production board. It is stated there that we are going to purchase that, and we expect people to go through and be familiar with it. The circumstance is that people have to be trained, of course, on how to use the system. So, therefore on the records, on the files, all the information is captured there…Knowing the gap, being aligned, so having good communication, good processes and communicating what the changes are about… Again, that is how we went through it, we kept the people updated, and we went through the training programs, so by the time it arrived, the guys knew it was arriving. (P9)

Generally when something happens like the introduction of the new system, we knew the date that system was going to be implemented, they informed us with updates of information of what is happening. So we all knew from day one that the system is going to be introduced on those

dates, training is there. So we all knew exactly what was going on. So any information regarding anything like that we generally get informed well, so we do know. So, communication is quite good. (P14)

Nevertheless, there are complaints from the operational level regarding lack of continuous communication about the problems and hurdles after the new system was fully implemented. For instance, as mentioned by one participant:

When they were working out the system before the implementation, they put up a monthly newsletter, to tell you about the system and when it is going to be implemented and etc. Since the system is coming, there is generally two ways communication that says we want to do this and we want to do that. And they come back to us and say no, it is going to cost us too much to get that changed. (P16)

In conclusion, it is apparent that management and operational levels agreed that two ways communication through multiple channels is important for the staff members to be ready for changes in the processes for managing knowledge in ENG. A good communication mechanism helps in effective obtainment and exchange of knowledge; it also provides initial guidelines for employees to prepare for modification in the documentation process. Nevertheless, improvements in the existing communication mechanism could benefit the firm, particularly in reducing the communication gap between the two levels: management and operational. As a result of the improvement, it is expected that uniform understanding about changes in the firm's KM processes could be enhanced in the near future.

Effective implementation of KM processes requires participation from the firm's members to ensure that implementation meets the intended goals. Without firm-wide participation, it could be unfeasible to realise benefits from KM. Participation is not only about requiring the staff members' commitment during the implementations, yet is also crucial to encourage contribution of ideas and viewpoints from staff members from the beginning of change processes planning.

Initial involvement in the change process could enhance the staff members' participation once the processes are actually implemented.

From management's point of view, although decision for change is made by people at the higher hierarchical level, the employees are encouraged to contribute ideas and opinions regarding the need for improvement in the firm's operation. For example,

> Continuous improvement: that is why we need to do things in a smarter way. It has to come from the shop floor, as well as from top. You know the CEO looks for improvement, for example looking for ways to reduce costs, improving processes and doing it smarter and better to make you more efficient. That should be happening on the shop floor every day. (P9)

In particular, encouraging participation from the operation floor has largely contributed to continuous creation of knowledge in the firm.

> How we do it is we encourage feedback from the engineers, by telling them I'm doing this and changing this; if there is something wrong with it I need to know. So I'm continually sending them e-mails asking how is it going and is it working, so by asking actively all the time, the good line of communication from my side is great. (P11)

> Some of, probably about 40% of, my workload come from the floor. I actively encourage the guys on the floor, those people at the shop floor to come to me with problems and they know that I am going to consider any request. Just tell me what it is, come and tell me and I will take notes, I will follow up with tracking down and looking for more information or reasons for not doing it. I always give them feedback. Generally, out of 40%, 38% are worthy for follow ups. (P11)

The practice of allowing the bottom level to participate in the knowledge development process is also supported by one of the employees.

The company comes out with the idea and they request feedback from the employees about what they think about the idea. Then, they refine the initial idea, based on employees' experiences and feedback. (P15)

Additionally, a new leadership direction has been introduced in ENG. With the appointment of the recent leader, management is more open to suggestions from the bottom level. Some of the ideas proposed are then considered and implemented in the firm's operation. For instance, as mentioned by one participant:

About two months ago, the company organised a stitching meeting, because the new GM comes in and with the new management there were rumours that go around. So this program was initiated by her; get everyone into the room and raise your opinion about what you thought or any question related to the business operation and future planning; that was quite good. Everyone managed to voice out their concerns. There was a committee being set up consisting of staff and management. This committee handles the issues and ideas that have been raised in the meeting and some of those have been implemented. Management considers the ideas for short term and long term planning. That idea is called 'stitching'. (P15)

The approach is supported through various programs, including firm-wide meetings and the online network in pooling ideas for improvement.

The organisation has an IT system where any staff can go to the website and put forward questions or any idea that they have. Then, if the idea is feasible, management will take it into consideration and it will go around for further discussion. (P15)

Further, some employees are also allowed to participate during the transition of the documentation process. Prior to transition into a new documentation system, management has selected representatives from the operational level to be part of the team handling movement from the extant system to the new application.

Through involvement in the transition process, the employees are able to gain understanding about similarities and differences between the two systems; hence the transition process could be accomplished with less hassle. With in-depth understanding about the system, management perceives that the representatives could assist other staff members on the floor when the new system is fully utilised.

> The system is needed to document processes and we had the guys from shop floor to be a part of it, and then we went through, we documented what we want to happen before we went out, so it was a long time ago. (P9)

From another perspective, participation from the staff members is also important to support the sharing of knowledge in ENG. Since knowledge sharing in ENG, particularly at the operational level, is commonly accomplished through informal discussions during performance of the jobs, participation from the staff members is very crucial for imparting knowledge to the work floor. The staff members' contribution of ideas through formal conversation such as meetings is also significant to ensure effective knowledge flow across the different levels in the firm.

> Ask the people this is what we can offer, so what would you like. Make them give their feedback, that would be included, and seize the opportunity. Someone who provides feedback might feel that they do something and are being appreciated, so that could encourage them to accept [changes]. (P11)

> Also, during part of the meeting every now and then, the supervisor, he comes at night and updates on something or a new thing in the company and if we have an idea on how to improve the operation, we can voice out there. (P10)

From management's point of view, all necessary groundwork has been taken care off prior to the introduction of KM changes in ENG, including provision of learning mechanisms, communication flows and participation opportunities. Nevertheless, not all employees agree with the adequacy of contextual supports

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for KM processes that have been established by management. Some of the employees perceived the existing system to be insufficient to prepare them to adapt to the proposed changes. In consequence, there are people who are still struggling to cope with changes in the workflows, claiming their productivity and job performance have been affected since the initiation of some changes in the KM processes.

Apart from creating change beliefs and understanding, as well as establishing an appropriate context to support changes in KM processes, another factor that could affect the staff members' readiness for embracing changes is the nature of the change implemented. A general approach for introducing changes in the firm has been on an incremental basis, focusing on the on-going processes of improvement.

> Here, change is part of the process improvement, so we always looking for improving, which is change. Because how you handle change, some people are very scared of change, how you are going to make it work. You can make change without people realising the change by doing it correctly, the soft way, changing a bit. Change management is important. We have two different ways of doing that. Incremental, which is always a protocol of process improvement or to improve the way we do business or even improving… (P9)

Since introducing changes is seen by management as one of the strategies for enhancing knowledge in the firm, information about the proposed changes is claimed to be effectively delivered to ensure affected parties are ready for change implementation.

> To introduce something big, you need to start a long way back, you need to paint the picture first why this is happening, go to the middle then maybe ground workout… Another way of imparting knowledge is through change and it is pretty well implemented here, to a certain degree. If the change affects everyone, we have briefings and collectively standing as well, so everyone should be pretty well informed… Most things are not

seen as changing because it is embedded in the system; unless someone sees and someone knows. The changes in relation to the people and management in here are reasonably good. Everyone is fairly talked about them. We all know each other well and where to go. Preferably in my office, we always write it down, someone takes it on board and this is what we are doing. And you know where it is coming from, the above. And everyone accepts that. (P11)

Also, management acknowledges the importance of implementing continuous changes to streamline the firm's internal operation, notwithstanding some restrictions on changes in the maintenance procedures, due to rigid regulation governing the industry in which the firm operates.

Basically the work has changed a little bit, we seem to do more work than what we normally do, and our skills don't really change unfortunately because that is the nature of this industry. (P14)

In aircraft servicing, there is no procedure change in it because it is a regulated thing... So, some patterns we can't change....Not really much change; we pretty much do the same thing… We don't have to change much I think. For example, if you bring a new fleet, then you run it.... It is really good fun when we bring in a new fleet. At one time we were running three types of aircraft. We have two recent types of aircraft, that we've purchased it. And then we phased out the other one. So, the strategy breaks out. (P16)

However, in certain situations, radical change is required, particularly to conform to changes in the industry requirement, yet only occasionally performed.

And the other one is sometimes you just need to rock the boat.... So, there is also that way as well. You need to get big changes done in a short time. We've got to realise that we rock the boat not very often, because if we keep changing, you lose credibility. So change also needs to be driven from within and from without. (P9)

One significant change in the way knowledge is managed is concerned with improvisation in the documentation processes. For management, a lot of effort was invested, including planning for pre and post implementation, to ensure changes in the process are well-supported for the employees.

> We also have a new system, a database for all engineering processes that has been implemented two years ago. We had another system before that doing the same thing, but we've decided to change; it was actually a year ago. It is part of the process. The system captures our processes, how do we do it, the way we want to go through it. We were going up with the tenders, they are going to do this for us, and we went through the process. It took about three years before we came through with the person we want, they installed the system and provided training before we start with the system, so it is not something that happens overnight. (P9)

While the modifications were seen as a minor process, the actual implementation results in major changes from the operational level's perception. Quite a drastic transition from the former system to the new one has also put some pressures on the staff members in adapting to the new process.

> Sometimes change happens as a simple change. But with the new system, we have to rewrite the programs and that cost us thousands of dollars...The new system is quite a major change, because that was the whole access to the system that they are going to bring in. All about records of the aircraft, stores, writing up defects and everything was on the old system. And it is just stop using the old system in one night, and this is the new system. But that is good because everybody has to come in. If we have both systems together, what people would do is to come back to the old system. They shut down the old system and replaced it with the new system. They shut down the old system on Friday and they started the new system on Monday. So you don't have the choice and you have to learn too. (P16)

Eventually, many factors could affect people's readiness for contributing to the KM processes. In the context of ENG, individual readiness could be stimulated by instilling beliefs about the need for changes, change benefits, change goals and management support. At the organisational level, beliefs about collective commitment from colleagues could enhance the staff members' readiness for carrying out KM changes. Further, despite beliefs and understanding about the changes, readiness for KM processes could be reinforced through identification of the capability to implement the proposed changes. Flexibility and expertise are considered important to shape an individual's capability to contribute to the various KM processes. Additionally, learning, communication and participation represent crucial contexts at the organisational level that could enhance readiness for executing KM processes. Lastly, despite the importance of creating beliefs and context for changes, readiness could also be influenced by the nature of change, reflecting the ways or approaches to introduce KM processes in the firm.

Summary of Case 3

KM is recognised as an important part of ENG's culture, even though roles of knowledge management to streamline the firm's operation are not fully appreciated by the operational level. Among of the important processes for managing knowledge in ENG include acquisition, creation, application, sharing, documentation and enhancement of knowledge. Both internal and external sources of knowledge contribute to knowledge acquisition process in ENG. Main mechanisms for obtaining knowledge include formal technical training and informal on-the-job training. Although training is acknowledged to be provided by management, there are disputes in terms of the effectiveness of the current process, due to the flaws in the extant practice, including deficiency of re-currency training for the staff members. On the other hand, on-the-job training represents the main mechanism for the new entrants to gain knowledge from the superiors.

Development of new knowledge is considered significant for the firm's operation; hence a dedicated unit for research and development was established to handle on-

going improvements for the maintenance operation. The existing approach adopted to support knowledge development and creation emphasises on bottom-up participation and multi-directional communication in the firm. This open approach has lessen management burden, in the sense that, nearly half of the innovative ideas for improvements were initiated by people from the operational floor.

Also, ENG employs expertise with diverse aviation industrial background. In conjunction with that, application of knowledge in ENG is highly dependent on the experienced engineers' knowledge and expertise that have been built over time. Nevertheless, since ENG currently performs maintenance for only one type of aircraft, the extant knowledge is largely applied to overcome current issues within the context of aircraft functions.

Since informal knowledge sharing is a tradition and widespread in ENG's operation, this process represents the backbone for the maintenance operation. Knowledge is shared through conversation among the shift's members while performing jobs or during discussions, with a gradual effort to encourage pooling of tacit knowledge. This situation results in over-dependency on the experts, since tacit knowledge is largely residing on the experts' mind. Although the firm has started to formalise sharing of technical and expert knowledge through circulation of written documents, from the experts' point of view, there are still a lot of tacit knowledge that they possess, yet to be externalised. The current practice of heavily depending on a verbal sharing of knowledge could affect the firm's performance if the experts leave the firm, without necessary actions for capturing tacit knowledge.

As part of the strategy for managing knowledge in ENG, various initiatives for improving knowledge documentation were carried out. Among all, formalisation of supervisory report as a medium for communication between the different levels in the firm, as well as issuance of notices to inform employees about the changes and re-alignments in the workflows, are included. ENG has also upgraded the use of its information system to streamline flow of information within the firm. The

documentation process is crucial to support extensive documentation procedures underlying the firm's operation in a highly regulated industry. Nevertheless, lack of understanding about the added value of the documentation process and inadequate contextual support has resulted in a pessimistic perception with regards to the improved system.

Finally, while management considered the existing processes and procedures represent the firm's on-going commitment to support knowledge flow in the operation, most of the employees perceived that the current processes are largely focused on managing explicit knowledge, while processes for capturing tacit knowledge demand for a more effective strategy implementation.

Conclusion

This appendix outlines background of the cases and description of findings derived from the three case studies. The findings were presented based on the three themes: knowledge management definition, knowledge management processes and effects of change readiness on KM processes implementation. All cases were presented independently and quotes from the participants were included to support the findings.

Findings indicate that factors affecting change for KM implementation can be assessed at individual and organisational levels. Additionally, the effects of these factors on KM implementation can be analysed from various dimensions: the contributions in developing change understanding among members of the firm and their functions in defining the organisational and individual contexts for KM implementation. Also, it is important to recognise that the effects of these factors on KM implementation could be affected by the different natures of KM change introduced in the firms.

Finally, a distinctive write-up for each case provides familiarity about the cases and enables emerging patterns from each case to be identified (Eisenhardt, 1989). This approach also portrays the ideas regarding KM practices and the influence of

change on the implementation among the different professional service firms that facilitates cross cases analysis. A further stage involves a more detailed analysis for cross cases comparison as presented in Chapter 5, 6 and 7 of the thesis.

Appendix 3: Coding

Table A: Excerpts of Concepts and Categories development

Category	Concepts	Incidents
Change Nature	change scope change size change frequency	client change little change Infrequent
Change Benefit	task improvement Complexity Familiarity	improve things, speed up process complex, simple, hard familiar, new approach
Change Goal	Clarity appropriateness	clear, vague, not understand suitable aim, relevant
Expertise	Level Availability	professional, supervisory, management team, experienced engineers key experts, speaker
Learning	Mentoring Coaching Training	on-the-job supervision, shift supervision buddy system external training, internal courses, training across branches, overseas training, technical exposure

Table B: Initial category codes and names

No.	Category Code	Category Name
1	A	Change Goal
2	B	Change Benefit
3	C	Perceived Management Support
4	D	Need for Knowledge
5	E	Collective Commitment
6	F	Expertise
7	G	Adaptability
8	H	Communication
9	I	Learning
10	J	Management Support
11	K	Participation
12	L	Firm Archetype
13	M	Inter-profession Differences
14	N	Knowledge Nature
15	O	Change Nature
16	P	Age
17	Q	Job Experience
18	R	Knowledge Acquisition
19	S	Knowledge Application
20	T	Knowledge Sharing
21	U	Change Preferences
22	V	Influence Ability
23	W	Vision
24	X	Information Systems
25	Y	Knowledge Documentation
26	Z	Knowledge Enhancement
27	AA	Knowledge Evaluation
28	AB	Knowledge Protection
29	AC	Process Efficiency
30	AD	Task Effectiveness
31	AE	Job Quality
32	AF	Firm Competitiveness

Table C: Final category codes and names

No.	Category Code	Category Name
1	A	Change Goal
2	B	Change Benefit
3	C	Perceived Management Support
4	D	Need for Knowledge
5	E	Collective Commitment
6	F	Expertise
7	G	Adaptability
8	H	Communication
9	I	Learning
10	J	Management Support
11	K	Participation
12	L	Firm Archetype
13	M	Inter-profession Differences
14	N	Knowledge Nature
15	O	Change Nature
16	P	Age
17	Q	Job Experience
18	R	Knowledge Acquisition
19	S	Knowledge Application
20	T	Knowledge Sharing

Table D: List of core categories and categories

No.	Core Category Code	Core Category Name	Category Code	Category Name
1	I	Individual - KM Change Understanding	A, B, C,D	Change Goal , Change Benefit, Perceived Management Support, Need for Knowledge,
2	II	Individual differences	F, G	Expertise, Adaptability
3	III	Firm - KM Change Understanding	E	Collective Commitment
4	IV	Firm KM Context	H, I, J, K	Communication, Learning, Management Support, Participation,
5	V	Firm Characteristic	L	Firm Archetype
6	VI	Professional Characteristic	M	Inter-profession differences
7	VII	Knowledge Characteristic	N	Knowledge Nature
8	VIII	Change Characteristic	O	Change Nature
9	IX	Individual Demographic	P, Q	Age, Job Experience
10	X	Knowledge Process	R, S, T	Knowledge Acquisition, Knowledge Application, Knowledge Sharing

Waikato Management School
Te Raupapa

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Te Whare Wānanga o Waikato

Dear Sir / Madam,

I am Fariza Rusly, a PhD Candidate at the University of Waikato, New Zealand. Currently, I am conducting the above research as my PhD requirement. The broad objective of this research is to understand the effects of change readiness on organization's knowledge management processes and the overall knowledge management effectiveness.

The outcomes of this research would assist policy makers and the management of professional service organisations to develop better strategies for the implementation of knowledge management processes with fair consideration on change readiness issues. Consequently, it could explain the effects of knowledge management processes on the overall knowledge management effectiveness in organisations.

As part of the data collection for my study, I will be interviewing managers or management representatives and employees of the organisation. The interviews will be audio recorded. Each interview session is expected to be completed in approximately 1 hour.

The interview is intended to gather information on *how knowledge management processes are being practised in organisations, the influences of change readiness in implementing knowledge management processes and the overall impacts of current knowledge management processes.* The outcomes from the interviews will provide valuable insights for further development of my research model / theoretical framework.

Herewith attached is the interview protocol to be used during the interview sessions for your reference. Should you require further information, please do not hesitate to contact me at fhr1@waikato.ac.nz.

Thank you for your time and cooperation to participate in this study.

Yours sincerely,

Fariza Hanim Rusly
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University of Waikato, New Zealand.
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THE INFLUENCES OF CHANGE READINESS ON KNOWLEDGE MANAGEMENT PROCESSES AND ITS' EFFECTIVE IMPLEMENTATION IN PROFESSIONAL SERVICE ORGANISATIONS

Dear Sir / Madam,

I am Fariza Rusly, a PhD Candidate at the University of Waikato, New Zealand. Currently, I am conducting the above research as my PhD requirement under the supervision of Professor Jim Corner and Dr. Peter Sun. The broad objective of this research is to develop a better understanding of how change readiness affects the process of managing knowledge in professional service organisations. Therefore, I would like to invite you to participate in this interview for the research to examine the influences of change readiness on knowledge management processes and its' effective implementation in professional service organisations.

The findings from this research will provide valuable insights for professional service organisations to develop better strategies in enhancing readiness among employees to comply with successful knowledge management processes. Consequently, it could help in reducing failure rates of knowledge management initiatives by minimising resistance for change through increased readiness in the processes of managing knowledge.

While participation in this study is entirely voluntary, your contribution in the interview is highly appreciated. The interview will be audio-recorded. You may, however refuse to answer any particular question and to withdraw from the study at any time. Your submission of the consent form will be treated as your agreement to participate in this study. The interview will take approximately 1 hour to be completed.

The information gained from the interview will be kept anonymous and be presented in aggregated form only, to protect individual and organisation anonymity. The interview data will be stored in a secured place for the duration of the researcher's study and will be destroyed after the completion of the study. Please be assured that your responses will be held in the strictest confidence.

The outcomes from the interview will be disseminated with aggregated data in the form of PhD thesis, scholarly articles and conference papers, without identifying

information to be disclosed. Furthermore, participant will have the opportunity to receive the interview summary for clarification.

If you have any questions about this study, please do not hesitate to contact me at +64 0212090801 or e-mail me at fhr1@students.waikato.ac.nz.

I thank you in advance for your time and cooperation.

Yours sincerely,
Fariza Hanim Rusly

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THE INFLUENCES OF CHANGE READINESS ON KNOWLEDGE MANAGEMENT PROCESSES AND ITS' EFFECTIVE IMPLEMENTATION IN PROFESSIONAL SERVICE ORGANISATIONS

I have read the Information Sheet for Participants for this study and have had the details of the study explained to me. My questions about the study have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I also understand that I am free to withdraw from the study at any time, or to decline to answer any particular questions in the study. I agree to provide information to the researchers under the conditions of confidentiality set out on the Information Sheet.

I agree to participate in this study under the conditions set out in the Information Sheet form.

Signed: _____

Name: _____

Date: _____

Researcher's Name and contact information:

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Appendix 5: Co-Authorship Forms

Co-Authorship Form

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This form is to accompany the submission of any PhD that contains research reported in published or unpublished co-authored work. **Please include one copy of this form for each co-authored work.** Completed forms should be included in all copies of your thesis submitted for examination and library deposit (including digital deposit), following your thesis Abstract.

Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

CHAPTER 2 : POSITIONING CHANGE READINESS IN KNOWLEDGE MANAGEMENT RESEARCH.

Nature of contribution by PhD candidate	Mainly responsible for conception, review of literature and writing the manuscript.
Extent of contribution by PhD candidate (%)	75%

CO-AUTHORS

Name	Nature of Contribution
JIM CORNER	Providing conception advise, reviewing + editing all versions of manuscript.
PETER SUN	Providing conception advise, commenting + editing all versions of manuscript.

Certification by Co-Authors

The undersigned hereby certify that:
❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
❖ in cases where the PhD candidate was the lead author of the work that the candidate wrote the text.

Name	Signature	Date
JIM CORNER		18/6/14
Peter Sun		18/6/14

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Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.
CHAPTER 5 : CHANGE READINESS : CREATING UNDERSTANDING AND CAPABILITY FOR THE KNOWLEDGE ACQUISITION PROCESS.

Nature of contribution by PhD candidate	Responsible for the conception & design of the study, conducting data collection, analysis & interpretation, developing framework and writing manuscript.
Extent of contribution by PhD candidate (%)	70%

CO-AUTHORS

Name	Nature of Contribution
JIM CORNER	Providing advise on research question development & study design. Editing manuscript.
PETER SUN	Providing advise on research question development & study design. Commenting & editing.

Certification by Co-Authors

The undersigned hereby certify that:
* the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
* in cases where the PhD candidate was the lead author of the work that the candidate wrote the text.

Name	Signature	Date
JIM CORNER	*[signature]*	18/6/14
Peter Sun	*[signature]*	18/6/14

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Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

CHAPTER 6 – CHANGE READINESS INFLUENCES ON THE KNOWLEDGE APPLICATION PROCESS: A CASE OF THREE PROFESSIONAL SERVICE FIRMS.

Nature of contribution by PhD candidate	Responsible for the conception + design of the study, conducting data collection, analysis + interpretation, developing framework and writing manuscript.
Extent of contribution by PhD candidate (%)	70%

CO-AUTHORS

Name	Nature of Contribution
JIM CORNER	Providing advise on research questions + design. Editing the manuscript.
PETER SUN	Providing advise on research question + design. Editing + commenting manuscript.

Certification by Co-Authors

The undersigned hereby certify that:
- ❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
- ❖ in cases where the PhD candidate was the lead author of the work that the candidate wrote the text.

Name	Signature	Date
Jim Corner		18/6/14
Peter Sun		18/6/14

Co-Authorship Form

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This form is to accompany the submission of any PhD that contains research reported in published or unpublished co-authored work. **Please include one copy of this form for each co-authored work.** Completed forms should be included in all copies of your thesis submitted for examination and library deposit (including digital deposit), following your thesis Abstract.

Please indicate the chapter/section/pages of this thesis that are extracted from a co-authored work and give the title and publication details or details of submission of the co-authored work.

CHAPTER 7: THE IMPACT OF CHANGE READINESS ON THE KNOWLEDGE SHARING PROCESS FOR PROFESSIONAL SERVICE FIRMS.

Nature of contribution by PhD candidate	Responsible for the conception, design of study, conducting data collection, analysis & interpretation, developing framework and writing manuscript.
Extent of contribution by PhD candidate (%)	75%

CO-AUTHORS

Name	Nature of Contribution
JIM CORNER	Providing advise on research questions & design, Editing the manuscript.
PETER SUN	Providing advise on research questions & design, Advising on manuscript clarity & Editing.

Certification by Co-Authors

The undersigned hereby certify that:
- ❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and
- ❖ in cases where the PhD candidate was the lead author of the work that the candidate wrote the text.

Name	Signature	Date
Jim Corner		18/6/14
Peter Sun		18/6/14