The Development and Investigation of a Conceptual Model to Understand Knowledge Management

By

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A Thesis submitted to the School of Business
In conformity with the requirements for
the degree of Doctor of Philosophy

Queen’s School of Business
Queen’s University
Kingston, Ontario, Canada

June, 2008

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ABSTRACT

The realization that knowledge constitutes a key organizational resource and should be managed effectively gave rise to the field of knowledge management (KM). Since then, the field has experienced tremendous growth as measured by the number of research papers, books, conferences, and consulting services. The lack of a theoretical foundation, however, has resulted in the proliferation of KM definitions and models with little underlying coherence among them. This research represents an attempt to address this shortcoming by developing and investigating a theoretically grounded model for KM.

The focus of the research is twofold. First, a conceptual model is developed that combines tenets of evolutionary theory, organizational learning and organizational memory (OM) into a single integrated model. The model proposes that organizational knowledge evolves through four recursive stages. At each stage, a process is required to manage the evolving knowledge, namely, knowledge scanning process, knowledge evaluation process, knowledge transfer process, and knowledge application process. The model further proposes that, as it evolves, knowledge is enabled by and embedded in OM infrastructures namely, individuals, roles, business logic, artifacts and culture.

Second, the conceptual model is then examined within an organizational setting to gain an understanding of how each of the knowledge processes and OM infrastructures function inter-dependently to contribute to the management of knowledge. Using a case study methodology, an investigation is conducted within the context of new service
development in three different lines of business (LOB) (referred to as TM, PD and MM) of a major logistics company. The research shows that the LOBs with enhanced KM capability (i.e., TM and PD) share three dominant aspects: articulable (i.e., their knowledge processes and OM infrastructures are well-defined and well understood at each stage of knowledge evolution); supportive (i.e., their knowledge processes and OM infrastructures at each stage are aligned with the goals of the respective stages); and equifocused (i.e., they are attentive to all the stages of knowledge evolution). In contrast to KM at these two LOBs, KM at MM is lacking in all three key aspects.
ACKNOWLEDGEMENTS

Many people have helped me in the course of my dissertation research, and any merit in it is largely due to them. First and foremost, I offer my sincerest gratitude to my mentor and supervisor, Dr. James D. McKeen. Through his support and Socratic style of questioning, he challenged, encouraged and guided me not only throughout this research but also in my PhD program. His ability to combine critique with empathy and a magnanimous disposition will always inspire me.

I am also indebted to Dr. Yolande E. Chan and Dr. Michael H. Zack who have significantly shaped my research and thinking with their tremendous support, advice and work. It is not an overstatement to say that the dissertation grew out of a series of conversations with them as well. I also benefited from feedback and suggestions from Dr. Peer C. Fiss, Dr. Peggy H. Cunningham, Dr. Maryam Alavi and Dr. Malcom Welch. For financial support, I thank the Monieson Centre at Queen’s School of Business, the Dean’s Office at Queen’s University (for multiple research scholarships), and the Social Sciences and Humanities Research Council of Canada.

This research was possible due to the support of senior managers at LOGCO. I am grateful for having had this opportunity and, from the bottom of my heart, thank everyone who welcomed me into their offices to share their knowledge and experience. I especially thank JDS, who championed this research at LOGCO and provided me with all the resources to complete the research, and MAM, who took care of all the administrative
issues. Due to confidentiality reasons, I cannot reveal the name of the company and the managers. Thus, this broad acknowledgement has to suffice. I am also grateful to Dr. Jane D. Corbett for her assistance in editing.

I am forever obliged to my parents, whose foresight and values paved the way for a privileged education, and to my wife who made it possible. The thesis is a small tribute to them.
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CHAPTER 1: INTRODUCTION

1.1 Background

An interest in the source and nature of knowledge has existed since the times of Socrates, Plato, and Aristotle (Nonaka and Takeuchi, 1995). The idea of knowledge management (KM), however, is quite recent. In a very short time, the field of KM has gained tremendous interest among academics and managers (Nonaka and Peltokorpi, 2006). A recent bibliometric analysis showed that over 2500 authors have contributed over 1400 publications to the field in the last three decades (Gu, 2004). While the growth of academic interest is evidenced by the proliferation of books, articles and special issues published on the topic (Argote, et al., 2003; King, et al., 2008), the growth of managerial interest is evidenced by the huge investments in KM initiatives made by various organizations. It is forecasted that investments in KMS will rise from $2.7 billion in 2002 to $13 billion in 2007 (Anonymous, 2004). Both academics and managers have recognized KM’s importance whether as a competitive necessity (Brusoni, et al., 2001; McAdam and McCreedy, 2000), a strategic resource (Cabrera and Cabrera, 2002), the source of competitive advantage (Chakravarthy, et al., 2003) or as a positive organizational effect (Gold, et al., 2001; Tanriverdi, 2005).

Easterby-Smith and Lyles (2003) characterize this growth in the field as “rapid” but “chaotic” (p.12). Organizations are still facing problems with their KM initiatives (Davenport and Hansen, 1999; Davenport and Prusak, 1998; Nevo, et al., 2003; Schultze
and Boland, 2000). Storey and Barnett (2000) reported failure rates of over 80 percent with KM. Some researchers have written about “knowledge management as a double edged sword” (Schultze and Leidner, 2002), the “deadliest sins of knowledge management” (Fahey and Prusak, 1998), the “vicious circle” of knowledge management (Garud and Kumaraswamy, 2005), and “knowledge traps” (Soo, et al., 2002). Moreover, the academic literature has been unable to agree on a single definition let alone the concepts behind KM. There are a variety of definitions (Alvesson and Karreman, 2001; Hlupic, et al., 2002), classification schemes, methods, models, and approaches regarding KM in the literature (Earl, 2001). Similarly, various KM frameworks have been identified in practice as well (Rubenstein-Montano, et al., 2001).

All this arises from the fact that those engaged in the field of KM have been slow to identify and build underlying concepts (Brusoni, et al., 2001), a consequence of the fact that the majority of work in KM is practice driven as opposed to theory driven (Scarborough and Swan, 2003). This presents a significant problem in light of the fact that KM is “not merely some passing fad, but is in the process of establishing itself as a new aspect of management and organization and a new form of expertise” (Hull, 2000, p.49). There is a need for deeper studies that look at the theoretical underpinnings of KM (Hazlett, et al., 2005; Tsoukas and Vladimirou, 2001). Thus, an attempt has been made in this research to advance a theoretical foundation of KM.

More specifically, a theoretical model is developed to investigate the management of knowledge within organizations. The model combines tenets of evolutionary theory,
organizational learning and organizational memory (OM) into a single integrated model which explicates the notions of KM by representing KM as a collection of knowledge processes and OM infrastructures. Using this model the following research question is examined within an organizational setting.

**Research question:** How do knowledge processes and OM infrastructures function inter-dependently to contribute to the management of knowledge?

It is hoped that this research will foster a theoretical debate in the KM literature, and that similar studies will follow. This research should be of interest to practitioners as well. Rubenstein-Montano et al. (2001) suggest that most KM initiatives within organizations use KM frameworks that are incomplete. They argue that these frameworks are focused on the processes of KM at the expense of a focus on contextual attributes such as people, culture, technology, and strategy. This research responds to the concerns raised by Rubenstein-Montano et al. (2001) and takes a holistic view, focusing on both the processes and the contextual attributes of KM.

### 1.2 Key Definitions

Definitions of the key terms used in this research follow.

**Knowledge**

The question “what is knowledge?” has occupied the minds of philosophers for centuries (Alavi and Leidner, 2001; Spender, 1996) and it is a tricky concept (Tsoukas and Vladimirou, 2001). Therefore, it comes as no surprise that the literature offers
various definitions of knowledge. The most elementary definition compares knowledge to data and information (Dretske, 1981). Whereas data are transaction-oriented, information is data drawn into patterns to reduce uncertainty. Information only becomes knowledge when someone applies his or her intellect to transform it. Other definitions of knowledge avoid this distinction among data, information and knowledge and take a broader perspective. For example, Nonaka and Takeuchi (1995) follow Plato’s definition of knowledge as “justified true belief,” and Alavi and Leidner (2001) define it as a “justified belief that increases an entity’s capacity for effective action.” In this research, Davenport and Prusak’s (1998) definition of knowledge is used:

Knowledge is defined as a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.

This definition of knowledge is useful in organizational settings because it captures the notion that knowledge is valuable but also complex and multi-dimensional. In addition, it captures the duality perspective of knowledge that combines two streams of thought: knowledge as enabling action and knowledge as a belief and a value (Hargadon and Fanelli, 2002). This concept of organizational KM includes both forms. Those focused on action propose that knowledge exists in the physical and social artifacts of an organization (Cohen and Levinthal, 1994; Huber, 1991; Levitt and March, 1988; Nelson
and Winter, 1982). The phenomenon of interest is how organizations and their participants acquire, store, retrieve, process, distribute, learn, unlearn, encode and replicate existing knowledge. On the other hand, those that focus on beliefs and values deem that knowledge exists as the possibility for generating novel organizational artifacts (Kogut and Zander, 1992; Leonard-Barton, 1998; Nonaka and Takeuchi, 1995). The phenomenon of interest involves how organizations and their participants generate, create, innovate, deviate, and in other ways produce new knowledge. In this research study, this duality perspective is adopted.

With this definition, three attributes of organizational knowledge relevant to this research are also identified: codifiability, completeness and diversity (Turner and Makhija, 2006). The defining characteristic of more codifiable knowledge is that it can easily be understood and articulated (Kogut and Zander, 1992). Highly codifiable knowledge can also be made explicit. In contrast, knowledge that is highly tacit is not codified and articulated. The ability to use tacit knowledge depends on prior experiences and familiarity with the knowledge. The characteristic of completeness refers to the degree to which the knowledge required for making decisions or completing tasks is sufficient and available (Turner and Makhija, 2006). Knowledge is less likely to be complete when decision situations are uncertain and unstable. Thus, organizations in such situations require more knowledge than is available to them. In contrast, complete knowledge suggests that all the knowledge necessary for making a particular decision is available. In this case, the decision situation is certain and stable. Finally, diversity refers to the amount and relatedness of knowledge required to characterize the knowledge in
question (Turner and Makhija, 2006). The knowledge that is highly specialized for a
given task is less diverse. In contrast, as knowledge becomes more diverse, it
encompasses more competencies and a broader base of knowledge for accomplishing
tasks.

**Knowledge Management**

Various definitions of KM are offered in the literature. Snowden (1998) defines
KM as the identification, optimization and active management of intellectual assets,
either in the form of explicit knowledge held in artifacts or tacit knowledge possessed by
individuals or communities. Hedlund (1994) suggests that KM addresses the generation,
representation, storage, transfer, transformation, application, embedding, and protection
of organizational knowledge. Brooking (1997) suggests that KM is the activity which is
concerned with strategy and tactics to manage human-centered assets. De Jarnet (1996)
defines KM as knowledge creation, which is followed by knowledge interpretation,
knowledge dissemination and use, and knowledge retention and refinement. Laudon and
Laudon (1999) suggest that KM is the process of systematically and actively managing
and leveraging the stores of knowledge in an organization. In light of these definitions, it
appears that KM is regarded as the set of various processes to manage organizational
knowledge.

There is yet another set of definitions in which KM has been defined primarily in
terms of its assumed relationship with an organizational objective. Bassi (1999) defines it
as “the process of creating, capturing, and using knowledge to enhance organizational
performance” (p.423). Van der Spek and Spijkervet (1997) define it as “the explicit control and management of knowledge within an organization aimed at achieving the company’s objectives” (p.43). Davenport and Prusak (1998) define KM as an attempt to do something useful with knowledge, to accomplish organizational objectives through the structuring of people, technology and knowledge content. Von Krogh (1998) refers to KM as identifying and leveraging the collective knowledge in an organization in order to help the organization compete. Wiig (1998) argues that KM is the systematic, explicit and deliberate building, renewal and application of knowledge. Its purpose is to maximize an enterprise’s knowledge-related effectiveness and returns on its knowledge assets and to renew them constantly. Scarbrough and Swan (1999) define KM as any process or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, in order to enhance learning and performance in organizations. Based on these definitions, KM is largely regarded as a set of various processes that manage organizational knowledge to attain a high level of performance.

It is beyond the scope of this study to provide an exhaustive list of the numerous other definitions of KM offered in the literature. However, those surveyed serve to highlight the lack of convergence among definitions. In this research, a working definition of KM is adopted:

Knowledge management is defined as the set of systemically specified activities used to actively manage and leverage organizational knowledge to accomplish organizational objectives.
In the following chapter, the meaning of KM is further explored while building a conceptual model for this research.

**Knowledge Management Capability**

The notion of capability can be traced back to Selznick (1957), Penrose (1959) and Andrews (1971), but the term knowledge management capability (KMC) is relatively new in the KM literature (Gold, et al., 2001; Kulkarni and Freeze, 2004; Tanriverdi, 2005). There are a few definitions of KMC. For instance, Chuang (2004) defines KMC as organizational ability “to mobilize and deploy KM-based resources in combination with other resources and capabilities” (p.460). Tanriverdi (2005) defines it as “the firm’s ability to create, transfer, integrate, and leverage related knowledge across [the organization]” (p.314). Feng et al. (2005) define it as the ability to adopt and deploy KMS in combination with other kinds of information systems and resources. However, on the other hand, Darroch (2005) views KM itself as a type of organizational capability.

In general, organizational capability refers to the strategic application of resources to accomplish certain tasks (Collis, 1994; Helfat and Pereraf, 2003; Kangas, 1999; Moingeon, et al., 1998). McGrath et al. (1995) suggest, “virtually every definition of [capability] in the literature refers to some purpose the firm is able to achieve…, preferably in a manner superior to that employed by other firms” (p.254). However, in this research, *Knowledge management capability refers to the extent to which an organization is able to deploy knowledge management.*
While KM represents the set of discrete activities for managing knowledge to accomplish a certain task, KMC represents an organization’s ability to deploy KM activities.

1.3 Research Design

This is a theory building study and it is conducted using a qualitative case-study methodology (Yin, 1994). More specifically, three in-depth case studies are conducted. The methodology is particularly useful for responding to the “how” questions and to gain rich insights into a phenomenon for which there is limited prior research or understanding. The guidelines established by Eisenhardt (1989) will be utilized for this research, in conjunction with the guidelines offered by Yin (1994). A case-study approach is an appropriate method when the phenomenon to be studied is not separable from its context. It uses a variety of data collection strategies and differs from other field research methods. A case-study methodology is typically designed to understand dynamics in a single context that can include multiple levels of analysis and multiple stakeholder perspectives (Eisenhardt, 1989). Another reason the case-study method was chosen is that it offers flexibility to adjust the research model through iteration between data and theory. This flexibility is needed to understand the topic. In addition, the case study is open to the use of theory or conceptual categories to guide the research and analysis of data compare to other qualitative designs such as grounded theory and ethnography (Meyer, 2001).
1.4 Key Finding

Upon analysis of data from three organizations, key insights regarding KM emerged. Two organizations that have enhanced KMC share three dominant aspects. First, the organizations have a knowledge process, individuals, roles, business logic, artifacts and culture that are well-defined and well understood at each stage of knowledge evolution. This ensures that they understand and know how to manage knowledge at each knowledge evolution stage. Second, the organizations have a strategically purposeful knowledge process, individuals, roles, business logic, artifacts and culture at each stage of knowledge evolution. Finally, the two organizations are attentive to all the stages of knowledge evolution without overemphasizing any specific stage. This aspect enables an organization to continue to move along the knowledge evolution cycle. In this research, these three dominant aspects are referred to as “articulable”, “supportive” and “equifocused” respectively.

In contrast to KM at these two organizations, KM at the third organization is lacking in all three aspects.

1.5 Thesis Overview

The thesis is comprised of nine chapters. Chapter 2 builds and discusses a conceptual model of KM. Chapter 3 describes in detail the research methodology employed in this research. Chapter 4 provides an overview of the new service development process, which is the specific context of this research. Chapters 5 through 7
provide a rich description of three cases along with within-case analysis for each case. Chapter 8 presents a cross-case analysis in which three cases are compared to further analyze and interpret findings. Finally, Chapter 9 discusses the contributions and limitations of this thesis.
CHAPTER 2: A CONCEPTUALIZATION OF
KNOWLEDGE MANAGEMENT

As mentioned in Chapter 1, there are various conceptualizations of KM, highlighting different aspects. For instance, whereas Davenport and Prusak (1998) emphasize generating, codifying/coordinating, and transferring knowledge, Ward and Aurum (2004) emphasize creating, acquiring, identifying, adapting, organizing, distributing, and applying knowledge. Other similar conceptualizations have been provided by Alavi and Leidner (2001), Gold et al. (2001), Tiwana (2000), and Chang et al. (2005). In some cases these differences are nominal while in others substantive. Hence, it is important that the concepts included under the rubric of KM are clearly identified, particularly in light of the fact that one of the goals of this research is to develop a conceptual model for KM that is theoretically grounded. This chapter presents such a model for KM.

2.1 Foundation for KM

In order to build a theoretical foundation, tenets from three distinct literatures—organizational learning (OL), evolutionary theory, and organizational memory (OM) are combined into a single integrated model. Below, the relevant segments of these literatures are briefly reviewed.
2.1.1 Organizational Learning and Evolutionary Theory

The idea that organizations learn independently of their individual members was first articulated by Cyert and March (1963). The concept has since been used in many different ways in different disciplinary traditions (Easterby-Smith, 1997), especially after the work of Argyris and Schön (1978). There is a considerable richness and diversity in the concept. For example, the “Handbook of Organizational Learning and Knowledge” (Dierkes, et al., 2001) includes separate chapters for each of the following disciplinary perspectives on OL: psychology, sociology, management science, economics, anthropology, political science, and history. Friedman et al. (2005) argue that “organizational learning has acted as a kind of conceptual magnet, attracting scholars from many different disciplines to focus on the same phenomenon—or different phenomena under the same name” (p.20). OL offers a fertile ground from which various disciplines derive their theory, concepts and assumptions (Friedman, et al., 2005).

Given the interrelationship of the two fields, OL also provides an excellent base of rich theories to support the investigation of KM. Whereas OL is concerned with the learning processes of and within organizations largely from an academic point-of-view, KM is concerned with the management of knowledge produced through learning processes largely from a practice point-of-view (Easterby-Smith and Lyles, 2003). Stated differently, OL is a descriptive field which studies the process of how an organization learns and KM is a prescriptive field which focuses on managing that learning (Easterby-Smith and Lyles, 2003; Vera and Crossan, 2003). Using the dichotomies of theory-practice and content-process, it has been argued that OL lies more towards the theory-
process quadrant while KM lies more towards the practice-content quadrant (Figure 1) (Easterby-Smith and Lyles, 2003).

Interestingly, the fields of OL and KM are rarely discussed together. Vera and Crossan (2003) observe that “researchers in each field often fail to acknowledge the other—as when researchers in organizational learning exclude the term knowledge from their studies and researchers in knowledge management do the same with the term learning” (p. 123). This is surprising given that both learning and knowledge are intertwined in an iterative and mutually reinforcing process: learning (the process) produces knowledge (the content) and knowledge impacts future learning. Undoubtedly, there is much to be gleaned in the study of KM from the OL literature (Vera and Crossan, 2003).
Among the many theories concerning OL, such as single loop learning, double loop learning, and holographic learning (see Dierkes, et al. (2001) for a complete review of OL theories), arguably the most successful attempt to integrate across the divide of knowledge and learning is provided by Nelson’s and Winter’s work on the evolutionary theory of the firm (Nelson and Winter, 1982; Winter, 1988). Before introducing their model, a brief review of evolutionary theory will be presented.

**Evolutionary Theory**

Evolutionary theories imply continuous learning by organizations (Barron, 2003). The theories have been applied to understand dynamic and complex processes such as the emergence of new organizations and changes within organizations. Since KM is a dynamic and complex concept, and is related to organizational learning, an evolutionary theory provides a good foundation. In addition, an evolutionary theory accounts for managerial actions (Barron, 2003; Volberda and Lewin, 2003). A common misconception about evolutionary theories is that managerial action is irrelevant. In other words, “managers are impotent in the face of ‘the environment’ in which their organization is operating” (Barron, 2003, p.79). It is important to clarify this point because it raises a related question about how an evolutionary theory can become a foundation for a prescriptive field like KM. While there is some truth to the argument, it does not imply that managers cannot affect the fate of their organizations (see Barron (2003) for a detailed discussion). Essentially, although a manager’s intentionality within the context of an evolutionary theory is limited, it is not passive. Managers can learn from their past experiences and organizations may develop management mechanisms that
help them make decisions regarding, for example, managing knowledge with regards to
service development. In addition, when managers make decisions, they embody certain
wisdom about the environment. This is important because KM is a prescriptive field, one
in which managers are able to take actions.

Furthermore, evolution implies change which is governed by three distinct
mechanisms: variation, selection and retention (Barron, 2003). Variation states that there
must be some mechanism by which certain ideas (or changes or innovations) are
introduced within an organization. These variations might include new technologies, new
services/products or the adoption of best practices. The selection mechanism ensures that
there is a process to distinguish between a beneficial idea and a deleterious idea to reduce
the risk of failure. Finally, the idea must have some way of spreading from the original
unit to other units within an organization. This is the process of retention.

Barron (2003) argues that “perhaps the most well-known evolutionary theory to
come out of economics is that developed by Nelson and Winter (1982)” (p. 80). Consistent with the work of Penrose (1959) and Hayek (1945), Nelson and Winter (1982)
argue that business organizations are essentially repositories of specific productive
knowledge and therefore focus on the internal processes by which firms acquire
knowledge and develop competencies. Using Nelson and Winter’s (1982) work, Zollo
and Winter (2002), while investigating the evolution of dynamic capabilities within an
organization, developed a model that they call a “knowledge evolution cycle” (see Figure
2). This model proposes that organizational knowledge evolves through four stages
chained in a recursive knowledge cycle. First, during the variation stage individuals or groups generate a set of ideas about how to approach old challenges in a new way. This happens on the basis of a combination of external stimuli (e.g., competitors’ initiatives) and internal stimuli (e.g., information generated from performance monitoring). These ideas, which are in raw form, are then subjected to internal selection mechanisms to evaluate their potential. The third stage of the cycle refers to the diffusion of the newly evaluated ideas to the relevant parties within the firm. The diffusion process requires spatial replication. Finally, at the retention stage, the ideas are retained through the application and repetition of the routines within the context of the new ideas. The replication and repetition stages tend to make knowledge evolve toward a more tacit form as it becomes highly embedded in the behavior of the organization.

Figure 2: The evolution of knowledge (adapted from Zollo and Winter (2002))
This model of knowledge evolution within an organization is used and extended to explicate the notion of KM (explained in the section 2.2). The model recognizes the fact that the replication stage may not exist as a distinct stage and will depend on the nature and the size of the firm. The stage may be diffused in other stages. For example, small firms may not depict replication as a distinct process compared to multi-national and multi-divisional firms (Zollo and Winter, 2002).

2.1.2 Organizational Memory

The OM literature is replete with definitions of OM (Jennex, et al., 1998; Stein, 1995). Stein and Zwass (1995) view OM as the means whereby knowledge from the past is brought to bear on present activities resulting in higher or lower levels of organizational effectiveness. Huber et al. (1998) define OM as the set of repositories of knowledge that the organization has acquired and retained. Kingston and Macintosh (2000) view OM as the sum of all knowledge assets owned by an organization. On the other hand, Walsh and Ungson (1991) define OM as sources of stored knowledge from an organization’s history that can be brought to bear on present decisions (Walsh and Ungson, 1991).

Despite the differences, these definitions emphasize that rather than belonging just to individuals, organizational knowledge is a distinct attribute of an organization (Argyris and Schön, 1978; Martin De Holan and Phillips, 2003). Levitt and March (1988), for example, claim that as organizations learn, their knowledge is codified into rules, procedures, technologies, beliefs, and cultures that guide future behavior. Thus,
organizations have the ability to collect, store and use the knowledge it has generated through experience. Other researchers have argued that storing new knowledge and using stored knowledge are key components of OL (Huber, 1991; Levitt and March, 1988).

OM can exist in both abstract and concrete forms (Jennex, et al., 1998); that is, OM comprises unstructured concepts and information within the culture and the minds of its individuals, and can also exist in concrete form in artifacts such as databases. These components of OM can also be viewed as representational or interpretational in function (Sandoe and Olfman, 1992), as shown in Figure 3. The representational function presents the facts for a given context and the interpretational function presents frames of references, procedures and guidelines that promote adaptation and learning. For example, an organization can design concrete procedures (e.g., Stage Gate) for the development of new services at the same time it can store the data related to the service being developed in its database. In this example, both database and procedures are components of OM. The database stores the facts (the representation function) and procedures store the guidelines to develop a service (the interpretation function).

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<th>Representation Function</th>
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<tr>
<td><strong>Concrete Form</strong></td>
<td>Database</td>
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<tr>
<td><strong>Abstract Form</strong></td>
<td>Individuals</td>
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Figure 3: Example of forms and functions of OM
The above discussion suggests that learning and knowledge are also associated with OM. This notion of OM is used to explicate the notion of KM (explained in the section 2.2).

2.2 A Conceptual Model of KM

In this section, a conceptual model of KM is built in three steps using the tenets of OL, evolutionary theory and OM (briefly described above). The following describes each step in detail. In the first step the knowledge evolution model is refined. It is proposed that a specific process manages the evolving knowledge at each stage of the evolution. At the variation stage, an organization uses a knowledge scanning process to scan for new knowledge in its environment (i.e., that not previously possessed by the organization) to assist with addressing new and old challenges. At the selection stage, the organization uses a knowledge evaluation process to evaluate the new knowledge. At the replication stage, the organization uses a knowledge transfer process to transfer the new knowledge to others those who require it. Finally, at the retention stage, the organization uses a knowledge application process to embed the knowledge within the organization. Collectively, these processes are referred to as knowledge processes.

At any stage in the knowledge cycle, it is possible that the knowledge is incomplete. However, as the knowledge moves through the evolution cycle, it becomes increasingly more complete. For example, the new knowledge that an organization attains as a result of scanning will become more complete as it is exposed to evaluation during the evaluation stage. The notion of completeness refers to the degree to which the
knowledge required for making decisions or completing tasks is entirely sufficient and available for the decision making (Turner and Makhija, 2006).

In the second step, OM is embedded in the model. As illustrated earlier, as organizations learn, their knowledge is retained in OM. Thus, it is argued that as knowledge evolves it is enabled by and embedded in OM. Based on these arguments about knowledge processes and OM, a conceptual model for KM is shown in Figure 4.

In the final step, the OM infrastructures are examined to understand where knowledge is retained. Robey et al. (1995) state that OM consists of cognitive and behavioral components. Moorman and Miner (1998) describe the infrastructures of OM as collective values, behavioral routines and physical artifacts. Day (1994) describes the infrastructures of OM as including collective insights contained within policies, procedures, routines, and rules. In this research, Walsh and Ungson’s (1991) work is
adopted since they provide a comprehensive and integrative framework for thinking about OM. The work has also been used by other researchers. For example, Argote (1999) used the framework to identify the means by which organizations accumulate production knowledge and Hargadon and Sutton (1997) used the framework to understand innovation in a product development organization.

Walsh and Ungson (1991) suggest that OM infrastructures (which they refer to as “storage bins or retention facilities” (p.63)) are comprised of five knowledge retention mechanisms: *individuals* who store knowledge in their memories, beliefs, values, and assumptions; *roles*, which store the organization’s expectations of organizational members within the organization; *business logic*, which stores procedures and operational rules to perform tasks; *artifacts*, which store knowledge in things such as the physical layout, facilities, and database of the organization; and *culture*, which stores knowledge in language, shared frameworks, symbols, and stories. Olivera (2000) argues that conceptualizing OM in terms of “retention facilities has proved useful for identifying general categories of organizational knowledge retention devices and memory processes” (p.813).

The conceptual model developed (Figure 4) uses two-way arrows between OM infrastructures and knowledge processes. This is meant to suggest that what is learned at each stage is retained (at least in part) and also that what is done at each stage is informed by what has already been learned. It is this two-way interplay that enables the organization to learn and progress. This model can be compared to some of the existing
work in the OL literature. The model suggests that an organization learns as knowledge evolves through the different stages. In most descriptions of organizational learning (OL), the process of OL is seen as a collection of processes (Pawlowsky, 2001). Cyert and March (1963) talk about OL as processes of taking knowledge into the firm, distributing knowledge inside the firm, the condensing of input knowledge, and the output of knowledge through orders to suppliers, deliveries to consumers, advertising, petitions for patents, and in many other ways. Hedberg (1981) regards OL as consisting of four processes: perception of environmental stimuli, selection of stimuli, interpretation of stimuli, and reaction. Huber (1991) talks about four processes of OL. These include knowledge acquisition, distribution, interpretation, and memorization. Pawlowsky (2001) also describes OL in terms of four processes: the identification of information to create new knowledge, the exchange of and diffusion of knowledge, the integration of knowledge into existing knowledge, and the transformation of the new knowledge into action and application. Lundberg (1989) and (Nonaka, 1992) present a similar view of OL.

Another widely accepted model is provided by Nonaka (1994). He suggests that organizations learn through the iterative processes of socialization, externalization, combination, and internalization. Socialization brings together tacit knowledge through shared experiences. Externalization articulates tacit knowledge as explicit knowledge. Combination connects discrete elements of explicit knowledge into a set of explicit knowledge. Finally, internalization embodies explicit knowledge as tacit knowledge.
However, the model of KM developed in this chapter is relatively distinct from the “pure process” and the other KM life-cycle models such as those developed by Davenport and Prusak (1998), Ward and Aurum (2004), Nissen (2002), Rus and Lindvall (2002), Alavi and Leidner (2001) and King, et al. (2008) as it explicitly includes the key elements of OM infrastructures. Within the realm of KM, this is important because it allows researchers and organizations to think about the context which includes individuals, culture and other critical elements of KM (Rubenstein-Montano, et al., 2001; Tsoukas and Vladimirou, 2001). According to Thompson and Walsham (2004b), the failure to consider concepts such as these imposes a distinct limitation of various KM initiatives.

2.3 Concepts Underlying KM

The theoretical model developed in the previous section identifies four knowledge processes: knowledge scanning, knowledge evaluation, knowledge transfer, and knowledge application. In addition, the model specifies five OM infrastructures: individuals, roles, business logic, artifacts and culture. The model provides some critical insights about KM and KMC. It is suggested that KM operates through these knowledge processes which are supported by OM infrastructures and KMC reflects an organization’s overall ability to deploy these processes and infrastructures. This understanding of KMC is consistent with how capability is viewed in the strategic management literature, where it is seen in terms of processes and infrastructures that organizations use to convert their inputs into desired outputs (Amit and Schoemaker, 1993; Collis, 1994; Dutta, et al., 2005). An organization with high capability is able to deploy its processes and
infrastructure effectively to accomplish its tasks (Collis, 1994). The underlying knowledge processes and OM infrastructures are further described below.

2.3.1 Knowledge Processes

In general, a knowledge process in this research is assumed to be a collection of partially ordered activities that transform inputs into desired outputs (Davenport and Short, 1990). For example, the knowledge scanning process considers a massive amount of knowledge from internal as well as external environments and reduces it to a manageable set of knowledge that is considered relevant to the organization.

Knowledge Scanning Process

At the variation stage, organizations scan for new knowledge to assist with addressing old and new challenges (Zollo and Winter, 2002). For example, a service organization constantly monitors its market and competitors for new service ideas. Scanning is defined as the activity of acquiring knowledge, which involves an exposure to and perception of knowledge (Aguilar, 1967). Scanning for new knowledge is important because the environments in which organizations are embedded are continuously changing, and scanning is the first link in the chain of perceptions and actions that permit an organization to adapt to its environment (Hambrick, 1981; Hambrick, 1982). Scanning may happen due to external stimuli (e.g., competitors’ initiatives, normative changes, and scientific discoveries) or internal stimuli (e.g., performance monitoring) or both (Zollo and Winter, 2002), as shown in Figure 3.
Knowledge Evaluation Process

During the selection stage, knowledge is subjected to an internal process in which new knowledge is exposed to experimentation to determine its potential for enhancing existing knowledge or creating additional knowledge (Zollo and Winter, 2002). For example, service organizations conduct pilot studies and market research to rank newly scanned service ideas in terms of revenue potential or feasibility. This is referred to as the knowledge evaluation process. The expected benefits from the new knowledge are probed through articulation, analysis and debate of the merits and risks connected to the knowledge (Zollo and Winter, 2002). If the risks associated with the knowledge are high, it can also be rejected or filtered out.

Experimentation with new knowledge is necessary. It can either create new knowledge or make the knowledge being evaluated more complete. Moreover, learning by experimentation is fundamental to solving problems for which the outcomes are uncertain and where critical sources of knowledge are uncertain or unavailable (Lee, et al., 2004). According to Leonard-Barton (1998), experimenting generates new kinds of knowledge that helps to accomplish tasks innovatively as well as establishes a virtuous cycle of improvement. It also protects against developing core rigidities by introducing new knowledge and methods of doing things (Rosenberg, 1982). Pisano (1996; 1994) emphasizes the role of experimentation as well. He suggests that before new knowledge can be used, organizations require “learning by doing” (which entails the resolution of unexpected problems that arise when new knowledge is put to use) or “learning before
doing” (evaluating in a controlled setting before knowledge is actually put to use by the recipient) or both.

**Knowledge Transfer Process**

The third stage of the knowledge evolution cycle (i.e., replication) involves transferring the newly evaluated knowledge to those who require it (Zollo and Winter, 2002). In some instances, without this, the new knowledge is likely to have minimal impact on the organization. For example, a service organization may design a specific mechanism (e.g., detailed functional requirements) to transfer ideas to a development group and support group which is eventually responsible for developing and implementing services. The transfer requires the spatial replication of the knowledge to leverage the newly found knowledge in different places and times where it is needed. The organization must develop linkages to the source of knowledge that can act as conduits for transfer.

**Knowledge Application Process**

Finally, at the retention stage, the organization uses a knowledge application process. The process enables an organization to embed the new knowledge in parts of the organization to do different things or do things differently, perhaps innovatively (Cohen and Levinthal, 1990; Kogut and Zander, 1992; Leonard-Barton, 1998). For example, during this stage service organizations develop and launch new services. Application is an important stage in the evolution of organizational knowledge since it results in value creation.
2.3.2 Organizational Memory Infrastructures

According to the conceptual model (Figure 4), there are five OM infrastructures--individuals, roles, business logic, artifacts and culture--as explained below.

**Individuals**

Much of organizational knowledge is stored with individuals (Hargadon and Sutton, 1997). According to Walsh and Ungson (1991), individuals in organizations retain information based on their own direct experiences and observations in order to remember and articulate experiences. The individuals can retain knowledge in their external memory stores (e.g., database) or, more subtly, in their personal memory stores such as belief structures, cause maps, assumptions, values, and opinions. The individuals not only store organizational knowledge but they are also actors who take actions. In a service organization, for example, individuals in marketing and sales, strategy development and market research groups have specific market knowledge and could be performing market scanning for new service ideas on a continual basis.

**Roles**

In order that the organization can accomplish its tasks and objectives, the work of individuals must be linked to a coherent pattern of activities and relationships, which is achieved through the creation of specific roles within an organization (Mullins, 1993). Roles can change over time but they persist even as individuals come and go. Roles are guided by collectively recognized rules that represent formal and informal codifications of expected behavior. In an organization, an employee’s primary role is indicated by a
position title and specified by a “job description” (Cherrington, 1994). For example, the organization may create specific roles such as chief knowledge officers, knowledge managers who own the knowledge processes during service development. While roles can be tightly or loosely defined and have different degrees of discretion associated with them, they do encompass the expected behaviors attached to a position or job.

Culture

Walsh and Ungson (1991) also suggest that since knowledge is collectively retained, it is important that individuals proactively interact to seek and offer knowledge. Such interactions between individuals are essential as they facilitate the active interpretation of knowledge. This interpretation is facilitated by the organizational culture since it establishes the organizational context for social interaction (De Long and Fahey, 2000). Culture refers to learned ways of perceiving, thinking, and feeling about problems (i.e., “the way in which things are done here”) that are transmitted to members of the organization (Schein, 1985). For example, the service organization may promote a culture which fosters radical service ideas. Epson promoted a shared ideology to aim for a “40% improvement” in new product activities (Imai, et al., 1985). Culture embodies past knowledge in organizational language, ideologies, and beliefs, as well as myths, rituals, legends and stories that determine the environment within which individuals communicate.
**Business Logic**

Business logic refers to formal standardized procedures for routine tasks (where there are known ways of solving a problem) or simply a set of informal broad policies for non-routine tasks where experience, judgment, wisdom and intuition direct problem solving (Moorman and Miner, 1997; Walsh and Ungson, 1991). For example, an organization may have specific formal and informal procedures for systems design, system development, project management, or making go-no-go decisions during service development. The logic arises in tried-and-true repetitive situations and is the basis for better organizational actions (March and Simon, 1958). Business logic essentially involves the collective knowledge (often tacit) and synchronized, interdependent behaviors to address tasks that are often context-specific.

**Artifacts**

An artifact is an object that embodies usable representations of knowledge (Becker, 2007; Chan, et al., 2007; Hargadon and Fanelli, 2002; Nonaka, et al., 2007; Rafaeli and Vilnai-Yavetz, 2004; Walsh and Ungson, 1991). An artifact is an instance of codification that can be retained, transferred and can enable actions and decisions (Newman, 2003). Common examples of knowledge artifacts are videos, databases, books, manuals, and products. At IDEO, designers “stockpile old products and parts in their offices and hallways or hang them from the ceiling” (Hargadon and Sutton, 1997, p.736) because these artifacts act as snapshots of the knowledge from previous projects. Individuals take cues from these artifacts and invoke particular schema which shape their interpretations and actions.
Organizational knowledge can also be embedded in facilities and layouts. The concept is also captured by $Ba$, a platform that facilitates knowledge related activities (Nonaka and Konno, 1998). $Ba$ can be thought of as a shared place. This place can be physical (e.g., an office or a dispersed business place), virtual (e.g., email, teleconferencing, web chat rooms) or mental (shared experience). For example, Imai et al. (1985, p.354-358) suggest that an organization may even have “a special corner within the [organization] where workers could experiment,” “meetings in a large room with glass walls,” and the place where “all the team members are located in one large room.” Ives et al. (2000) provide examples of various organizations that have created physical structures for enabling knowledge-related activities. Reuters News Service, known for its excellent internal knowledge sharing, has installed kitchens on each floor to encourage interactions and knowledge sharing. Skandia has set up a “futuring house” that provides an environment for knowledge activities that is enhanced by sights and even smells like fresh baked bread in order to encourage openness and innovation. Many Japanese firms have established “talk rooms” where researchers are expected to spend time and share tea and ideas.

Of the five infrastructures identified in the model, individuals and artifacts can be thought of as content knowledge resources, whereas culture, roles and business logic can be thought of as schema knowledge resources (Holsapple and Joshi, 2003). Content knowledge is embodied in usable representations. The key distinction between individuals and artifacts lies in the presence of knowledge manipulation abilities in individuals. The schema knowledge is represented in the working of an organization. It
can be captured in artifacts or individuals, but it exists independently of any one participant or artifact. For instance, culture, roles and business logic can be embedded in an artifact (e.g., database), but its existence does not depend on the artifact. Further, the artifacts could also be viewed as shown in Figure 5.

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<th>Concrete Form</th>
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<td>Abstract Form</td>
<td>Individuals</td>
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<td>Culture</td>
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Figure 5: Forms and functions of OM

2.4 Summary

The purpose of this chapter was to build a conceptual model that is theoretically grounded. The model, as constructed, integrates tenets from OL, evolutionary theory and OM literatures, three literatures which are interrelated and address the issue of organizational knowledge through different lenses. This model identifies the concepts underlying KM: the knowledge scanning process, the knowledge evaluation process, the knowledge transfer process, the knowledge application process, individuals, roles, business logic, artifacts and culture. These concepts are central to the empirical investigation in this research. Most importantly, by delineating knowledge processes, OM infrastructures and their interdependencies, the resulting conceptualization of knowledge management is both comprehensive and theoretically consistent.
CHAPTER 3: RESEARCH METHODOLOGY

As briefly mentioned in Chapter 1, a qualitative case-study methodology is adopted for this theory-building research. The methodology is appropriate for exploring a new phenomenon that is little understood (Yin, 1994). It is particularly useful for responding to “how” questions about a contemporary phenomenon (Leonard-Barton, 1990). Gummesson (1988) argues that the “detailed observations entailed in the case-study method enable us to study many different aspects, examine them in relation to each other, view the [phenomenon] within its total environment” (p. 76). In addition, the case-study methodology is open to the use of a conceptual model that guides the research and analysis of data compared to other qualitative methods (Meyer, 2001). For this research, a conceptual model for KM was developed in Chapter 2.

The chosen methodology follows a multiple-case study design. Multiple case studies typically provide evidence that is considered more compelling and robust (Yin, 1994). Multiple cases enable comparisons that can clarify whether an emerging theory is simply idiosyncratic to a single case or consistently replicated by several cases (Eisenhardt, 1991). Eisenhardt and Graebner (2007) explain that “a few additional cases can significantly affect the quality of emergent theory. For example, adding three cases to a single-case study is modest in terms of numbers, but offers four times the analytic power. Thus, theory-building from multiple cases typically yields more robust, generalizable, and testable theory than does single case research” (p. 27).
In this chapter the research methodology is explained in detail. First, the selection criteria for choosing research sites are discussed. Second, the pilot case study is described. Third, a brief description of the focal research site is provided. Fourth, a detailed explanation of data collection methods is presented, followed by data analysis techniques.

3.1 Case Selection

In order to understand “How do the knowledge processes and OM infrastructures function inter-dependently to contribute to the management of organizational knowledge,” a comparative three-case study was designed. The design combines the richness of within-case analysis and cross-case analysis. The choice of cases was guided by George’s (1979) and Pettigrew’s (1990) recommendations. The selection of each case was based on the variance in their ability to manage knowledge within the context of service development in comparable settings (i.e., industry, geography, size, products/services). The selection of cases in a multi-case design is extremely critical. According to Yin (1994), the choice should be based less on the uniqueness of a given case and more on the relative contribution to the development of a theory. The sampling logic of cases involves theoretical sampling in which the goal is to select cases that are likely to be similar (a literal replication) or polar (a theoretical replication).

Following the logic, three different lines of business (LOBs) with different abilities to manage organizational knowledge within the same organization were sought. Each LOB represents a single case. Selecting three LOBs not only controls the extraneous variables that could affect the management of organizational knowledge but
also it is easier to convince a single company to participate than three different companies.

Initially, seventy two multi-unit companies in Canada, the US and India were contacted. It was ensured that each company had three or more LOBs. The key contacts (i.e., senior executives) in each company were identified either from the Queen’s Alumni Central database or through personal and direct contacts. A sample recruitment letter and letter of information sent to these individuals via email is attached in Appendix A. A reminder email (see Appendix B) was sent after approximately seven days to those who did not respond to the request. Eventually, thirteen companies expressed an interest and willingness to participate in the research. Meetings were held with the senior executive(s) of each of these thirteen companies. Prior to each meeting, additional explanatory documents describing the research in some detail were sent. These documents described the context of the meeting, data collection and analysis strategies, and deliverables from the research (see Appendix C).

Following these meetings, four companies (i.e., SOFTCO—a large software multinational company, TELCO – a large telecommunication multinational company, MEDIACO – a large national media company; and LOGCO – a large national logistics company)\(^1\) were included in the sample of potential research sites. The other nine companies opted out or were dropped out of the study due to one or more of the following reasons: (1) unable to commit to the time requirements of the study; (2) worried about confidentiality issues; and, (3) unable to identify or provide access to three

\(^1\) Names are disguised for confidentiality.
LOBs that satisfy the logic of theoretical sampling (i.e., variability in the ability to manage knowledge).

All four organizations were invited to choose a strategic activity that they considered critical for their business. LOGCO and SOFTCO suggested new service development (NSD) for the study and TELCO and MEDIACO selected new product development (NPD). In addition, TELCO also agreed to provide access to a LOB to conduct a pilot study.

Although the requirement of the study was a single multiunit company, all four companies were kept in the sample for theoretical and administrative reasons. From a theoretical perspective, it was necessary that in a given company, of the three participating LOBs, two LOBs had similar KMC and the other LOB had a lower/higher KMC. This could be established only after some time was spent in each participating company. From a logistical perspective, it was decided to keep all four companies in the sample to guard against the possibility that a company might baulk in terms of access. Thus, initially the data collection activity continued in all four companies. However, midway into the research (approximately 6 months), data collection from SOFTCO and MEDIACO was stopped once it was realized that LOGCO had met the theoretical sampling logic and TELCO would provide a pilot study.
3.2 Pilot Study

A pilot case study at TELCO within the context of NSD was conducted for a number of reasons. The pilot site represented a complicated case. As such, it exposed all relevant data collection issues likely to be encountered during the final study at LOGCO. In addition, the pilot was used to refine data collection plans with respect to the data and the procedures to be followed.

The other purpose of the pilot was to design and refine the interview questionnaire. Compare the interview questionnaires provided in Appendix C (before pilot) and Appendix D (after pilot). During the pilot, it became evident that distinct and specific questions for a knowledge process and the OM infrastructures should be asked at each stage of knowledge evolution. TELCO has developed a Life Cycle Management (LCM) approach to develop their services/products, which has roughly the same stages as the conceptual model: an idea development stage as knowledge scanning stage; a new product introduction stage as knowledge evaluation and knowledge transfer stages; and production and retirement stages as a knowledge application stage. At every stage of LCM, the nature of a process and the OM infrastructures is different from the other stages. For instance, the majority of new service ideas scanning are carried out by the office of the Chief Technology Officer and the process used for scanning is very broad in nature. However, the detailed evaluation of service is done by a different group of people who belong to a service development division. The process to carry out the evaluation is also different; it includes things such as testing readiness of the technology supporting a service, the market that will be serviced and the customer who will buy the service.
Similarly, for the actual build and execution of a service a different group is involved and it could even be outsourced.

Thus, four discussion themes in the questionnaire were developed: service idea scanning, service idea evaluation, service idea transfer and service idea implementation. Each theme represented a stage of knowledge evolution. Under each theme questions were designed to enquire about the process and OM infrastructures (i.e., individuals, roles, business logic, artifacts, and culture). The questionnaire was also refined using suggestions by Patton (2002). Finally, the pilot also provided considerable insight into the basic issues in NSD. This information was used concurrently with an ongoing literature review on NSD.

3.3 Case Description

LOGCO is a logistics company which has a long history. It is over 250 years old, the tenth largest employer and among the top 50 companies in terms of gross revenue in its home country. It moves millions of messages and packages every hour of the business day with extremely high standards of delivery. The company provides its services via the electronic channel, such as online and by telephone (hereafter referred to as the e-channel) and the physical channel, such as retail outlets (hereafter referred as the p-channel). The company operates under a strict government regulatory framework which mandates that it operate its services on a financially self-sustaining basis that meets the needs of all its customers. The framework also establishes strict targets for service quality, productivity improvements and financial performance.
The three LOBs from LOGCO that were selected for the study are Transaction Messaging (TM), Parcel Delivery (PD), and Market Messaging (MM).\footnote{2} TM delivers bills, statements, invoices, and other types of messages. TM enjoys exclusive privileges on the p-channel for the collection, processing and delivery of transactional messages but it is facing stiff competitive threats from electronic substitution. PD delivers parcels and packages to domestic and international destinations. It is facing stiff competition from other global players such as FedEx, DHL and UPS. MM delivers marketing related material to highly defined target groups. It provides an attractive alternative to mass-media advertising by enabling marketers to create a measurable response. This LOB faces competition from the advertising done through mediums such as Radio, TV, the Internet, and Newspaper.

The context of this study is NSD. It is a mature activity in all three participating LOBs. A few years ago, each LOB also implemented a business process program to improve its KM around service development. More specifically, they attempted to achieve higher service quality, design, and revenue and lower development time and cost. In this research, the program is referred to as Market-to-Fulfill, which entails an end-to-end focus on service development (i.e., market requirement for a service to the delivery of that service). Although each LOB has implemented the program, the rate of adoption has differed. PD adopted the program first, followed closely by TM. MM was the last LOB to adopt the program. Thus, the LOBs exhibit interesting differences in how they manage knowledge during service development. The Market-to-Fulfill business process provides an excellent context for the study. El Sawy and Josefek (2003) argue that

\footnote{2} Names are disguised for confidentiality.
management of knowledge around key business processes such as service or product development, should be the focus of KM studies in the future. Furthermore, Mertins, et al. (2003) have found that KM is important in activities such as NPD and NSD, second only to understanding markets and customers.

3.4 Data Collection

The data collection at LOGCO was conducted for a period of one year during 2006-07. The collection focused on the conceptual categories that were identified earlier, that is, four knowledge processes and five OM infrastructures. The collection also sought information on other things such as the internal environment, competition, strategic focus of the company and its evolution, as well as the history of NSD in the company. Since the participating LOBs share a significant number of corporate functions, the data were collected from the various corporate functions as well (e.g., project development office, marketing research).

Data were collected through different methods: semi-structured and focused interviewing, documentation review, direct observation and survey. The use of multiple methods provides greater construct validity in case-study research (Yin, 1994). The multiple methods approach also provides balance in what can otherwise become a subjective exercise in which the researcher imposes his or her own biases or is influenced by the research sites (Eisenhardt, 1989). In addition, these methods offer an opportunity to “triangulate” findings to deepen understanding (Jick, 1979). To keep track of the
enormous amount of data and ensure that all data, coding and interpretations were properly tracked, a database for each case was created using NVIVO 7.0.

Overall 55 semi-structured and focused interviews were conducted with senior, middle and junior managers involved in NSD (see Table 1). In addition to conducting interviews at each LOB, data were also collected from corporate functions such as Market Research, Project Development, and Change Management. These corporate functions are among the resources that are shared by all LOBs during service development. Each interview lasted for 60-90 minutes. Multiple interviews with some informants were conducted, so in total, 34 managers were interviewed. The participating managers were provided with background information about the research well in advance of the interviews (see Appendix E). The managers were identified through the snowball technique (i.e., the participating managers were asked to identify others who were knowledgeable about NSD). In order to improve the validity of information collected, multiple, highly knowledgeable managers from different hierarchical levels and functional areas were interviewed (Eisenhardt and Graebner, 2007).

All interviews were tape-recorded and immediately transcribed using the guidelines from McLellan, et al. (2003) to explore emerging themes in subsequent interviews. Follow-up interviews were focused in nature and were conducted with several managers to verify themes that emerged in the previous semi-structured interviews. A literature search was conducted in tandem with data collection and analysis in order to ground the analysis theoretically (Glaser and Strauss, 1967).
<table>
<thead>
<tr>
<th>LOB</th>
<th>Number of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM</td>
<td>10</td>
</tr>
<tr>
<td>PD</td>
<td>9</td>
</tr>
<tr>
<td>DM</td>
<td>7</td>
</tr>
<tr>
<td>Information Technology functions</td>
<td>5</td>
</tr>
<tr>
<td>Other corporate functions included:</td>
<td>17</td>
</tr>
<tr>
<td>Market Research; Project Development;</td>
<td></td>
</tr>
<tr>
<td>Change Management; Corporate Strategy;</td>
<td></td>
</tr>
<tr>
<td>Business Process; Business Practice;</td>
<td></td>
</tr>
<tr>
<td>and Service, Customer &amp; Employee Monitor</td>
<td></td>
</tr>
<tr>
<td>Others included very senior employees</td>
<td>7</td>
</tr>
<tr>
<td>(with over 30+ years of experience in</td>
<td></td>
</tr>
<tr>
<td>the company) who were closely associated</td>
<td></td>
</tr>
<tr>
<td>with NSD in each LOB and a Senior</td>
<td></td>
</tr>
<tr>
<td>Vice-President who was partially</td>
<td></td>
</tr>
<tr>
<td>responsible for NSD across all three</td>
<td></td>
</tr>
<tr>
<td>LOBs.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Interviews conducted

Interviewees pointed to public and confidential documents such as strategic reports, analysis reports, presentations and employee and customer surveys that further clarified management of knowledge with respect to NSD. The interviews were conducted during several site visits to the company. During the visits, impressions and informal observations (i.e., direct observations), were formally captured and noted. The technique was useful for observing the artifacts and culture (e.g., behavior of people). Both artifacts and culture are key constructs of the KM model (described in Chapter 2).

In addition, a survey questionnaire was distributed to managers in each LOB after completing all the interviews (see Appendix F). The managers were essentially asked to give numerically scaled values to characterize their management of knowledge on a Likert scale. Some demographic information was also collected. The survey was used to observe the patterns in values to support qualitative evidence. Thus, statistical significance was not sought. The questionnaire used in the survey extends the KMC scale
provided by Tanriverdi (2005) to suit the research context. The scale was constructed and tested in two phases by two different managers in each phase. After each phase, appropriate changes were made to improve the questionnaire based on the feedback. The survey was sent to 126 managers (42 in each LOB) through email. Seventeen managers were on vacation as indicated in their “out of office” reply and 9 managers reported their inability to respond to the survey because they were recent hires. Thus, out of 100 managers, 60 managers (18 from TM, 20 from DM, 22 from Parcels) responded to the survey with a response rate of 60%. The response rate was considered good given that the response rate for recent internal surveys at LOGCO has been close to 30%.

3.5 Data Analysis

Data collection continued until the additional insights from the data became redundant and reached a state of “theoretical saturation” (Glaser and Strauss, 1967), where “efforts to get additional members [could not] be justified in terms of the additional outlay of energy and resources” (Lincoln and Guba, 1985, p.233). Thus, the analysis was an ongoing activity and the theorizing process was emergent. For example, at the beginning of the data collection, the focus of the study was to collect data on the management of knowledge only within the context of the e-channel. However, soon it was realized that the e-channel and the p-channel are heavily intertwined and that focusing only on the e-channel would not provide sufficient insights into KM with respect to NSD.
The interviews were transcribed and coded using NVIVO 7.0. The coding was done at two levels. First, topic and analytic codings were performed (Richards, 2005). Topic coding allocates passages to topics. This was an extremely useful coding because the constructs to be observed (i.e., four knowledge processes and five OM infrastructures) were identified before entering the site. Moreover, the interview questionnaire was also designed to capture these constructs. On the other hand, analytic coding refers to coding that comes from the interpretation of and reflection on data. In this research these codings were treated as a part of first-level coding, which is a device for summarizing segments of data (Miles and Huberman, 1994). The coding scheme is described in Table 2, which evolved during the analysis.

At the second-level, pattern coding was used, which is a way of grouping those summaries developed at the first-level into a smaller number of sets, themes, or constructs (Miles and Huberman, 1994). It is same as performing the cluster analysis or the factor analysis in statistical analysis and it is particularly useful for laying the groundwork for cross-case analysis (Miles and Huberman, 1994). By nature, pattern coding is also analytic. The pattern coding scheme is described in Table 3, which evolved during the analysis.

<table>
<thead>
<tr>
<th>Code</th>
<th>Sub-Code</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process</td>
<td>Topic</td>
<td>Activities performed during idea generation</td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>Analytical</td>
<td>Sources from where the information is gathered</td>
<td></td>
</tr>
<tr>
<td>Filter</td>
<td>Analytical</td>
<td>How are ideas filtered out</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>Analytical</td>
<td>How frequently scanning is performed</td>
<td></td>
</tr>
<tr>
<td>Ability</td>
<td>Analytical</td>
<td>How well a LOB is doing on scanning activities</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Sub-Code</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Process</td>
<td>Topic</td>
<td>Analytical</td>
<td>Activities performed during idea evaluation</td>
</tr>
<tr>
<td>Theoretical</td>
<td>Analytical</td>
<td>Business case development without or before going to the market to collect data</td>
<td></td>
</tr>
<tr>
<td>Pilot</td>
<td>Analytical</td>
<td>Working with selected clients to test a service</td>
<td></td>
</tr>
<tr>
<td>Post Mortem</td>
<td>Analytical</td>
<td>Decision-making whether to proceed or kill a service</td>
<td></td>
</tr>
<tr>
<td>Ability</td>
<td>Analytical</td>
<td>How well a LOB is doing on evaluation activities</td>
<td></td>
</tr>
<tr>
<td>Codes For Knowledge Transfer Process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Sub-Code</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Process</td>
<td>Topic</td>
<td>Social Networking</td>
<td>“Who knows who” is important while looking for knowledge</td>
</tr>
<tr>
<td>Individual Mobilization</td>
<td>Analytical</td>
<td>Individuals are transferred between departments based on requirements</td>
<td></td>
</tr>
<tr>
<td>Group Alliances</td>
<td>Analytical</td>
<td>Multi-functional teams</td>
<td></td>
</tr>
<tr>
<td>Ability</td>
<td>Analytical</td>
<td>How well a LOB is doing on transferring activities</td>
<td></td>
</tr>
<tr>
<td>Codes For Knowledge Application Process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Sub-Code</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Process</td>
<td>Topic</td>
<td>Build</td>
<td>Developing a service</td>
</tr>
<tr>
<td>Launch</td>
<td>Analytical</td>
<td>General release to the market</td>
<td></td>
</tr>
<tr>
<td>Monitor</td>
<td>Analytical</td>
<td>Measuring the market performance of a service</td>
<td></td>
</tr>
<tr>
<td>Retire</td>
<td>Analytical</td>
<td>Existing services were merged or removed from the market</td>
<td></td>
</tr>
<tr>
<td>Ability</td>
<td>Analytical</td>
<td>How well a LOB is doing on application activities</td>
<td></td>
</tr>
<tr>
<td>Codes OM Infrastructures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Sub-Code</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Roles</td>
<td>Topic</td>
<td>Formally Defined</td>
<td>Roles to perform an activity under a given knowledge process</td>
</tr>
<tr>
<td>Informally Defined</td>
<td>Analytical</td>
<td>Proper job description</td>
<td></td>
</tr>
<tr>
<td>Informally Defined</td>
<td>Analytical</td>
<td>Informally or loosely defined roles</td>
<td></td>
</tr>
<tr>
<td>Individuals</td>
<td>Topic</td>
<td>Team(s) performing a knowledge process</td>
<td></td>
</tr>
<tr>
<td>Business</td>
<td>Topic</td>
<td>Procedures or policies to perform a knowledge</td>
<td></td>
</tr>
<tr>
<td>Logic</td>
<td>process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal</td>
<td>Analytical</td>
<td>Formal procedure</td>
<td></td>
</tr>
<tr>
<td>Informal</td>
<td>Analytical</td>
<td>Informal procedure</td>
<td></td>
</tr>
<tr>
<td>Artifacts</td>
<td>Topic</td>
<td>Special spaces or structures that were created to encourage a knowledge process</td>
<td></td>
</tr>
<tr>
<td>Culture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>Analytical</td>
<td>Shared understanding</td>
<td></td>
</tr>
<tr>
<td>Behavioral</td>
<td>Analytical</td>
<td>Shared actions</td>
<td></td>
</tr>
<tr>
<td><strong>Other Codes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Code</strong></td>
<td><strong>Sub-Code</strong></td>
<td><strong>Type</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>Knowledge Management</td>
<td></td>
<td>Analytical</td>
<td>Relatively which LOB exhibits higher KMC based on all knowledge processes and OM infrastructures</td>
</tr>
<tr>
<td>Capability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure</td>
<td>Analytical</td>
<td>High or low in a relative sense to each other</td>
<td></td>
</tr>
<tr>
<td>Strategy</td>
<td>Analyzer</td>
<td>Analytical</td>
<td>Showing the characteristics of an Analyzer based on Miles and Snow’s (1978) typology</td>
</tr>
<tr>
<td></td>
<td>Defender</td>
<td>Analytical</td>
<td>Showing the characteristics of a Defender based on Miles and Snow’s (1978) typology</td>
</tr>
<tr>
<td></td>
<td>Reactor</td>
<td>Analytical</td>
<td>Showing the characteristics of a Reactor based on Miles and Snow’s (1978) typology</td>
</tr>
</tbody>
</table>

Table 2: Topic and analytic coding scheme

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulable</td>
<td>Pattern</td>
<td>All the KM elements at a given stage of knowledge evolution were well-defined and understood</td>
</tr>
<tr>
<td>Supportive</td>
<td>Pattern</td>
<td>All the KM elements at a given stage of knowledge evolution were strategically purposeful</td>
</tr>
<tr>
<td>Equifocused</td>
<td>Pattern</td>
<td>KM focused on all the stages of knowledge evolution and ensured knowledge flow between stages</td>
</tr>
</tbody>
</table>

Table 3: Pattern coding scheme
After the first-level coding, an analysis table was created to distinguish among knowledge evolution stages (see Figure 6) based on the data reduction and presentation techniques suggested by Miles and Huberman (1994). Emerging themes were identified and noted in the table. The table was helpful in the identification of patterns across the cases. An analysis diagram was created and used to record the patterns, as shown in Figure 7. The figure depicts the logic of how a concept emerged by identifying patterns, that is, first order, second-order and higher-order.

Patterns were developed using analytic induction. Analytic induction refers to a technique in which “researchers develop hypotheses, sometimes rough and general approximations, prior to entry into the field or, in cases where data already are collected, prior-to-data analysis. These hypotheses can be based on hunches, assumptions, careful examination of research and theory, or combinations. Hypotheses are revised to fit emerging interpretations of the data over the course of data collection and analysis” (Gilgun, 1995, p.268-269).

Further, data were analyzed recursively in two stages (Eisenhardt, 1989). A within-case analysis was conducted for each case to gain an in-depth understanding. A cross-case analysis was conducted to identify within-group similarities and differences. A cross-case analysis was conducted by comparing the analytical table and analytical diagram for each case in pairs. Similarities and differences were noted which helped understand KM within each LOB.
Figure 6: An Analysis Table
Figure 7: An Analysis diagram
Concurrent with within-case and cross-case analyses, preliminary within-case and cross-case reports were written. Nine key informants from the LOBs reviewed different reports and offered feedback and clarification. Of the nine informants, two informants from MM reviewed the report on MM; two informants from PD reviewed the report on PD; three informants from TM reviewed the report on TM; and two informants from common corporate functions reviewed all three within-case and cross-case analyses. Relevant additions and changes to the reports were made and final detailed reports were created. These reports were sent back to one of the key informants from each LOB for further review. No significant changes were suggested this time. Finally, a formal presentation of findings was made to the senior leadership of LOGCO. After this iteration, the company gave its clearance. By this time, an in-depth understanding of KM at LOGCO had been gained.

3.6 Summary

In this chapter, the multiple case-study methodology used to conduct this research was described in detail. A justification for the selection of the methodology was also provided. Three LOBs in a logistics company were selected as research sites to provide theoretical and literal replication. The majority of data collection from the LOBs was done through semi-structured and focused interviews. Other techniques such as archival data, documentation, direct observation and survey were also used to complement interviews. To conduct data analysis, a technique called analytical induction was used specifically because it allowed the iterations between assumptions and analysis until insights emerged.
In addition, the chapter also described a pilot study that was conducted to gain an understanding regarding administrative issues surrounding case-study and research logic as well as to refine the interview questionnaire before conducting the final case studies.
CHAPTER 4: NEW SERVICE DEVELOPMENT

From the KM definition, it is evident that KM entails managing knowledge to accomplish a certain task. The accomplishment of a task emphasizes the role of context which is considered important in the study of KM (Sambamurthy and Subramani, 2005; Thompson and Walsham, 2004a). In this research, new service development (NSD) is chosen as the context.

NSD is a knowledge intensive and a critical activity within an organization (Stevens and Dimitriadis, 2004). There are several definitions or classifications of new services (Menor, et al., 2002). Lovelock (1984) defined new services in terms of the service outcomes which ranged from radical innovations (e.g., major innovation, start up business, and new services for the market presently served) to incremental innovations (e.g., style changes, service improvements and service line extensions). Tax and Stuart (1997) provide an alternate definition based on the extent of change to the existing service system or the operational process and participants. Menor (2000) suggests that both the newness of a service offering (what service is offered?) and the service concept (how is the service offered?) define a new service as an offering not previously available to the firm’s customers. This research is less concerned with what signifies a new service and thus any of these definitions would suffice. The interest lies more in the stages of the service development.
The chapter briefly reviews the NSD literature. The more detailed literature reviews have already been provided elsewhere (e.g. Johne and Storey, 1998). Specifically, various NSD models that illustrate stages of service development are presented. Next, outcomes of service development are provided, followed by key enablers that facilitate NSD.

4.1 Introduction

The importance of services is emphasized in today’s economy, as they constitute more than 70% of the gross national product within most developed nations (Stevens and Dimitriadis, 2004). During the last two decades, the globalization of services, deregulation of markets and rapid progress in information and communication technology, make NSD even more critical for competitive advantage (Fitzsimmons and Fitzsimmons, 2000). It is an important activity for winning new business, keeping existing business and extending business to new markets. However, despite its criticality, NSD remains among the less studied topics in the literature compared to new product development (NPD) (Menor, et al., 2002).

Earlier research on NSD was based on NPD research (Cooper, 1993). However, service development is different from the development of a product in very important ways including intangibility, heterogeneity, and simultaneity (Johne and Storey, 1998). Services are intangible and are predominantly processes rather than “things.” This intangibility makes services difficult to test in concept. Services can more easily be modified than physical products and are often easily copied by competitors.
Heterogeneity refers to the property of variable quality. Since it is created and consumed at the staff-consumer interface, the service experience is likely to vary each and every time it is provided. The degree of variation depends on the degree of standardization of the service. The customers cannot fully assess service prior to purchase. Finally, simultaneity refers to the property by which the service is produced and consumed simultaneously. Thus, most services are inherently perishable and cannot be held in stock. As a consequence, most innovations in services generally involve small and incremental changes that are easily imitated.

In addition, service firms do not require much R&D; nor do they invest much in fixed assets to support innovations or spend much money buying patents and licenses (De Jong and Vermeulen, 2003). These differences have led to the NSD process being different from the NPD process (Menor, et al., 2002).

### 4.2 Service Development Models

NSD refers to the overall process through which new service offerings are developed (Johnson, et al., 2000). It encompasses the complete set of activities from idea generation to launch and monitor (Cooper, et al., 1994). Although a little less developed, there are a few models of NSD in the service literature. The first model described eight linear and sequential stages for developing services in the financial and health sector (Bowers, 1987; Bowers, 1989). The stages in the model were the following: develop a business strategy, develop a new service strategy, idea generation, concept development and evaluation, business analysis, service development and evaluation, market testing,
and commercialization. The model is similar to Booz, Allen and Hamilton’s (1982) NPD model that had linear stages: new product strategy, idea generation, screening, evaluation, business analysis, development, testing and commercialization (Figure 8).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New product strategy</td>
<td>Identify the strategic business requirements that the new product should satisfy</td>
</tr>
<tr>
<td>Idea generation</td>
<td>Search for a product idea to meet strategic objectives</td>
</tr>
<tr>
<td>Screening, and evaluation</td>
<td>A quick analysis of the idea made against criteria that reflect the objectives of the organization</td>
</tr>
<tr>
<td>Business analysis</td>
<td>A detailed analysis of the attractiveness of the idea in business terms</td>
</tr>
<tr>
<td>Development</td>
<td>Translation of the idea into an actual product for the market</td>
</tr>
<tr>
<td>Testing</td>
<td>The commercial experiments necessary to verify business judgments</td>
</tr>
<tr>
<td>Commercialization</td>
<td>The when, where, to whom and how decisions of the launch</td>
</tr>
</tbody>
</table>

Figure 8: New product development

In contrast, based on their empirical work, Scheuing and Johnson (1989), developed an expanded model consisting of 15 stages: formulation of new service objectives, idea generation, idea screening, concept development, concept testing, business analysis, project authorization, service design and testing, process and system design and testing, market program design and testing, personnel training, service testing and pilot run, test marketing, full scale launch and post launch review. On the other hand, Alam and Perry (2002) found that organizations use only 10 stages for NSD: strategic planning, idea generation, idea screening, business analysis, formation of cross-functional team, service design and process/system design, personnel training, service testing and pilot run, test marketing and commercialization.
Further, Shostack (1984) discussed a complex development process of a discount brokerage service firm, which is highly iterative and verbal with every stage aimed at further specifying the service (see Figure 9). Voss et al. (1992) describe the stages of NSD as concept development, prototype development, prototype testing and launch. Bitran and Pedrosa (1998) propose NSD through strategic assessment, concept development, system design, component design and implementation stages.

<table>
<thead>
<tr>
<th>First level stages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. First phase definition–vague description of the basic service function produced</td>
</tr>
<tr>
<td>2. First phase analysis–information gathering process (internal and external)</td>
</tr>
<tr>
<td>3. First phase synthesis–clarification of the service definition and boundaries drawn</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second level stages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Second phase definition–detailed service description produced</td>
</tr>
<tr>
<td>5. Second phase analysis–internal review of the service and external market research</td>
</tr>
<tr>
<td>6. Second phase synthesis–documentation of service description and implementation plans</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The final stages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. First phase implementation–operation functions put in place and tested</td>
</tr>
<tr>
<td>8. Second phase implementation–implementation of communication strategy</td>
</tr>
<tr>
<td>9. Market introduction—the service goes live</td>
</tr>
<tr>
<td>10. Post-introduction audit–review of service and starting point for further development</td>
</tr>
</tbody>
</table>

Figure 9: New service development model by Shostack (1984)

There are other models too. Edvardsson and Gustavsson (2003) explain that the “NSD process may be described in many different ways depending on the aim of the description, the context, and the researchers’ “world-view” to mention a few” (p.157). Menor et al., (2002) suggest that in general these models exploit the stages of the basic NPD process while providing new extensions that enrich an understanding of the facilitating conditions, activities and outcomes in NSD. Johnson et al. (2000) have integrated many of these conditions, activities and outcomes in their NSD process cycle.
(see Figure 10). The cycle basically identifies four iterative stages and thirteen tasks that must be produced to launch a new service, as well as the components of the organization which are involved in the process.

Despite the existence and use of these formal models of NSD by some organizations, some studies have reported that not all organizations use a formal process to manage their service development (Jones, 1995; Kelly and Storey, 2000). Thus, there is a debate about whether service organizations follow a formal or an informal NSD process.
4.3 Outcome

Service development produces multiple benefits. Researchers have measured service performance on a number of dimensions (Johne and Storey, 1998). For example, de Brentani (1989) derived four independent dimensions of performance (i.e., sales and market share, competitive, “other booster” and cost). Cooper et al. (1994) specified fourteen measures of performance from which they derived three independent performance dimensions (i.e., financial, relationship enhancement, and market development). Similarly Griffin and Page (1993) organized seventy-five performance measures into five categories of overall firm benefits, program level benefits, service level benefits, financial benefits, and customer acceptance benefits. Griffin and Page (1996) extended their own work and suggested measures for success and failure based on testing the hypothesis that the most appropriate set of measures depends on organizational strategy and also on the overall business strategy. They found success can be measured in many ways and, since so many stakeholders are involved, one must sacrifice some level of success on one dimension to achieve success on another. Voss et al. (1992) articulated a useful distinction between process measures and outcome measures of NSD performance (see Figure 11). While outcome measures are related to the specific objectives, process measures are related to the facilitating mechanism for achieving an outcome. Thus, NSD performance is a multidimensional construct that reflects both operational effectiveness and marketplace competitiveness and can be measured on a project or overall development process level (Menor, et al., 2002).
Figure 11: New service development measures

4.4 Enablers

Various enablers of NSD performance have been identified in the service literature. An exhaustive review of these antecedents is beyond the scope of this research; however, an attempt has been made to cover key enablers. In Table 4, a synthesis of the results of a few key articles is presented.
<table>
<thead>
<tr>
<th>Source</th>
<th>Description of Key Enablers</th>
</tr>
</thead>
</table>
| De Jong and Vermeulen (2003) | There are nine enablers that directly enhance NSD. Some of them focus on the role of key persons and others on formal structures.  
**Involvement of front-line employees:** The knowledge of customers and competitive offerings possessed by front line employees helps initiate new services.  
**Presence of service champion:** A service champion plays a key role in mobilizing essential resources for NSD.  
**Management support:** Encouragement by senior management facilitates creative behavior which is key during NSD. The outcome of NSD is often uncertain, and co-workers must be convinced that they will not be punished for failure.  
**Funnel tools:** Formal systems and tools such as systems to gather ideas, development procedures, and brainstorming, trigger idea generation.  
**Multi-functional team (MFT):** Employment of a MFT facilitates new combinations of knowledge and competencies that help problem solving during NSD.  
**Resource availability:** Time, money and people are important resources for NSD.  
**Pre-launch testing:** Evaluating new services in a formal market test and use of customer feedback to refine services improves the offering.  
**Market research:** Market research is important to understand customers’ needs and preferences for services.  
**Launch:** A careful market launch consists of training employees, effective marketing and evaluation of the results. |
| Johne and Storey (1998) | A host of factors affect the success of NSD. These supporting factors can be summarized under three broad sub-tasks.  
**Opportunity analysis:** The fit between the operational requirements for providing a new service with the existing process operations.  
**Product synergy:** The fit with existing service line, company image, and corporate strategy  
**Marketing synergy:** The fit with existing resources/expertise in terms of delivery systems, operations, sales force, advertising, market research, and customer service  
**Managerial synergy:** The fit with organizational structure and financial resources  
**Diversification:** The service was a diversification, service new to firm, new technology, new production, new processes, customers new to firm  
**Market knowledge:** Customer needs and behavior understood, clearly identified target segment, competitors understood  
**Market orientation:** Use of market research, market-oriented strategy, customer service, orientation  
**Product of high importance.**  
**Market attractiveness:** Size, growth, mass market |
<table>
<thead>
<tr>
<th><strong>Market synergy:</strong></th>
<th>Customer need for service, responds to changes in the marketplace</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project development:</strong></td>
<td>Developing services in a cost effective and timely manner, which are then launched in an appropriate way.</td>
</tr>
<tr>
<td><strong>Innovation orientation:</strong></td>
<td>Top management, support for innovation, NSD important variable in HRM</td>
</tr>
<tr>
<td><strong>Effective NSD management:</strong></td>
<td>Well-planned, well-executed, formal process, sufficient resources, experienced staff</td>
</tr>
<tr>
<td><strong>Speed of development:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Co-ordination:</strong></td>
<td>Inter-functional communication and co-ordination, involvement of front-line employees, formal development team</td>
</tr>
<tr>
<td><strong>Organizational support:</strong></td>
<td>Top management support, product champion, commitment of people involved</td>
</tr>
<tr>
<td><strong>Extensive testing:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Launch preparation:</strong></td>
<td>Internal marketing, internal communications, and training</td>
</tr>
<tr>
<td><strong>Formal and effective launch:</strong></td>
<td>Formal launch, full-scale, well coordinated, well targeted, post-launch evaluation</td>
</tr>
<tr>
<td><strong>Offer formulation:</strong></td>
<td>To maximize appeal to target customers.</td>
</tr>
<tr>
<td><strong>Service advantage:</strong></td>
<td>Differentiated service, unique benefits, significant improvement, better value, brand image, difficult to copy</td>
</tr>
<tr>
<td><strong>Customer knowledge:</strong></td>
<td>Service familiar to customers, complex service, no learning effort required, easy to understand</td>
</tr>
<tr>
<td><strong>Highly innovative:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Service quality:</strong></td>
<td>Higher quality, reliability, quality image</td>
</tr>
<tr>
<td><strong>Quality of service experience:</strong></td>
<td>Delivery quality, customer service, friendly/courteous, prompt/efficient</td>
</tr>
<tr>
<td><strong>Effective communications:</strong></td>
<td>Extensive, raises awareness, explains benefits, builds brand image, distinct position, consistent with marketing strategy</td>
</tr>
<tr>
<td><strong>Front-line expertise:</strong></td>
<td>Knowledge, marketing skills, commitment, enthusiasm, experts</td>
</tr>
<tr>
<td><strong>Extensive distribution systems.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Customer participation in delivery.</strong></td>
<td></td>
</tr>
</tbody>
</table>

Froehle et al. (2000)

| **Cross functional team:** | Directly influences the effectiveness of the firm’s NSD efforts through the combination of expertise |
| **Formalized NSD processes:** | This involves systematic approaches to innovation, it can be replicated more easily and reduce cycle times. Formalization usually incorporates common rules, service platforms, integrated sub-systems, and other key building blocks. Formalization influences the firm’s ability to develop services faster. |
| **Information technology:** | IT enhances communication, availability of |
information and reduces information lags which directly affect both the speed of the NSD process and the general effectiveness of the firm’s NSD activities.

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edvardsson and Gustavsson, (2003)</td>
<td>The authors suggest that the quality of the work environment affects the success of NSD. More specifically, an individual should have an opportunity to exercise influence and control over one’s own work situation, develop security and meaning, develop social relations at and through the job, keep a social distance to the job, maintain good health and avoid negative stress, and work in a safe physical surrounding.</td>
</tr>
</tbody>
</table>
| Edvardsson and Olsson (1996)                | The service development can be broken down into three activities: service concept development; service process development; and service system development. The service concept is the description of customers’ needs and how these are to be satisfied. The service process is the chain of activities which must occur for the service to function. The service system represents the resources required for the service. These consist of the following:  

**Service company’s staff.**

**Customers.**

**Physical/technical environment:** This refers to premises, computers and other technical systems but also the equipment at partners’ premises.

**Organization and control:** This includes the organizational structure which must clearly define responsibility and authority. The other aspect of the organization is the administrative support systems. For example, planning and information, the financial system and wage systems, play a key role in controlling the business. A third component is the interaction with customers (e.g., feedback) and other interested parties. The fourth aspect includes the organization of the various activities connected with marketing. |
| Edgett (1994)                               | The author identifies the following antecedents:  

**Organizational:** NSD is enhanced by high levels of inter-functional cooperation, management support, and a talented NSD team.  

**Resource allocation:** Time, money and people  

**Formalization of a development process.**  

**Preliminary assessment and Design testing:** The project’s feasibility must be gauged before many of the resources are consumed.  

**Market research and Market potential.**  

**Business/financial analysis:** A complete analysis of both the financial aspects and potential revenue stream for the new service  

**Project update:** Continued reviews of the service being developed are important  

**Market synergy:** Service must meet a consumer need and the launch is backed up with a strong knowledge of how to deliver the service |
**Launch effectiveness:** Presenting the service to targeted customers effectively (i.e., a well-planned and coordinated, communication plan, marketing)

| Table 4: New service development enablers |

### 4.5 NSD at LOGCO

In general, LOGCO has an established and fairly well-structured service development process. In this section, the stages involved in NSD and key enablers of the development are described.

#### 4.5.1 Stages

As described earlier, not all organizations use a formal model to manage their service development, but NSD at LOGCO is a well-defined process. In general, the organization adheres to the following stages, which are similar to those suggested by Bowers (1987; 1989).

**Service Strategy and Objectives**

The organization identifies the long-term strategic vision and objectives for its services in a five-year annual plan. The plan lists the key services that the organization will build in the short and medium terms (i.e., 1-5 years). The plan is updated on an annual basis. There are also a few groups within the organization that are involved in the development of a strategic vision and objectives for a more distant future (i.e., 10 – 15 years).
Idea Generation

The search for ideas inside and outside the organization is somewhat formal. The organization, for example, has Marketing Research, Marketing and Sales, and Customer Value Management groups that help understand current and evolving market requirements. The activity is also performed informally through “hallway discussions,” since the majority of individuals are in the same campus or building.

Business Analysis and Evaluation

The organization has adopted a five-stage gating procedure, which encourages and directs them to develop a business case and evaluate it. The first three stages of the gating procedure are about progressively screening the new service ideas. The gating procedure is used for developing a generic service offering. The organization has also designed a business practice procedure to screen customized offerings.

Build and Launch

Stages four and five of the gating procedure guide the organization through the development and launch of a service. Depending upon the type of a service, the service can be launched either to a selected set of customers or to all customers.

Monitoring

This is one of the most important stages of NSD at LOGCO. It helps the organization monitor its new offerings. The feedback from the market helps the organization to improve its services or launch new services.
4.5.2 Enablers

The enablers of NSD were discussed earlier. Many of the enablers discussed are present at LOGCO. Below they are described briefly.

Involvement of front-line employees

Front-line employees are often the key source of market requirements. Their knowledge of customers and competitive offerings helps initiate new services (De Jong and Vermeulen, 2003). At LOGCO, these front-line employees include individuals from, for example, marketing, sales, operations and customer value management.

Presence of a Project Sponsor

A project sponsor is very important as the individual plays a key role in mobilizing essential resources for NSD (De Jong and Vermeulen, 2003). LOGCO realizes the importance of a project sponsor and, thus, there is always a formal project sponsor assigned to a project. Typically, the sponsor is a senior-level manager.

Multi-functional Team

During service development, the organization forms a multi-functional team whose members come from various functions across the whole organization. The team directly influences the effectiveness of the firm’s NSD efforts through the combination of expertise (De Jong and Vermeulen, 2003; Froehle, et al., 2000).
Market Research

Market research is important to understand the evolving market requirements and to develop services to satisfy them (De Jong and Vermeulen, 2003). At LOGCO, there is a separate group (i.e., Market Research group) to perform this activity. In addition, the organization also works with external agencies to conduct market research.

Testing and Launch

Services are tested at multiple stages (e.g., the evaluation stage and launch stage) to get formal market feedback to refine services and improve offerings before they are formally launched. The launch itself consists of training employees, effective marketing and the evaluation of results which are formally conducted at the fifth stage of the gating procedure.

Formal Development Process

The organization has formalized the process of service development through the adoption of stage-gate and business practice procedures. In addition, the organization performs a formal monitoring of its services and has a somewhat formal procedure for idea generation.

Quality Work Environment

Edvardsson and Gustavsson (2003) suggest that the quality of the work environment affects the success of NSD. More specifically, individuals should have an opportunity to exercise an influence and control over their own work situation, develop
security and meaning, develop social relations at and through the job, keep a social distance to the job, maintain good health and avoid negative stress, and work in a safe physical surrounding. LOGCO provides its employees a quality working environment. The organization is one of the top hundred employers in the market and has won accolades for its human resource practices.

**Project Update**

Edgett (1994) suggests that a continuous review of the service being developed is very important for the successful completion of a project. At LOGCO, reviews of the service initiatives are done on a regular basis by the respective LOB’s Management Council.

**4.6 Summary**

Although a detailed literature review of NSD was beyond the scope of this research, this chapter covered three important aspects of NSD. First, the NSD models/processes that organizations use to develop their services. Second, the NSD outcomes used to measure the performance of a developed service as well as the process used to develop the service. Finally, the various antecedents or enablers that make the NSD successful were described. A quick overview of NSD at LOGCO was also provided. This brief understanding of these aspects of NSD is important before delving into the detailed cases in the following chapters.
CHAPTER 5: CASE STUDY ONE–TRANSACTION MESSAGING

5.1 Background

Transaction Messaging (TM) is LOGCO’s most profitable LOB. It competes in the large communications market, which is valued ten times more than TM’s revenue, and includes telephone, instant messaging, email and other communication channels. TM provides its services via the p-channel and the e-channel. The growth in services on the p-channel remains flat and faces the threat of electronic substitution. Thus, the services on the e-channel are designed to complement as well as substitute the p-channel services. TM’s vision is to provide multi-channel services that merge and consolidate the services on the p-channel and the e-channel in a way that cannot be replicated by its competitors.

To realize this vision, TM’s key strategy is “defend, build and grow.” Defend refers to actively building stronger relationships and bonds with customers so that they choose TM for their message delivery services on a continuing basis. Build means creating new multi-channel services as well as repositioning TM’s services in new markets. Finally, grow refers to developing new services and adding new value to the existing services.

Essentially, TM is an analyzer organization (Miles and Snow, 1978). It is not leading change in its industry; rather, its strategic intent is to defend its current services by maintaining efficiencies and quickly capturing new service and market opportunities.
identified by industry leaders from around the world. The LOB balances between efficiency and innovation. Generally, analyzers have characteristics of prospectors and defenders, thus they are more complex and functionally balanced. They defend positions in a stable marketplace by improving efficiencies and in a turbulent marketplace they move quickly to adopt new innovations which appear to have a strong market potential.

5.2 Organizational Structure for NSD

As mentioned earlier, the context of this study is NSD. NSD is a mature activity at LOGCO and TM has implemented a business process program, referred to as Market-to-Fulfill, to improve its KM around service development. The business process entails an end-to-end focus on service development (i.e., from the market requirement of a service to the delivery of that service). Various groups are involved in this activity and an understanding of their roles is important to understand service development at TM.

Within the context of service development, TM has four Service Development and Management groups, a Business Support and Market Development group, and an Innovation group (see Figure 12). Each Service Development and Management group manages the development of its own services but they are somewhat dependent on each other due to the complementary nature of their services. The Business Support and Market Development group is primarily responsible for driving TM’s business strategy and maintaining relationships with the stakeholders inside and outside LOGCO; for example, they provide the interface to Marketing and Sales and to Operations groups at the corporate level. The Business Support and Market Development group is often
referred to as “Chief of Staff” within TM. The Innovation group is under TM but it is mandated to generate forward-looking services for all LOBs. However, the majority of their services are for TM.

Service development is also enabled by various groups at the corporate level as they play a critical role during various stages of service development (see Figure 12). The Corporate Strategy group, for instance, is responsible for developing overall corporate service strategy. Although each LOB creates its own service strategy, each LOB’s service strategy must be merged into a single corporate service strategy. Basically, a LOB’s service strategy is an input to the overall corporate strategy. The Marketing Research group at the corporate level also plays a key role in service development by conducting primary and secondary research to understand market requirements for LOBs. The Customer Value Management group regularly monitors and measures service delivery and customer satisfaction indexes regarding various LOGCO services.

Further, although each LOB has its own marketing and sales expertise, similar expertise also exists at the corporate level to provide a unifying view of LOGCO’s services. This expertise is provided by the Marketing and Sales group. The group helps to identify new service ideas. The Project Development group is a common pool of project management experts that provide the project management skills during NSD. The Operations and Engineering group is responsible for launching and providing services to customers. The Change Management group is involved in transferring knowledge to the
### Groups (and responsibilities) at the corporate level that facilitate service development

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Strategy</td>
<td>Manages the overall corporate strategy; Each LOB’s strategy feeds into the corporate strategy</td>
</tr>
<tr>
<td>Marketing Research</td>
<td>Conducts research using primary and secondary sources</td>
</tr>
<tr>
<td>Customer Value Management</td>
<td>Monitors and measures customer satisfaction</td>
</tr>
<tr>
<td>Marketing and Sales</td>
<td>Provides common marketing and sales view to customers</td>
</tr>
<tr>
<td>Project Development</td>
<td>Monitors and provides best service development practices</td>
</tr>
<tr>
<td>Operations and Engineering</td>
<td>Delivers services</td>
</tr>
<tr>
<td>Change Management</td>
<td>Provides change management services to internal and external stakeholders</td>
</tr>
<tr>
<td>CIO</td>
<td>Manages informational assets; Provides and develops a common vision of services on the e-channel</td>
</tr>
</tbody>
</table>

### Organizational structure of Transactional Messaging with regards to service development

<table>
<thead>
<tr>
<th>Service Development and Management</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Development and Management</td>
<td>Develops services return message services</td>
</tr>
<tr>
<td>Service Development and Management</td>
<td>Develops services for the international market</td>
</tr>
<tr>
<td>Service Development and Management</td>
<td>Develops services for the domestic market</td>
</tr>
<tr>
<td>Service Development and Management</td>
<td>Develops services for the e-channel</td>
</tr>
<tr>
<td>Innovation</td>
<td>Responsible for innovative services for the whole organization</td>
</tr>
<tr>
<td>Business Support and Market Development</td>
<td>&quot;Chief of Staff&quot;</td>
</tr>
</tbody>
</table>

Figure 12: TM’s organizational structure
internal and external stakeholders who are and will be affected by services. Finally, the CIO group manages informational assets (i.e., IT enabled business processes, IT infrastructure, IT skills) related to service development. This group is also leading the long-term vision of LOGCO for the e-channel services. During this case study, individuals from these groups were interviewed to gain an in-depth understanding of KM during NSD.

The way in which TM manages its knowledge at each stage of knowledge evolution during NSD--scanning, evaluation, transfer and application--is described in detail in sections 5.3 to 5.6. Under each stage, all the constructs from the conceptual model, that is, process, individuals, roles, business logic, artifacts and culture (described in Chapter 2), are explored. Next, in section 5.7, an analysis to identify patterns is presented, followed by a summary. What results is an in-depth understanding of how knowledge is managed at TM within the context of NSD.

5.3 Knowledge Scanning Stage

At this stage, TM scans for new knowledge, including ideas for incremental and radical services, to assist with addressing new and old challenges and for opportunities in services. Scanning is important for TM because the environment in which it is embedded is changing, and scanning for new knowledge permits the LOB to adapt to its environment.
5.3.1 Scanning Process

To scan for new service ideas, TM informally follows a sequence of search, filter and selection activities. During the search, the fundamental purpose is to discover different service ideas. For example, TM conducts research to understand industry, competitive and customer trends. These service ideas are screened at a high-level to ensure that the ideas are aligned with TM’s service strategy and business requirements.

As a manager points out,

“When we are searching for new service ideas, we have our business objectives at the back of our mind. For instance, some of our competitors also provide financial services which we will never provide. Thus, we never look for financial service ideas.”

Eventually the ideas that demonstrate potential are selected and put through the formal evaluation (described later in this chapter).

The primary responsibility of scanning activities lies on the shoulders of TM, which it pursues very actively. It is an ongoing process and is carried out through formal activities—primary search and secondary search. Whereas the primary search is conducted to develop an understanding of industry trends, competition, and evolving customer choices, the secondary search is feedback oriented resulting from the monitoring of current services and current customer requests. As noted by a manager,

“We do the primary search through the Market Research group, the Corporate Strategy group and/or through an external consulting agency. For example, we went to market with Decima Research, an external research agency, to
understand customer choices for one of our services. We did a couple of waves of market research on that service. We also do a secondary search. For example, we use Customer Value Management as part of our feed-in process to understand how customers see us, how they compare us to our competition, where can we fix things and so on.”

Service ideas are also discovered serendipitously through informal discussions. Most individuals are exposed to information about customers, competitors and industry through magazines, newspapers, strategic reports, internal special-interest groups’ reports and internal publications. As a manager explains,

“Generally speaking, most people will do environmental scanning, looking at information brought into the corporation from different sources. Mentally, we are all doing comparisons with our competitors. In my case, I spend the first half hour of my day scanning newspapers and searching on Google for items that might impact our business.”

He further explains,

“A few years ago, I built a service with another manager starting from the initial stage right through to the market launch. We had an idea about delivering services through the Internet, so we went to our big customers like AOL and GM and spoke with them casually about the idea. Later on we built that service. The service arose from an informal hallway discussion and was an internally generated idea.”
While scanning for service ideas, TM also balances between narrow and broad scanning behavior (Leonard-Barton, 1998) because it has not only to defend its current services but also grow by providing radically new services. One manager provides examples,

“I look at unorthodox aspects such as electronic security and digital identity management that are peripheral to our business. I keep up with developments in new technologies that could enable or inhibit us. I periodically scan Forrester, McKinsey and Gartner reports as well. I read stories about organizations such as Kodak. I am interested in the environment because I want to know whether we should go to hybrid vehicles to deliver our physical messages. I read stories about scams too. All these affect the kind of services that we want to bring to the market.”

He also provides an example that illustrates a narrow scanning behavior,

“The people in the Service Development and Management group are also involved in idea searching but they keep their finger on the pulse of what they are doing currently. Because they are narrowly focused they come up with relatively obvious service extensions. They are all scanning the environment but the scope of their scan is very limited.”
5.3.2 Individuals and Roles

TM focuses on short-term, middle-term and long-term service ideas through different groups. Each Service Development and Management group is formally responsible for formulating its own service strategy and generating service ideas since they are the ones who are also responsible for services. However, as previously pointed out, their scanning is enabled by various groups at the TM and corporate levels. TM is focused on long-term ideas (i.e., 5-15 years) with the help of the Corporate Strategy and CIO groups. These groups also ensure that the services from each LOB are complementary, mutually exclusive and non-competing. In addition, the CIO group is responsible for long-term ideas on the e-channel services. The Innovation group is focused primarily on the middle-term (i.e., 3-5 years) service ideas. Finally, the Customer Value Management, Marketing and Sales, and Market Research groups at the corporate level are focused on customers’ current requirements and industry trends (i.e., short-term ideas).

The Business Support and Market Development group plays an enabling role by integrating the service strategies and objectives of all four Service Development and Management groups. This helps each Service Development and Management group understand the services coming out of the other Service Development and Management groups. The Business Support and Market Development group also conducts scanning of new service ideas as a part of their formal responsibilities.

3 Both individuals and roles are discussed together in each case analysis and cross-case analysis. Essentially, the two were found inseparable at LOGCO. Roles were defined and there were individuals performing those roles. There is an exception, however, in the case of MM where a few critical roles which were not assigned to any individuals.
5.3.3 Business Logic

Scanning is part of TM’s five-year strategic plan that is prepared and updated on an annual basis. The plan describes strategic and service objectives and identifies major service initiatives that will be implemented between a one and five year timeframe (i.e., from short-term to middle-term). Identifying services as part of the annual plan enables TM to plan and commit appropriate resources at the beginning of a financial year. More recently, TM has also started creating a strategic plan called “2020,” which has created a platform for the LOB to think and discuss its services over a long-term (i.e., 10-15 years) timeframe.

Scanning is also performed informally on an ongoing basis. As a manager remarks,

“Opportunities arise all the time in the market and we have to capture them. You cannot predict all the required services at the beginning of a financial year.”

Another manager adds,

“We are also formally encouraged to go out into the field and meet employees across the country on a regular basis to get their ideas and be more visible to the frontline employees. It is another way of getting ideas from the employees who are on the shop floor.”

The manager continues,

“We have our CEO’s venue at the corporate level; people write to her directly about their ideas. Within our LOB we meet regularly with the sales team. Every quarter there is a monthly sales review with our sales colleagues. There are
different procedures for getting ideas from different sources.”

5.3.4 Artifacts

The workspace design within LOGCO reflects conservatism. The layout has been designed to optimize space and make individuals transferable between offices. With regard to the workspace, TM is no exception. As a manager from the corporate level explains,

“We are the children of the military. After World War II everybody who left the army came here. So the layout of this organization reflects that.”

Nonetheless, individuals throughout LOGCO have personalized their offices to motivate creativity. For instance, one manager from TM collects memorabilia from all the conferences he attends; this reminds him of key insights gained from those conferences. Similarly, the majority of managers in all LOBs have collected and displayed posters depicting work-flow processes, mission and objective statements, and corporate performance scorecards in their office. Another manager from PD hangs posters of “Bond 007” to think creatively. Yet another manager from the CIO group has hung piñatas around his team area and painted a brainstorming room in different colors. A manager at the corporate level even has a VCR, TV and music system in his office.

TM’s employees also meet outside LOGCO campus to brainstorm new service ideas. In addition, the LOGCO campus is big and beautiful with a café, picnic tables, gymnasium and kitchens on every office floor. These artifacts bring people together in a common space which fosters idea generation. As one manager explains,
“Most of our new service ideas are generated through informal conversations in the hallway, near elevators and on the campus.”

An excellent example of how an informal conversation led to a ground-breaking service occurred when a few senior managers were smoking together in a “Smokers’ Lobby.” They realized that one of their service policies regarding customer protection was really hurting them as well as their customers. They started working on the policy on an informal basis and were able to successfully change the policy.

General information systems such as on-line chat rooms and email also facilitate interaction among individuals that enable the generation of new service ideas. LOGCO has also recently created an IT-enabled discussion forum to formally encourage and manage idea generation at the corporate level.

5.3.5 Culture

Due to a strong social mandate and government regulatory influence, the overall cultural at LOGCO is one of stability and control. The company maintains this culture through a sense of mission and consistent work practices (Denison and Mishra, 1995). A sense of mission refers to a greater emphasis on the stability of purpose and meaning of LOGCO’s existence, which is to

“Operate [logistics] services on a financially self-sustaining basis that meets the needs of our customers: [domestic] business and consumers.”

The organization has also developed various standard operating policies to achieve

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4 From the five-year annual corporate plan
consistency in its service offerings. As a manager explains,

“We have a mindset that we want to work like Timex. We want to be reliable, consistent and as efficient as possible, all the time.”

Yet, amidst this organizational culture of stability and control which de-emphasizes change and flexibility and emphasizes risk aversion and conservatism, TM is also fostering a sub-culture of adaptability and change (Denison and Mishra, 1995). More specifically, it is building a capacity to change internally in response to external conditions to provide radical services in order to mitigate the competitive threat from electronic substitution. As one manager points out,

“If we don’t change the way we think about and do our business, we will be out of it.”

One of the best examples of adaptability comes from TM’s focus on e-channel services. A few years ago, TM launched a messaging service on the e-channel which failed to meet its financial and service objectives. Rather than canceling the service, TM has tried to learn from its past mistakes and has invested heavily to meet its objectives. As a manager explains,

“This would not have been possible in the past, when our mindset was to resist change. But now we are moving from that environment to an environment of innovation, one in which we want to go out and take some risks and make changes. In the past our culture was such that if you wanted to innovate, you would have to do it at your own risk. If you failed, you were held accountable; we did not care
about any lessons learned. But now we are stating innovation as our top priority.

We are building a certain amount of tolerance for managed risk and entrepreneurialism.”

Another manager from the corporate level, while commenting on the changing culture at TM, emphasizes,

“I think there is evidence that TM has brought the most incremental and radical services to the market, both on the e- and p-channels. Look at their portfolio of services, there is a very strong capability. If you look at the new services built by other LOBs, there are fewer than those built by TM.”

5.4 Knowledge Evaluation Stage

The objective behind this stage is to subject new service ideas to an internal selection process through which ideas are screened and prioritized for resource allocation. Even the service ideas that are under development could be again put through this process. Ideas are selected on the basis of their likelihood to help meet TM objectives.

5.4.1 Evaluation Process

Having identified new service ideas through scanning, TM evaluates those ideas iteratively through a sequence of theoretical, pilot and postmortem activities. During theoretical and pilot evaluations, the fundamental purpose is to rigorously analyze whether or not a new service idea is valid and whether it can solve current challenges. The analysis may include market, technical, financial, competitive, and operation
assessments.

Theoretical evaluation is performed using existing knowledge that may be either inside or outside the organization. If the knowledge does not exist inside LOGCO, TM will go to the Marketing Research group or an external consulting agency. During the pilot evaluation, TM scales up its evaluation and quickly generates an easy to modify service prototype that can be tested against the actual use by a few customers. The use of a pilot evaluation results in significant improvement in development time and cost (Thomke, 1998). The final stage of the evaluation is the postmortem, in which a thorough analysis of the results from the theoretical and/or pilot evaluations is made to make a “Go” or “Kill” decision.

5.4.2 Individuals and Roles

During the early phase of the evaluation, a multi-functional team is formed that stays together until the service is fully developed and launched. The team members represent stakeholders from various functional departments from the corporate and TM levels who cooperate and share knowledge during the service development. The multi-functional team contributes directly to the overall effectiveness of developing services because of the new combination of knowledge and competencies (Avionitis, et al., 2001).

The multi-functional team has two types of members: the development members and the support members. The development members include individuals from the Service Development and Management group who initiated the service idea. The
development members may also include individuals from the Project Development, CIO, Operations and Engineering groups. The support members may include individuals from groups such as Change Management, Market Research, Corporate Strategy, Finance Decision Support, and Marketing and Sales. These members are not directly involved in the development but they are the subject-matter experts who offer their advice to the development members during the service development.

In addition, TM has a Management Council, which includes senior members from the LOB. The Council meets on a regular basis and is formally responsible for monitoring the projects and making “Go/Kill” decisions. A manager who is a member of this council reports,

“One of the things that we are doing on a weekly basis within our line of business is to talk about the status of our various service initiatives. The idea is to incorporate discussions about new investments, as well as create a forum to talk about new initiatives and start prioritizing them. For example, yesterday we invested three hours with that purpose in mind.”

5.4.3 Business Logic

LOGCO has two procedures to get their service ideas evaluated and prioritized—business practices and stage gate. These procedures are followed throughout the organization. If the service idea is about changing or developing a new service policy, then TM follows the business practice process, as shown in Figure 13. The procedure can also be used for developing customized offerings for customers. But if the service idea is
a generic offering, then TM follows the stage gate process, as shown in Figure 14 (Cooper, 1993). The stage gate process is a conceptual and operation road map for moving a new service idea to launch. It breaks down the service development into stages of activities, of which the first three stages are about progressively evaluating the idea in more detail. The evaluation includes things such as business opportunity assessment, market assessment, customer assessment and exit strategy. The business practice process is comparatively less onerous but it ensures that ideas are evaluated rigorously.

In addition, TM has designed specific evaluation criteria for ranking and prioritizing service ideas. The criteria enable filtering out ideas that cannot provide the expected benefits to the LOB. Each criterion has been carefully designed and weighted to ensure that the ideas that are developed into services are aligned with TM’s strategy to “defend, build and grow.” During the time of this case study, the evaluation criteria included dimensions such as revenue potential, ROI, time and cost, strategic impact and customer value. The evaluation criteria are flexible and are changed when TM’s strategic objectives are modified. For instance, TM has tried to become a risk-taking LOB by changing its evaluation criteria. As a manager explains,

“We are engaged in more innovative projects these days compared to those we pursued a few years ago. It is all based on our filter criteria that we can change based on our strategic needs. For example, five years ago we tried to go to the market with an idea for Kiosk services. The idea was filtered out due to a strong emphasis on the ROI criterion. Today we are implementing the same idea despite its poor ROI because there is a greater emphasis on the strategic impact criterion.
We believe Kiosk services will improve our market perception and brand, and that is one of our strategic objectives.”
Figure 14: Stage gate procedures

Stages are:
- where the action occurs, work is done
- where risk is managed
- Cross-functional collaboration
- Incremental—each stage costs more than the preceding one

Gates are:
- Go/Kill, project culling and prioritization decision are made
- Focused on quality of execution, business rationale and action plan
- Where criteria is used to evaluate potential for success

“Go build a business case and market plan”
“Select best option to go to planning (if required)”
“Go build and get ready for launch (to market)”
“You are ready to launch”
“Handover ongoing operations”
“Are we delivering on the business case and market plan?”
5.4.4 Artifacts

At LOGCO there is no experimentation laboratory. A few years ago LOGCO had a laboratory but, due to the nature of services that LOGCO develops, the lab was rarely used. Now the experimentation is done through pilots. There is more emphasis on the “real” data than on the “controlled” data. However, the Operations and Engineering groups maintain laboratories where some physical attributes of services are tested, for example, bar code reading. But these groups are the corporate level groups which are common to all LOBs. Often service firms use formal market tests and use customer feedback to refine their services (De Brentani, 2001).

The IT infrastructures also play an important role in experimentation with knowledge. On an infrequent basis, the Innovation group under TM uses simulation to test the detection of items that could be sent by message via the physical channel.

5.4.5 Culture

Due to a strong social mandate and government regulation, TM has developed a conservative culture, which in turn has made its evaluation process rigorous to ensure that ideas when implemented have an extremely high probability of succeeding. Thus, all service ideas are evaluated thoroughly and formally in various stages (i.e., theoretical, pilots and postmortem). At each stage the evaluative criteria (as described earlier) are utilized. The stage gate and business practices procedures ensure that each idea is put through a formal process which also contributes to the rigor. The formation of a multi-
functional team of “subject-matter” experts contributes to making informed decisions. All these steps also improve the transparency of evaluations and curb any political maneuvering.

This conservative culture “cuts both ways,” that is, as well as aiding, it also hinders new thinking. Thus TM has taken steps (apart from applying weighted evaluation criteria) to ensure that it also nurtures creativity and innovation. As a manager explains,

“We are seeing some changes in our culture. It is spotty at best, but much better than in the past. Lots of ideas that we are now implementing would never have gotten through the initial stages before. Earlier, there was almost a pre-pre-filter that created an atmosphere that inhibited bringing what might be perceived as “dumb ideas” to the table. In contrast, now more and more people are saying that there are all kinds of great opportunities that we can pursue. Time is changing and our filters have changed as well. Earlier, people would do what their bosses told them to do; now they will question and discuss ideas with their peers and bosses. We encourage them to do so.”

But at the same time, as another manager explains,

“We do not want to be reckless. We want to build the same amount of rigor and discipline as we innovate. We still want to hit those financial and high customer index targets.”
5.5 Knowledge Transferring Stage

This stage of knowledge evolution is about transferring the newly evaluated service knowledge and the related knowledge to relevant stakeholders within, as well as outside, TM.

5.5.1 Transfer Process

In general, within the context of NSD, knowledge transfer at TM follows a sequence of need identification, source identification and knowledge sharing activities. First, a need for more knowledge or a need to transfer the knowledge to relevant parties is identified. Next, those who have the knowledge or require the knowledge are identified, followed by sharing of knowledge. The actual sharing of knowledge is primarily done in two ways: documentation and story-telling. Various documents, such as business cases and marketing research reports, are produced during service development. These documents are shared among individuals but they are not the optimal means of sharing knowledge within TM. The documents are usually dispersed throughout the organization and are not always stored at a central location. As a manager explains,

“Individuals maintain documents on their hard drive or sometimes on a shared drive.”

However, during the time of this case study, a records management initiative was formally launched to maintain all the documents at one central location that will be accessible through collaborative systems such as the intranet. As a manager describes,

“We have recently launched a Records Management initiative. This will lead to
more disciplined management of our knowledge resources. We are in the process of taking the inventory of our knowledge. Once the process is over, we will digitize and index it for quick retrieval and then it will become a common platform for knowledge sharing.”

Due to limited use of documentation, story-telling is the most important way of knowledge transfer. It is also critical because the knowledge from numerous past projects has not been formally codified. As a manager describes,

“We have heavy procedures for evaluating ideas and then implementing them, but the transfer of knowledge is primarily done by telling stories of what happened in the past.”

A story is a detailed narrative of management actions, employee interactions, or other intra-organizational events that are communicated informally within the organization (Bennet and Neilson, 2003). Since employee tenure at TM is, in general, very high, story-telling for transferring knowledge works well. As a manager notes,

“There is always at least one individual on any project who was, or knows someone who was, exposed to an event relevant to the current project.”

However, the records management initiative will become equally important in the future because the majority of individuals (i.e., almost half the current workforce) will retire in the next eight years. According to a manager at the corporate level,

“I think we need a central database for which someone is formally responsible. Also, we need to structure the information in that database. With so many people retiring in the next few years, we absolutely need it.”
In summary, at TM, individuals rely heavily on personalization and less on codification to transfer knowledge (Hansen, et al., 1999). As a manager emphasizes,

“When it comes to sharing and transferring knowledge within LOGCO, we do not rely on documentation as much as we do on face-to-face communication.”

The codification strategy focuses on codifying knowledge using an “individual-to-document” approach in which knowledge is extracted from an individual, made independent of that individual, and reused. Codification firms invest heavily in IT. This strategy allows many people to search for and retrieve codified knowledge without having to contact the individual who originally developed it, since knowledge is stored in documents, manuals, databases, electronic repositories, and so on. In contrast, the personalization strategy focuses on dialogue between individuals, not on a database. It is an individual-to-individual approach in which knowledge is shared not only face-to-face, but also by electronic communications, thus building networks of people.

5.5.2 Individuals and Roles

Knowledge transfer in TM is everyone’s responsibility. It is formally measured in their personal scorecard (personal scorecards are taken very seriously at LOGCO). Some individuals have informally taken up the responsibility of driving the knowledge transfer initiative. For example, a manager who has taken up such a role explains,

“Our challenge is the sheer abundance of knowledge and people. Knowing where to go is very important. One aspect of my role that I value is the creation of a “Yellow Pages” listing of who knows what and the location of key documents. This is part of the library that we are putting together and it will be on our
The idea is that when people want to talk about our business and want to know what is going on in our business, they will have quick access to what they need.”

The manager further explains,

“I already have a vision for this personal initiative. First, I will list the various kinds of information that we have; second, we will organize that information. This will be followed by digitization, indexing and searching capabilities. I will be sitting with my peers next week to review this initiative. All this will become part of the Records Management initiative.”

5.5.3 Business Logic

As mentioned, TM relies primarily on the personalization strategy and less on the codification strategy for knowledge transfer. As a result, service ideas within the context of NSD are transferred through three key mechanisms: formation of multi-functional teams, mobility of individuals, and the appropriation of formal/informal social networks.

The formation of a multi-functional team during the early phases of an evaluation stage facilitates intra-organizational knowledge transfer about the new service ideas. The multi-functional team members are from the different parts of LOGCO who collaborate with one another on a specific project.

Knowledge is also transferred through the mobility of individuals (i.e., personnel transfer and rotation) within different teams. This mechanism enables the transfer of difficult to articulate knowledge and an understanding of the business from multiple
perspectives. As a manger explains,

“Individuals within LOBs and at the corporate level are interchangeable based on project needs.”

Finally, formal/informal social networking is the most important mechanism in facilitating the diffusion of knowledge. TM nurtures these social networks among their members using various strategies. At a formal level, face-to-face communication is encouraged through an individual’s scorecard. Based on the size and importance of service projects, specific team-building exercises/meetings are held for multi-functional teams. Team-building exercises/meetings are also held frequently at the TM level, in which all the members from the LOB come together to share knowledge and strengthen their networks. Informally, managers hold “lunch and learn” meetings, parties and brainstorming sessions, where individuals from different parts of LOGCO are invited to learn about each other’s work. One of the corporate managers, while commenting on knowledge transfer practices, acknowledges,

“The sharing of knowledge in TM is very rich. The people in this LOB are new but they are not afraid of expanding their network to acquire knowledge. If an individual has a few contacts, he/she will leverage those to build it further.”

In addition, there are special interest groups at the LOGCO level that bring people together from different parts of the organization to share ideas. For example, one group of

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5 Each individual in TM has a personal scorecard that is aligned with the LOB’s scorecard and is used for the individual’s performance appraisal. The scorecard has financial, customer, service and employee engagement dimensions. The employee engagement dimension emphasizes things such as face-to-face communication, visibility and transparency in leadership, information sharing, team development.
individuals prepares a report on the market every day and sends it to everyone in the group via email. Anyone can subscribe to the email and become part of this group. Various TM managers are part of this group. There is also a social networking group and an orientation program for new employees at LOGCO level that help new employees to build their own network.

The codification strategy encompasses the Records Management initiative and the knowledge transfer within the context of change management, which is the responsibility of the Change Management group. The Change Management group, which is a part of a multi-functional team, is formally responsible for transferring the knowledge about the changes that the new service is going to bring after the launch. Based on the service type this may include educating internal and/or external stakeholders. The Change Management group has Take-to-Market (for external stakeholders) and Take-to-Company (for internal stakeholders) programs to handle such knowledge transfers.

5.5.4 Artifacts

The personalization strategy for knowledge transfer is enabled by two factors—the similarity of knowledge and locational proximity. Although LOBs have their own set of services, there is a lot of homogeneity in their services. At the fundamental level, all service types involve moving a message from one point to another either on the p-channel or the e-channel. This homogeneity of knowledge helps the diffusion of knowledge.
There are extensive linkages between individuals that develop due to locational proximity as the majority of employees from the common corporate functions and the LOBs are in the same campus or the same building. This locational proximity increases the frequency of contact which serves to build social ties among individuals that are useful for the diffusion of knowledge. LOGCO also uses standard IT infrastructure (e.g., email, chat room, and intranet) as tools for communication. IT infrastructure extends individuals’ reach to those who are beyond face-to-face contact. In the near future, it is anticipated that the database that will be created as a part of the Records Management initiative will also become a key artifact for communication.

5.5.5 Culture

The culture that is fostered throughout LOGCO is employee oriented. Organizations fostering such a culture show great concern for their employees and their welfare (Kayworth and Leidner, 2003). LOGCO is rated as one of the top 100 employers in their national market by various ranking agencies. Individuals, in general, are very loyal to LOGCO, which is also evident from their employment tenure. Most individuals who work here often retire from the organization. For example, of the 30,000 LOGCO employees predicted to leave the company in the next 10 years, only 4,000 employees will leave for reasons other than retirement.

Kayworth and Leidner (2003) also refer to this type of culture as parochial, which suggests that individuals are loyal to their organization. In a parochial culture, individuals can be motivated through reward systems (e.g., employee engagement in an individual
scorecard) to share knowledge and they frequently share knowledge with each other because they can see long term benefits to both themselves and to the organization. As a manager observes,

“When I am looking for information, I always find it. People are willing to share knowledge readily. The only challenge is to know where to go.”

5.6 Knowledge Application Stage

Within the context of this study, the application stage refers to when services are eventually built and executed.

5.6.1 Application Process

Typically, a service development at TM follows a sequence of activities–build, launch and monitor. During the building activity, a service is designed and developed, followed by a rigorous testing and validation to ensure that the new service meets the business requirements. Next, the service is rolled out to operations for launch. The launch could be only for a selected set of customers or it could be a full scale launch. The launch also includes marketing, sales and change management initiatives. The final activity of monitoring is to ensure that TM is getting the feedback from its customers. The feedback is an important source for improvements and new service ideas.
5.6.2 Individuals and Roles

The individuals from TM are integrators of the expertise of a multi-functional team. For instance, as a project sponsor TM will work closely with a manager from the Project Development group to ensure that best project management practices are followed while the members from the Operation and Engineering groups build and execute services. A different manager from the Business Support and Market Development group of TM (also a part of the multi-functional team) will ensure that an interface to corporate level groups such as Operations, Engineering, Marketing and Sales is maintained for proper transitioning of the service. Other members of the multi-functional team could include managers from the Customer Value Management group who will be responsible for collecting customer feedback about the service. The feedback provides an internal stimulus which launches a new knowledge cycle.

5.6.3 Business Logic

As integrators, TM drives the development of detailed business, functional and design requirements. These requirements are subsequently used by the members of the multi-functional team to build, launch and monitor services. The activities, as illustrated above, are performed as part of the stage gate and business practices procedures. Under stage gate, gate 4 and gate 5 cover build and launch activities respectively (as shown in Figure 13).
5.6.4 Artifacts

As mentioned earlier, the actual development of a service is done outside the LOB. The launch of service is handled by operations, and the majority of monitoring activity is done by the Customer Value Management group. Thus, the role of artifacts in the knowledge application stage is not significant. However, the Innovation and the Service Development and Management groups working on the e-channel maintain their own development laboratory which reduces their need to go outside the LOB for service development.

5.6.5 Culture

In the past, LOGCO tried to become a process-oriented organization. One of the key outcomes of this initiative was the creation of numerous resources and competencies at the corporate level that could be shared among LOBs. This has led to internal competition for the same scarce resources and competencies. In order to reduce its dependency, TM has started to build its own resources and competencies. For example, TM has good representation of its own members in the multi-functional team as compared to multi-functional teams formed in some other LOBs.

In addition, the Innovation group and two of their Service Development and Management groups have built competencies which make them less reliant on common corporate resources during NSD (e.g., they have their own engineers to build services). Ideologically, they believe in building these competencies and appropriate organizational structure internally. Availability of its own resources and competencies is very important.
during the implementation stage because they do not have to compete for common resources at the corporate level during service development. It also offers them flexibility because during this stage of service development, members from other functional groups within the multi-functional group are often more rigid and do not go beyond their prescribed roles. As a manager explains,

“By the time we reach to the implementation stage, the majority of things about the project are well documented. The people who come from different parts of the organization in a multi-functional team have very specific roles to play during this stage and they do not stray. They just follow the recipe so that the project is completed on schedule and within budget without much regard for the service itself. Having our own members gives us a flexibility to be responsive, for example, to changing requirements and be creative even during this stage.”

A summary of findings for at all the stages is presented in Figure 15.
Knowledge Processes

Knowledge Scanning Stage
- New service ideas are scanned through an informal sequence of search, filter and selection activities
- Ideas are acquired from inside and outside the organization
- Scanning behavior is both narrow and broad

Knowledge Evaluation Stage
- New service ideas are evaluated through a formal iterative sequence of theoretical, pilot and postmortem activities for screening and prioritization
  - The evaluation process is very rigorous

Knowledge Transfer Stage
- New service ideas and related knowledge are transferred through an informal sequence of need identification, source identification and sharing activities
  - There is a heavy reliance on personalization and less on codification
  - Story-telling is used more than documentation

Knowledge Application Stage
- New services are implemented through a formal sequence of build, launch and monitoring activities
  - The implementation process is very rigorous

OM Infrastructures

Individuals, Roles, Business Logic, Artifacts, Culture

Individuals/Roles:
- Each Service Development and Management group is primarily responsible for formulating its own strategic objectives and generating new service ideas
- Idea generation is facilitated by other corporate level and TM level groups, i.e., Corporate Strategy and CIO (long-term ideas); Innovation Group (middle-term ideas); Marketing/Sales, Customer Value Management, Market Research (short-term ideas)
- Idea generation is also enabled and managed by TM’s Business Support and Market Development group

Individuals/Roles:
- Multi-functional team with development and support members provide their subject matter expertise during evaluation
- Management Council monitors the projects and makes “Go” and “Kill” decisions

Individuals/Roles:
- The knowledge sharing expectation is formally set by personal performance scorecards
- Individuals have taken informal initiatives to create yellow pages

Individuals/Roles:
- Integrators (for instance, development members within the multi-functional team build and test a service and hand it over to Operations to launch; Marketing/Sales promote the service; Customer Value Management monitors the service performance)
**Figure 15: Management of knowledge within the NSD context at TM**

### Business Logic:
- **Ideas are acquired on an ongoing basis**
- **Ideas are acquired formally and informally**
- **The formulation of service objectives and the generation of new service ideas is part of a flexible annual five-year strategy plan which focuses on short-term to medium-term ideas**
- **The formulation of service objectives and the generation of new service ideas is also a part of a flexible “2020” strategy plan which focuses on long-term ideas**

#### Artifacts:
- **Conservative physical layout but highly personalized spaces to motivate creativity**
- **Sometimes TM meets outside the campus to think “outside the box”**
- **The campus is big and beautiful with cafés, cigarette corners, picnic tables, gymnasium and kitchens which nurtures informal discussions**
- **IT infrastructure is used for formal and informal discussions**

#### Culture:
- **Strong social mandate and government regulatory influence on the business**
- **Balances between stability/direction and adaptability/change to promote incremental and radical ideas**

### Business Logic:
- **Stages 1, 2 and 3 of stage gate procedure**
- **Business practices**
- **Formal flexible weighted criteria that is aligned with the current business strategy**

#### Artifacts:
- **No service experimentation lab.**
- **Emphasis on real data through pilots.**
- **IT infrastructure is used for simulation**

#### Culture:
- **Conservative culture but balancing between incremental and radical ideas**
- **Transparency in evaluation**
- **Rigor**

### Business Logic:
- **Personalization (i.e., individual-to-individual)**
  - Knowledge transfer is done through social networking, multi-functional team, and mobilization of personnel
- **Codification (i.e., individual-to-documentation)**
  - Change management helps transfer of knowledge to internal and external stakeholders who are affected by the new service
  - Records management (centralized database for documents)

#### Artifacts:
- **Locational proximity**
- **IT infrastructure is used for communication**

#### Culture:
- **Employee-oriented and parochial**

### Business Logic:
- **Stages 4 and 5 of the stage gate procedure for high visibility services**
- **Business practices**
- **Develop business, functional and design requirements**

#### Artifacts:
- **Services are usually built outside TM**
- **Innovation and the Service Development and Management groups working on the e-channel have development labs**

#### Culture:
- **Ideology of building capability (i.e., resources and competencies)**

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**Market-to-Fulfill Process (New Service Development)**
5.7 Identifying Patterns

The previous sections presented findings from the exploring and describing phase (Miles and Huberman, 1994). Both topical and analytical codings were used during this phase, also referred to as first-level coding (described in Chapter 3). Next, an attempt was made to make “complicated things understandable by reducing them to their component parts” (Bernard, 1988) by doing pattern coding, as part of second-level coding (described in Chapter 3). The following section presents findings from this next phase of analysis. Iterations were made between insights from the existing literature on KM and those emerging from in-depth analysis of collected data. What emerged from this analysis were three critical aspects which contributed to the management of knowledge at TM. The first aspect, **articulable**, ensures that KM at TM translates into how to manage knowledge at each stage of knowledge evolution. The second aspect, **supportive**, ensures management of knowledge at each stage of knowledge evolution at TM is purposeful. Finally, the **equifocused aspect** ensures that TM attends to the management of knowledge at each stage of knowledge evolution without overemphasizing any specific stage. Whereas the articulable and supportive aspects are static in nature as they focus on managing knowledge at a specific stage, the equifocused aspect is dynamic in nature as it also focuses on managing knowledge between stages. Each of these aspects is described in more detail in the following sections.
5.7.1 Articulable

Articulable means that the KM elements (i.e., process, individuals, roles, business logic, artifact and culture) at each stage of knowledge evolution are well-defined and well understood within the organization either explicitly and/or tacitly. The “tacit” here refers to an understanding that is conscious and can be more or less completely articulated (Balconi et al., 2007). Articulability of KM elements, thus, enables an organization to be aware of how to manage knowledge at each stage of knowledge evolution. While analyzing, it was found that at TM, KM elements at scanning, evaluation, transfer and application stages were well-defined and well understood. In general, through these elements, TM essentially knows how to manage the evolving knowledge within the context of NSD. The derivation of the articulable aspect is schematically represented in Figure 16. The aspect was derived by identifying patterns and is organized as first-order, second-order and higher-order concepts.

Knowledge Scanning Stage

The knowledge scanning stage involves idea generation and all the KM elements at this stage are articulable, which enables TM to scan for new service ideas. In the process of scanning (i.e., search, filter and selection activities), although informally defined, individuals are aware of the process that helps them manage new idea search before it is put through the formal stage gate or business practices procedures for development. Further, during this stage, certain individuals/groups have specified roles.
Figure 16: An analysis of articulable KM at TM
For instance, the Service Development and Management groups have the primary responsibility of formulating their own strategic objectives and generating new service ideas. However, each group is aided by the other groups including the Corporate Strategy, CIO, Marketing/Sales, Customer Value Management, Market Research, Innovation and Business Support and Market Development that are at the corporate and TM levels.

The service objectives are set by the annual five-year strategy plan, which helps TM identify short-term and medium-term service opportunities. On the other hand, the “2020” strategy plan enables the LOB to identify long-term ideas. The artifacts at TM are also enabling, for instance, individuals have highly personalized workspaces in a conservative environment to think creatively. The big and beautiful campus and IT tools further nurture ideas generation through the promotion of informal conversations. Finally, TM has a strong social mandate and government influence to satisfy customer needs, which ensure that the LOB is listening to its customers.

**Knowledge Evaluation Stage**

During the evaluation stage, TM determines the potential of new service ideas. All the KM elements (i.e., process, individuals, roles, business logic, artifacts and culture) are well-defined and well understood at this stage too, which enables TM to evaluate new service ideas. In other words, TM has KM elements that outline how to evaluate knowledge. The process of evaluation (i.e., theoretical, pilot and post-mortem activities) is formally conducted through the stage gate and business practices procedures, which allows TM to do different things such as trying new approaches to problem-
solving, initiating pilot projects, and doing things by trial and error. Once the idea has been initially selected as a potential service offering after scanning, individuals are aware of the activities that would be involved before the idea is fully implemented into an offering.

Further, during the early stages of evaluation, a multi-functional team is formed which stays together until the service is fully developed and launched. The members in this team are from various organizational functions. The Management Council regularly monitors the evaluation of ideas and makes prioritization (i.e., “Go” and “Kill” decisions). The first three stages of the stage gate procedure or business practices procedure provide detailed step-by-step instructions of what is involved to get service ideas evaluated. The role of artifacts in evaluation is somewhat restricted because, like other service firms, TM emphasizes real data, which they collect from pilot studies. Finally, the LOB has a culture in which all the ideas are rigorously evaluated.

Knowledge Transfer Stage

This stage of knowledge evolution involves transferring service ideas and related knowledge to those who require it. Knowledge transfer at TM is everyone’s responsibility and the process of transferring (i.e., need identification, source identification, and sharing) is informally defined and understood with a strong emphasis on storytelling rather than documentation. Various formal and informal procedures exist to facilitate knowledge transfer. The formation of a multi-functional team and the mobilization of personnel are formal procedures for knowledge transfer, whereas social
networking is an informal procedure for knowledge transfer during service development. These procedures are used to share knowledge among stakeholders who are involved in service development.

The change management procedure is used to transfer knowledge to the stakeholders who will be affected by the service once implemented. This procedure is used to transfer knowledge to both external and internal stakeholders. Records Management is another formal initiative that will create a centralized database of documents, which will become a critical way of knowledge sharing within the organization. The proximity (including similarity in knowledge and locational aspects) further enables greater knowledge diffusion among individuals (Reagans and McEvily, 2003). Finally, the employee-oriented and parochial culture fosters knowledge sharing among individuals. In summary, all the KM elements are well-defined at this stage, which enables TM transfer knowledge to all the stakeholders.

**Knowledge Application Stage**

During the application stage, TM builds and executes services. All the KM elements at this stage of knowledge evolution are well-defined and well-understood. The process (i.e., build, launch and monitor activities) is formally conducted through the stage gate and business practices procedures. The development members within the multi-functional team build the service and hand it over to the Operations group for launch. The Marketing/Sales group at the corporate level works with the LOB to promote the service and the Customer Value Management group monitors the service performance.
The final two stages (i.e., 4 and 5) of the stage-gate procedure and the business practices procedure provide detailed step-by-step descriptions of what is involved to get a new service built and executed. The role of artifacts during the knowledge application stage is limited because the majority of development is done outside the LOB. However, the Innovation group and the Service Development and Management group working on the e-channel have their own development labs and resources where they develop services. Finally, TM supports the ideology of building the resources and capabilities required for NSD within TM. Thus, it has the majority of resources and capabilities that are required to build and execute services.

5.7.2 Supportive

The second aspect identified during the analysis is that the KM elements at each stage of knowledge evolution are purposeful. In other words, each stage has a strategic objective to be fulfilled and KM elements enable the fulfillment of those objectives. The derivation of the supportive aspect is schematically presented in Figure 17. The aspect was derived by identifying patterns and it is organized as first-order, second-order and higher-order concepts.
### First-Order Informant Concept

**Knowledge Scanning Stage**

**Process:** Scanning activities (i.e., search, filter and selection) for new service ideas are carried out both formally and informally on an ongoing basis at TM; Ideas are acquired from inside and outside the organization; Scanning behavior is both narrow and broad.

**Individuals/Roles:** Each Service Development and Management group within TM generates incremental and radical ideas through a short-term focus (enabled by the Marketing/Sales, Customer Value Management and Market Research groups), medium-term focus (enabled by the Innovation group), and long-term focus (enabled by the Corporate Strategy and CIO groups).

**Business Logic:** The nature of annual five-year and the “2020” strategy plans provide a formal platform to think about market opportunities on an ongoing basis.

**Artifacts:** Provisions to personalize offices, participate in informal discussions due to proximity, and meet outside the campus to think “outside the box” promote creative ideas.

**Culture:** Culture of stability/direction and adaptability/change promotes a balance between risk-aversion and risk-taking behavior which further enables them to scan for range of service ideas from being incremental to radical.

### Knowledge Evaluation Stage

**Process:** Service ideas are rigorously put through evaluation activities and ensured that the ideas are aligned with TM’s strategy.

**Individuals/Roles:** A Multi-functional team brings rigor in evaluation through its subject-matter expertise and the Management Council ensures that the ideas are evaluated and prioritized based on the strategic intent.

**Business Logic:** Ideas are evaluated and prioritized based on weighted criteria to ensure that strategic objectives are met.

**Artifacts:** (TM has no service experimentation lab, thus the emphasis is on real data through a pilot project which helps the understanding of services better as it is based on real data from customers. This is typical of service organizations)

**Culture:** A culture of rigor ensures that the services are evaluated thoroughly and fairly so that they have a higher probability of succeeding.

### Knowledge Transfer Stage

**Process:** Relies more on storytelling than documentation.

**Individuals/Roles:** Individuals are formally encouraged to share knowledge through face to face communication; Some have informally taken the responsibility to created yellow pages.

**Business Logic:** Facilitates the building of social ties since personalization is a key knowledge transfer strategy.

**Artifacts:** Proximity helps build social ties and thus enables personalization strategy.

**Culture:** Employee oriented and open culture promotes personalization strategy.

### Knowledge Application Stage

**Process:** The implementation activities are rigorously followed to ensure that the service requirements are met.

**Individuals/Roles:** The allocation of responsibilities to various individuals ensures that right skills are used during build and execute.

**Business Logic:** TM is an integrator of capabilities. As an owner of services they develop business, functional and design requirements.

**Artifacts:** TM has physically separated the development of services that are being developed for the e-channel. The services on the e-channel are mostly radical in nature, thus, separating the development of radical services from incremental services.

**Culture:** The ideology of building an organization with all the capabilities and resources to build its own services helps in service build and execute in terms of dependence on common resources required and control over the implementation activities.

### Figure 17: An analysis for supportive KM at TM

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**Second-Order Informant Concept**

- Scans for new service ideas that are both radical and incremental, which aligns with its strategic purpose.

**Higher-Order Informant Concept**

- Evaluates new service ideas rigorously to ensures new ideas are aligned with TM’s business strategy.

- Uses mix of personalization and codification strategies to transfer knowledge but mostly relies on personalization strategy.

- Rigorously engages in the build and execution of new service ideas.
Knowledge Scanning Stage

TM’s objective is to launch innovative services and simultaneously maintain its current offerings with incremental improvements. Thus, the strategic purpose of the knowledge scanning stage is to generate ideas that are both radical and incremental. All the KM elements support this purpose. The process of scanning is carried out on an ongoing basis both inside and outside the organization. The activity is carried out formally (e.g., through research) as well as informally (e.g., informal discussions). All this helps TM to adapt to its market. The scanning process exhibits both narrow and broad behavior. Scanning narrow segments of the environment leads to building incremental services, whereas scanning broad segments of the environment leads to innovation (Leonard-Barton, 1998). In other words, TM focuses on the scale and scope of its existing knowledge (Almeida, et al., 2003). When organizations focus on the scale of their knowledge the result is the possession of a large volume of proximate knowledge (leading to incremental ideas). When the scope of knowledge is increased, an organization becomes more aware of distant knowledge (leading to radical ideas).

The roles of certain individuals/groups are specific during this stage. Each Service Development and Management group within TM generates incremental and radical ideas through short-term focus (enabled by the Marketing/Sales, Customer Value Management and Market Research groups), medium-term focus (enabled by the Innovation group), and long-term focus (enabled by the Corporate Strategy and CIO groups). Often the short-term ideas are incremental in nature and the medium-term and long-term ideas are radical in nature.
The nature of the annual five-year and the “2020” strategy plans ensures that TM has a formal platform to think about short-term, medium-term and long-term market opportunities on an ongoing basis. Further, the provisions to personalize offices, participate in informal discussions due to the proximity, and meet outside the campus to think “outside the box” promote creative ideas. Finally, the culture of stability/direction and adaptability/change promotes a balance between risk-aversion and risk-taking behavior, which further enables them to scan for a range of service ideas from incremental to radical.

Knowledge Evaluation Stage

The strategic purpose during the evaluation stage is to evaluate new service ideas rigorously and ensure that they align with the strategic objective of TM (i.e., building radical and incremental ideas). This rigor and alignment comes from the iterative sequence of theoretical, pilot and post-mortem activities. The multi-functional team provides its subject-matter expertise during the evaluation process, which further contributes to the rigor. The monitoring of the evaluation process by the Management Council ensures that ideas are being evaluated thoroughly and prioritized as per TM’s objectives before implementation.

The use of flexible weighted criteria further helps TM to prioritize service ideas that are aligned with the LOB’s strategic objectives. Although there is no experimentation laboratory (which is typical of service organizations), the ability to conduct pilot studies helps TM to understand services better before they are fully
developed and launched on a full scale. Finally, the culture of rigor ensures that all services including incremental and radical are evaluated thoroughly and fairly so that the services have a high probability of succeeding, whether incremental or radical.

**Knowledge Transfer Stage**

The strategic purpose during the transfer stage is to transfer knowledge to all the stakeholders (i.e., development and support members that become part of a multi-functional team, as well as those who will be affected by the service when implemented) those who require it and all the elements support this purpose. TM relies more on a personalization strategy then on a codification strategy. Thus, in order to transfer knowledge, TM depends more on storytelling than on documentation. The personalization strategy also enables innovation at TM which often requires the transfer of tacit knowledge (Hansen, et al., 1999). Sharing of knowledge is formally reinforced by personal performance scorecards and face to face communication. Some individuals have also informally created yellow pages, which they share with others.

For personalization, building social ties is very important, which TM nurtures through various formal and informal procedures (e.g., team building, special interest groups and lunch and learns). The similarity in knowledge and locational proximity as well as an employee oriented and parochial culture also enables individuals to build social ties which foster a free-flow of communication and more opportunities to be involved in individual-to-individual knowledge transfer. However, not all knowledge transfer is dependent on personalization. Codification is used for the internal and external
stakeholders who are often not part of the social network. Further, the Records Management will also supplement the knowledge transfer within the organization.

**Knowledge Application Stage**

The strategic purpose during the application stage is to build and execute services in a way that ensures the requirements of the organizational mandate and business strategy are rigorously met. The KM elements enable TM to meet this purpose. Thus, the implementation rigorously follows build, launch and monitor activities. TM is an integrator of capabilities and, as an owner of services, it builds its own detailed business, functional and design requirements. All other development responsibilities are allocated within the multi-functional team; for instance, build and launch responsibilities to the Engineering Operations groups, promotion responsibility to the Marketing/Sales group and monitoring responsibility to the Customer Value Management group, ensures that the appropriate set of skills are available during different stages of service building and executing.

Further, the physical separation of the e-channel services from the p-channel services enables TM to create a different environment that is required for radical (e-channel) and increment (p-channel) services. An ideology of building an organization that has the majority of resources and capabilities required to build and execute services is making TM less dependent on corporate resources and capabilities. This enables and provides the LOB more flexibility and control while building and executing services.
5.7.3 Equifocused

Both articulable and supportive aspects of KM are static in nature; that is, the emphasis is on managing knowledge at a specific stage rather than on how the organization transitions from one knowledge evolution stage to another in a cyclical fashion. In contrast, the equifocused aspect is dynamic in nature and it ensures that an organization attends to managing knowledge at each stage of knowledge evolution without overemphasizing any specific stage. This equifocused aspect along with constituents (i.e., first-order, second-order and higher-order concepts) are represented schematically in Figure 18 and described below.

Three properties help TM move along the knowledge evolution cycle. First, the KM enables smooth transitioning of services from ideation to implementation. In order to become a process-centric organization, TM has implemented a few processes within the organization. One such process, as mentioned earlier, is Market-to-Fulfill which helps the LOB understand the flow of service development from start to end. Further, the various steps of service development are formalized with the implementation of stage-gate and business practices procedures. These procedures provide step-by-step instructions regarding how to evaluate a service idea and subsequently build a service. A manager at the corporate level, while commenting on NSD at LOGCO, explained,

“One of the biggest problems we had in the past was that many of our projects were stuck at various stages. For example, we had projects that were under evaluation for as long as five years and some projects were perpetually under
implementation. But now we have implemented procedures such as stage-gate, which keep our service development moving.”

The second property that contributes to the dynamic nature of KM practices is the monitoring of the knowledge evolution stages. The Management Council and the Business Support and Market Development group constantly review services being developed and ensure that the development is transitioning from the knowledge scanning to the knowledge application stages. The Service Development and Management group as well as the Customer Value Management group monitor the internal and external environment and the performance of the existing services which provide stimuli to the knowledge evolution cycle.

The third property that contributes to the dynamic nature of KM is the ability to mobilize knowledge between the stages of knowledge evolution. During the early stages of service development a multi-functional team is formed which stays together until the service is completely built and implemented. Thus the required knowledge diffuses across stages through them.
Figure 18: An analysis for Equifocused KM at TM

- The Market-to-Fulfill process enables TM to envision the flow of how new ideas turn into new services
- The Stage gate procedures and business practices for NSD provide a roadmap of what is involved at each stage of service development

- The Management Council and Business Support and Market Development group regularly review service development at each gate and ensure that TM is moving along all the NSD stages
- Each Service Development and Management and Customer Value Management group monitor the internal and external environment and the performance of the existing services which provides stimuli to the knowledge evolution cycle
- Multi-functional team enables diffusion of knowledge between stages of NSD

- Smooth transitioning from service ideation to implementation

- Monitoring to ensure that service development is moving to the next stage

- Mobilizing knowledge to ensure that lessons learned at each stage of service development are carried over to the next stage

Equifocused
5.8 Summary

This chapter has presented a rich description of KM within the context of NSD at TM. At each of the knowledge evolution stages, all the constructs from the conceptual model (described in Chapter 2), that is, process, individuals, roles, business logic, artifacts and culture, were explored in detail. Next, a within-case analysis was presented. The analysis showed that KM at TM is articulable, supportive and equifocused. The aspect of **articulable** ensures that an organization knows “how to manage knowledge” at each stage of knowledge evolution. The aspect of **supportive** ensures that KM in the organization is purposeful. Finally, an aspect of **equifocused** ensures that KM attends to the management of knowledge at each stage of knowledge evolution without overemphasizing any specific stage.
CHAPTER 6: CASE STUDY TWO – PARCELS DELIVERY

6.1 Background

Parcels Delivery (PD) is LOGCO’s leading domestic player in the highly competitive parcels market, which is growing at the rate of the domestic economy. The service performance of PD is strong and it continues to show improvement despite stiff competition from other global players (e.g., FedEx, DHL). One of the key advantages of PD is that it has the most expansive delivery and retail infrastructure in the domestic market. The LOB provides its services via the p-channel. The e-channel is used to complement the p-channel by providing services such as online access to create labels and pay online, as well as access to parcel’s tracking.

The LOB operates under an old operations infrastructure that offers them various opportunities to augment their services. As a manager noted,

“Most of our plants were built in the 70s prior to the revolution by FedEx in our industry. Our infrastructure is still on the old model and we are stuck with the legacy.”

Thus, the current strategy of PD to “improve contribution” is essentially about seeking operational efficiencies, which includes improving delivery efficiencies, service quality, increasing market share and creating a customer-centric culture. The majority of their service development is incremental. Essentially, PD is a strong defender (Miles and Snow, 1978). Its focus is on improving operational efficiency, a limited service range, and a niche in parcels’ delivery infrastructure. They compete in a market that is relatively stable
but highly competitive. Generally, defenders focus on engineering tasks, focusing more on resource efficiencies and process improvements that cut costs, more specifically, operational efficiencies. They seek to maintain a niche in a stable product market with limited products rather than emphasizing new products and market opportunities. Their product development is usually a simple extension of current offerings.

6.2 Organizational Structure for NSD

The context of this case study is NSD. It is a very mature activity and PD has implemented a business process program to improve its KM around service development referred to as Market-to-Fulfill, which entails an end-to-end focus on service development (i.e., from market requirement to the delivery of a service). Compared to other LOBs at LOGCO, PD was the first to implement this business process.

Structurally, with regard to service development, PD has two Service Development and Management groups, a Marketing, Strategy and Planning group, a Sales group, and a Parcel Operations group (see Figure 19). Each Service Development and Management group manages the development of its own services. The Marketing, Strategy and Planning group is responsible for developing Parcels’ strategy, planning and marketing communication. The Sales and Parcel Operations groups provide interface with sales and operations groups at the corporate level.
Groups (and responsibilities) at the corporate level that facilitate service development

<table>
<thead>
<tr>
<th>Corporate Strategy</th>
<th>Marketing Research</th>
<th>Customer Value Management</th>
<th>Marketing and Sales</th>
<th>Project Development</th>
<th>Operations and Engineering</th>
<th>Change Management</th>
<th>CIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Manages the overall corporate strategy; Each LOB’s strategy feeds into the corporate strategy)</td>
<td>(Conducts research using primary and secondary sources)</td>
<td>(Monitors and measures customer satisfaction)</td>
<td>(Provides common marketing and sales view to customers)</td>
<td>(Monitors and provides best service development practices)</td>
<td>(Delivers services)</td>
<td>(Provides change management services to internal and external stakeholders)</td>
<td>(Manages informational assets; Provides and develops a common vision of services on the e-channel)</td>
</tr>
</tbody>
</table>

Organizational structure of Parcels Delivery with regards to service development

<table>
<thead>
<tr>
<th>Service Development and Management</th>
<th>Service Development and Management</th>
<th>Sales</th>
<th>Marketing, Strategy and Planning</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Develops services for the domestic market)</td>
<td>(Develops services for the international market)</td>
<td>(Performs Parcels specific sales in conjunction with the Corporate Marketing &amp; Sales group)</td>
<td>(Develops strategy, marketing communication and manages service initiatives)</td>
<td>(Provides interface to operations)</td>
</tr>
</tbody>
</table>

Figure 19: PD’s organizational structure
The roles and responsibilities of the groups under the corporate level were described in the previous chapter (Section 5.2). The way in which PD manages its knowledge at the four stages of knowledge evolution--scanning, evaluation, transfer and application--is described in detail in the sections 6.3 to 6.6. Under each stage process, individuals, roles, business logic, artifacts and culture constructs are explored. In section 6.7, patterns are identified followed by a summary. This results in an in-depth understanding of both the context and the way knowledge is managed at PD within the context of NSD.

6.3 Knowledge Scanning Stage

At this stage, PD scans for new service knowledge to assist with addressing old and new challenges and opportunities in services. Scanning is important for PD because its environment is highly competitive with extremely strong global players.

6.3.1 Scanning Process

Like TM, PD informally follows a sequence of search, filter and selection activities to scan for new service ideas. During the search, the fundamental purpose is to get exposed to different service ideas. These service ideas are screened at a high level to ensure that the ideas are aligned with PD’s mandate and business requirements. As a manager explains,

“When we are looking for ideas, we are very much driven by our strategy and business requirements”
The ideas that have the potential to address new and old challenges are then selected and put through the formal evaluation.

PD has the primary responsibility for scanning for new service ideas. It is an ongoing process that is conducted through formal and informal activities. Formally, PD conducts a primary and secondary search of its environment. A primary search is carried out to develop an understanding of competitive and industry trends as well as evolving customer choices. As one manager explains,

“Research is an important source for idea generation. For instance, some time ago we worked with Deloitte Consultancy to understand the small and medium enterprise segments. They did a comparison of our service offerings against those of our competitors.’ The comparison was about how our customers would react if we were to make changes to our services. We also do trend analysis. Currently, we are looking at RFID to improve our track and trace infrastructure.”

On the other hand, a secondary search is feedback oriented, resulting from monitoring current customers and current service offerings. As a manager notes,

“Customers are our big source of ideas. Sometimes they come to us directly with a specific request. We also have a formal system of customer value management, which looks at the general demands of customers such as the determinants of their choices and their purchase criteria. A focus group can also be consulted to figure out customers’ priorities.”

On an informal basis, service ideas are discovered serendipitously through chance events which could include informal discussions:
“Our team members pretty much talk to one another in informal hallway conversations.” reports a manager.

As mentioned earlier, the strategic focus of PD translates into seeking operational efficiencies. This results in a behavior that emphasizes narrow scanning (Cyert and March, 1963). Thus, PD scans for service knowledge that is in the neighborhood of its current services and requirements. A manager describes,

“The context of our conversation is always about what problems we are facing today and how we solve them. It is not very forward looking.”

He further adds,

“There are three ways through which service ideas are generated. The basic set of ideas comes from customers’ current requirements that we do not meet. The next set of ideas comes from speaking to customers about new ways to fulfill their requirements. We spend a fair bit of time on that as well. There is a third set of ideas on which we are not yet spending much time. These are about building new business models that can help generate new revenue. We don’t have much time to incubate innovative ideas or to do R&D work.”

Another manager at the corporate level remarks on PD’s scanning behavior,

“The emphasis of PD is on today, the farthest they look in the future is tomorrow, and in retrospect, it is yesterday. That is their strategy, very narrow and very focused.”
6.3.2 Individuals and Roles

Both the Service Development and Management groups under PD are formally responsible for formulating their own service strategy and generating service ideas because they are the ones who are responsible for services. The generation of new service ideas is facilitated by various groups at the PD and corporate levels. Since the emphasis is more on fulfilling immediate or incremental market requirements (i.e., short-term ideas), the Customer Value Management, Sales and Marketing, and Market Research groups play a critical role. With their help, PD keeps their finger on the current customer requirements, competitors and industry trends.

PD is also focused on long-term services (i.e., 5-15 years) with the help of the Corporate Strategy and CIO groups. The groups ensure that the services from each LOB are complementary, mutually exclusive and non-competing. In addition, the CIO group is also responsible for long-term ideas on the e-channel. The Marketing, Strategy and Planning group plays an enabler role by helping PD develop its strategy and formally manage the flow of new services initiatives. However, a manager explains,

“Those services are all very incremental, nothing radical.”

6.3.3 Business Logic

The scanning is part of PD’s five year strategic plan that is prepared and updated on an annual basis. The plan describes strategic and service objectives and identifies major service initiatives that will be implemented in a one to five year timeframe. This helps PD to allocate required resources at the beginning of a financial year. The activity
is also encouraged and performed on an ongoing basis. Further, managers are required to meet their frontline workers on a regular basis to get input from them. More recently, PD has also started creating a strategic plan called “2020,” which has created a platform for the LOB to think and discuss about its services in a 10-15 year timeframe.

6.3.4 Artifacts

From the artifacts point-of-view, PD resembles TM. It shares the same campus and uses common information systems to facilitate interactions. When required, individuals also meet outside the campus. As mentioned earlier, the organizational layout reflects conservatism but individuals throughout the organization have personalized their workspace to motivate creativity (see section 5.2.4 for more details). A manager from PD adds,

"I think that it is healthy for people to have their say about what their environment should look like. Some of our new people that are coming onboard are willing to do more unique things with their environment, whereas we also have people who are very comfortable in their traditional space. If you look at the third floor it is very different. People who sit there have converted a room into one common area. They have dimmed the lighting, put pictures on the wall and have chairs with funky colors. So there are some who are definitely trying to change. I think this encourages creativity.”
6.3.5 Culture

As mentioned earlier, due to a strong social mandate and government regulatory influence, the overall cultural at LOGCO is one of stability and control. The company fosters this culture through a sense of mission and consistent work practices (described in section 5.2.5). This culture of stability and control is also found in PD. Emphasizing this culture, a PD’s manager acknowledges,

“We have a strong social mandate. Creativity, taking risks and changing things is present in our organization but I do not think it extends to the point where we would be willing to fail three times out of ten or even two times out of ten. I think the company as a whole has set itself to be more risk-averse mainly because of our mandate. We get a lot of attention and public scrutiny.”

PD enforces this culture very strongly by strictly focusing on its strategic objective of improving operational efficiency. This focus further emphasizes predictable and incremental ideas (Denison and Mishra, 1995). One manager points to the list of service ideas that PD is implementing, and notes,

“We know to some extent the ideas that we will be presenting next year during our corporate planning. If you look at the ideas we are currently implementing, there is nothing revolutionary. It is all about fulfilling the promises made to our customers and doing a few things that our competitors are doing.”

6.4 Knowledge Evaluation Stage

The objective behind this stage is to evaluate new service ideas through an internal selection mechanism. Even the service ideas that are under development could
again be put through this process. The ideas are screened and prioritized based on their likelihood to meet PD’s objectives.

6.4.1 Evaluation Process

PD evaluates its new knowledge through a sequence of theoretical, pilot and postmortem activities, which is the same as TM (described in section 5.3.2). While explaining the stages involved in the evaluation of an idea, a manager notes,

“Initially, we look for available research and try to validate the concept with customers. We also do a high level assessment of economics, check for internal capabilities and consider how disruptive is the idea. Is it a big investment? These are all the things that we include in our thought processes. If all that fits and gets prioritized, we would go to a customer to test the idea. We also establish criteria to measure success and look at those at regular intervals. Sometimes, depending upon the scope, we may form a steering committee, whose members are selected from our customer base and our Parcels Management Council, to monitor the evaluation. Otherwise, it will just be the Parcels Management Council.”

Thus, the theoretical and pilot evaluations are fundamentally conducted to rigorously analyze whether or not a new service idea is valid and can solve current challenges. The analysis mostly involves market, technical, financial, competitive, and operational assessments. The final stage of the evaluation is the postmortem which is conducted in order to analyze the results of the theoretical and/or pilot evaluations in order to make a “Go” or “Kill” decision on a service initiative.
6.4.2 Individuals/Roles

Like TM, PD also forms a multi-functional team during the early phase of the evaluation that stays together until the service is developed and launched. The team members represent stakeholders from various functional departments from corporate and PD levels who cooperate and share knowledge during service development. The structure of the multi-functional team is also similar to that which is formed during service development in TM. The team has two types of members: development members and support members. The development members develop the services, whereas support members provide their expertise when required (e.g., marketing research, pricing decisions). Further, PD also has a Management Council, consisting of senior members from the LOB that is formally responsible for making “Go/Kill” decisions on service ideas.

6.4.3 Business Logic

PD follows the same business logic: business practices and stage gate procedures (Figure 13 and Figure 14). The procedures are followed throughout the organization. If the service to be developed is about changing or developing a new service policy or developing a customized offering for customers then PD follows the business practices process. But for a generic offering the stage gate process is strictly followed. While commenting on evaluation practices, a manager at corporate level notes,

“[PD] has got the mechanics of stage gate and business practices procedures running very well compared to all the other LOBs. [PD] is on top because of its
maturity. Their Parcel Management Council has a good control over the procedures.”

The LOB has also designed evaluation criteria for ranking and prioritizing ideas. The criteria enable them to filter out ideas that cannot provide the expected benefits. Each criterion has been carefully designed and weighted to ensure that the service ideas that are developed are aligned with PD’s strategy of “improve contribution.” During the period of the case study, the evaluation criteria included dimensions such as margin/ROI impact, alignment, customer value, and speed and ease of implementation. The evaluation criteria are flexible and they are updated when PD’s strategic objectives change. One manager explains,

“In two years time these criteria could change. We evaluate them every year by asking ourselves if this is the right kind of ranking order. We look at our activities and resources. But for now, the margin is job number 1, 2 and 3 for us. Thus, of all the criteria, marginal ROI impact has a 50% weight, followed by strategic alignment and customer value criteria. These three really drive us at this point of time.”

6.4.4 Artifacts

PD also emphasizes the “real” data as opposed to the “controlled” data. Thus, from the artifacts point-of-view, PD is no different from TM. The Operations and Engineering groups maintain laboratories where some physical attributes of services are tested but these groups are the corporate level groups that are common to all LOBs at
6.4.5 Culture

PD has a conservative culture and emphasizes rigor in its evaluation process. As explained above, the service ideas are evaluated thoroughly and formally in various stages (i.e., theoretical, pilots and postmortem). It is ensured that approved ideas do contribute to improving operational efficiencies. A manager reports,

“One of our informal mandates is to do our homework very rigorously. The test for this is to convince the person above you of the rigor of your work. It is not a stage gate process with sign offs, but the approval of your senior managers regarding the rigor of your work is very important. We will not go to any of the decision gates without having hierarchy approval on the rigor. We don’t even go to the stage gate without obtaining approval from our stakeholders. We ensure that when we go to the gates everything has been rigorously analyzed and tested and the idea will be approved. We don’t experiment at the gates. Although everything we do informally for rigor is not signed off, signs are done at the gate, we do believe in being thoroughly prepared before going to Parcels Management Council for approval.”

Another manager adds,

“In our business we have less freedom to play around with ideas, even our pilots are well thought-out and choreographed before we do them.
Service ideas are evaluated using the criteria mentioned earlier. Further, the stage gate and business practices procedures and the formation of a multi-functional team of subject-matter experts contribute to making informed and rigorous decisions. These steps and the rigor improve the transparency of evaluations and curb any political maneuvering.

6.5 Knowledge Transferring Stage

This stage of knowledge evolution is about transferring the newly evaluated service knowledge and related knowledge to relevant stakeholders within PD as well as outside PD.

6.5.1 Transfer Process

Similar to TM, knowledge transfer at PD follows a sequence of need identification, source identification and knowledge sharing activities. The sharing of knowledge is done in two ways: documentation and storytelling. Various documents produced during service development are not necessarily stored at a central location. Thus, PD has also taken up an initiative to bring all the documents together. As a manager explains,

“There was no archiving of our past learning but now we are creating an archival system that holds the information regarding what we did in the past on a particular project, the progress made, the result and so on. We are building that right now. But we are also doing it for those ideas that were brought forward but not approved. One of the things in this company is that in every meeting in which
we talk about new things, eventually someone will say that we thought about that
two, five or ten years ago. There has been no record of that wealth of knowledge
from the past. But now we are trying to build archives. Not only are we going to
capture what we have done but also what we have not done. It will help us to
understand why we are going forward on any strategy in the future.”

This initiative will become part of a corporate-wide Records Management initiative that
has been formally launched to maintain all the documents at one central location that will
be accessible through collaborative systems such as the intranet. The initiative is in
relatively better shape for PD in comparison to all other LOBs at LOGCO. As a manager
acknowledges,

“I think we need to do some work but a few groups in our LOB have done a
decent job of keeping track of everything they did in the past few years. For
example, we have a good record of campaign and marketing related material in
our group that we have been doing.”

Storytelling is the most important mode of knowledge transfer in PD because the
knowledge from the majority of past projects has not been formally codified. As a
manager describes,

“Storytelling is right down into the core of the organizational culture. There are
no collaborative tools for knowledge-sharing. Thus, it is very dependent on face-
to-face storytelling.”
Another manager adds,

“We do not have knowledge management systems or libraries. We mostly have stories.”

However, the records management initiative will become equally important in the future because the majority of individuals (i.e., almost half the current workforce) will retire in the next eight years. In summary, at PD, individuals rely heavily on personalization and less on codification to transfer knowledge (Hansen, et al., 1999).

6.5.2 Individuals and Roles

This is also similar to TM. Knowledge transfer in PD is everyone’s responsibility as it is formally measured on their personal scorecard. A manager commented,

“By putting it on the scorecard, knowledge transfer has been made personally important to me.”

Some individuals in PD have formally taken up the responsibility to drive the knowledge sharing initiative on a broader scope, such as making presentations to stakeholders about PD’s strategy and championing a creation of central database for documents. The manager further explains,

“Last week I was at a plant making a presentation about our strategy. The presentation was only supposed to last for forty-five minutes but I ended up speaking for three hours. The guys from the plant were so excited. Yesterday, I met with a few managers here in the head office to discuss the creation of a documents database. I believe this sharing is important because it helps us understand what are we doing in [PD] and why.”
6.5.3 Business Logic

PD relies primarily on the personalization strategy and less on the codification strategy for knowledge transfer. Under this strategy, the activities used to transfer knowledge are the same as TM: the formation of multi-functional teams, mobility of individuals, and the appropriation of formal/informal social networks. The formation of a multi-functional team during the early phases of the evaluation stage facilitates intra-organizational knowledge transfer about the new service ideas. Knowledge is also transferred through the mobility of individuals within different teams. For example, during the case study, one of the participating managers was promoted to manage international business both in PD and TM.

The formal/informal social networking is once again the most important mechanism in facilitating the diffusion of knowledge. As a manager suggests,

“I get all my information through the social network. Personal networking is paramount in this company. When I came to the head office two years ago from an operations plant, I was told that networking is the most important asset that you can have working in this office. Even the organizational structure posted on the Intranet is such that I cannot search people by their roles. I have to know the names first.”

PD nurtures the building of social networks among its individuals using various mechanisms that are similar to TM. At a formal level, face-to-face communication is
encouraged through the individual’s scorecard. As a manager explains,

“The style of communication is face–to-face. We have scheduled meetings every Monday. That is how things are shared here. One-to-one, face–to-face verbal contact is probably the most prominent mode of communication. There is an electronic form of communication as well through email, chat and Webcast, but that is very limited. Our group president is also trying to get people from this head office to go into the field. It is becoming more formal and everyone is emphasizing face-to face communication. It is part of everyone’s scorecard now. The scorecard has become a way of influencing what we believe is necessary. It is a tool to change the culture and behavior.”

Team building exercises/meetings are also held for multi-functional teams as well as for PD employees to build social networks. In addition, managers hold “lunch and learn” meetings, parties and brainstorming sessions, where individuals from different parts of LOGCO are invited to learn about each other’s work. Another manager adds that

“We also facilitate the exchange of ideas by putting couches around our office. People get along very well with each other and they go to each other’s office. We also encourage people to match up with other people when working on teams. We sometimes create an informal list of stakeholders and encourage our people to get feedback from them.”

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6 Each individual in PD has a personal scorecard that is aligned with the LOB scorecard and is used for the individual’s performance appraisal. The scorecard has financial, customer, service and employee engagement dimensions. The employee engagement dimension emphasizes things such as face-to-face communication, visibility and transparency in leadership and information sharing, team development, etc.
The codification strategy encompasses the Records Management initiative and the knowledge transfer within the context of change management, which is the responsibility of the Change Management group, is another important procedure to transfer knowledge. This is similar to TM. The Change Management group, which is part of a multi-function team, is formally responsible for transferring the knowledge about the changes that the new service is going to bring after the launch. Based on the service type this may include educating internal and/or external stakeholders.

6.5.4 Artifacts

From the artifacts point-of-view, PD’s position is similar to that of TM. Personalization is a key strategy for knowledge transfer. It is facilitated by the similarity in the knowledge bases across the organization and the extensive linkages between individuals that develop due to locational proximity. According to a manager,

“Our ability to network comes from the fact that we are all in the same building. You see people networking everywhere. You see them walking to the cafeteria on the campus. There are thirty to forty picnic tables that are always full of people from different departments and LOBs sitting together. In this building alone we have a small cafeteria and a gymnasium. So for us geography plays a big role.”

In addition, PD has specifically created a Parcels’ “look n’ feel” area where all the senior managers from PD sit together. This has improved the communication among managers because there is a greater opportunity for them to easily see and hear each other (Becker, 2007). A manager explains,

“I don’t sit in that area but I see there is a huge benefit for those who sit there
because they can build the relationships with each other.”

6.5.5 Culture

As described earlier (section 5.4.5), the culture that is fostered throughout LOGCO is employee-oriented and parochial. Thus, the culture within PD is similar to that of TM. Individuals are motivated through reward systems (e.g., employee engagement in an individual scorecard) to share knowledge and they frequently do share knowledge with each other because they can see the long term benefits to both themselves as well as to the organization. A manager observes,

“There is an awareness among people; they realize that knowledge-sharing is important. For example, as a strategy manager, in order for me to understand why we want to go follow a particular service development strategy, I have to understand what the development teams are thinking in terms of services. Thus, communication is important for us.”

6.6 Knowledge Application Stage

During this stage, PD builds and executes services.

6.6.1 Application Process

Like TM, PD essentially follows the same sequence of activities, that is, build, launch and monitor, to develop services. During the build, a service is designed and developed, followed by a rigorous testing and validation to ensure that the new service
meets the business requirements. The service is then rolled out to operations for a market launch, followed by monitoring to ensure that PD is getting the feedback from its customers. This feedback is an important source for ideas for improvements and new service.

6.6.2 Individuals and Roles

The individuals from PD are integrators of the expertise of a multi-functional team as well. As a project sponsor, PD works with the multi-functional team to build and execute services. For instance, the services are built and executed by Operation and Engineering groups. A manager from Marketing, Strategy and Planning will ensure that the service development is on track in terms of time, cost and requirements and that the group will develop marketing and advertising communications in conjunction with corporate Marketing groups. The Sales and Operations groups will work closely with Sales and Operations at the corporate level to maintain a proper interface during transitioning.

6.6.3 Business Logic

As integrators of knowledge from many individual specialists, when developing services, PD drives the development of detailed business, functional and design requirements, which are subsequently used by the members of the multi-functional team to build, launch and monitor services. Stage gate and business practices are standard procedures for developing services throughout LOGCO; PD is no exception to that. The
activities (i.e., build, launch and monitor) illustrated above are performed as part of the stage gate and business practices procedures. Under stage gating, gate 4 and gate 5 cover build and launch activities respectively.

6.6.4 Artifacts

The role of artifacts within PD was not found to be significant. The actual development of a service is done outside the LOB, by non LOB members of a multi-functional team, such as the IT group, operations, and engineers. Further the launch of service is handled by operations, and some of the monitoring activity is done by the Customer Value Management group. As a manager describes,

“We have not built any formal development lab. Our area of expertise is to drive the business requirements and make sure that they are met, for which we rely on processes. Once the business case is approved and the requirements are defined, it is a hands-off approach.”

6.6.5 Culture

As mentioned earlier (section 5.5.5), in the past LOGCO has tried to become a process-oriented organization. One of the outcomes of this initiative was the creation of shared resources and competencies, which led to stiff internal competition for the same scarce resources and competencies. The ideology at PD is similar to that of TM. It believes in accumulating resources and building competencies internally within the LOB to reduce its dependencies on shared resources. While commenting on competency
building, a manager notes,

“we absolutely need to build expertise within our LOB. We cannot look outside our business for competencies because our business is so complex. We only go outside when we need people to execute on our requirements.”

PD even has its own team to measure the service delivery index, which is usually performed by the Customer Value Management group for other LOBs. PD’s service delivery index is measured differently. In addition, PD has a good representation of its own members in a multi-functional team as it is easy to control the service development. While discussing the importance of having one’s own members on the team, a manager remarks,

“I would absolutely agree because quite often we are the ones who are driving the initiative. We have made the commitment to the organization to get something done and we need the troops to rally. It is our team members who will do whatever it takes to get things done.”

A summary of findings is presented in Figure 20.
<table>
<thead>
<tr>
<th>Knowledge Processes</th>
<th>Individuals/Roles:</th>
<th>OM Infrastructures</th>
</tr>
</thead>
</table>
| Knowledge Scanning Stage | - Each Service Development and Management group is primarily responsible for formulating its own strategic objectives and generating new service ideas  
- Idea generation is facilitated by other corporate level and TM level groups, i.e., Corporate Strategy and CIO (long-term ideas); Marketing/Sales, Customer Value Management, Market Research (short-term ideas)  
- Idea generation is also enabled and managed by PD’s Marketing Strategy and Planning group | - Integrators (for instance, development members within the multi-functional team) build and test a service and hand it over to Operations to launch; Marketing/Sales promote the service; Customer Value Management monitors the service performance |
| Knowledge Evaluation Stage | - A multi-functional team with development and support members provide their subject matter expertise during evaluation  
- The Management Council monitors the projects and makes “Go” and “Kill” | |
| Knowledge Transfer Stage | - The knowledge sharing expectation is formally set by personal performance scorecards  
- Individuals have taken informal initiatives to create archives | |
| Knowledge Application Stage | | |

New service ideas are scanned through an informal sequence of search, filter and selection activities  
Ideas are acquired from inside and outside the organization  
Scanning behavior is narrow  
New service ideas are evaluated through a formal iterative sequence of theoretical, pilot and postmortem activities for screening and prioritization  
The evaluation process is very rigorous  
New service ideas and related knowledge are transferred through a formal sequence of need identification, source identification and sharing activities  
There is a heavy reliance on personalization and less on codification  
Story-telling is used more than documentation  
New services are implemented through a formal sequences of build, launch and monitor activities  
The implementation process is very rigorous
<table>
<thead>
<tr>
<th>Business Logic:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ideas are acquired on an ongoing basis</td>
</tr>
<tr>
<td>• Ideas are acquired formally and informally</td>
</tr>
<tr>
<td>• Formulation of service objectives and the generation of new service ideas is part of a flexible annual five-year strategy plan which focuses on short-term ideas</td>
</tr>
<tr>
<td>• Formulation of service objectives and the generation of new service ideas is also a part of a flexible “2020” strategy plan which focuses on long-term ideas</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Business Logic:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Stages 1, 2 and 3 of stage gate procedure</td>
</tr>
<tr>
<td>• Business practices</td>
</tr>
<tr>
<td>• Formal flexible weighted criteria that is aligned with the current business strategy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business Logic:</th>
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</thead>
<tbody>
<tr>
<td>• Personalization (i.e., individual-to-individual)</td>
</tr>
<tr>
<td>○ Knowledge transfer is done through social networking, multi-functional team, and mobilization of personnel</td>
</tr>
<tr>
<td>• Codification (i.e., individual-to-documentation)</td>
</tr>
<tr>
<td>○ Change management helps transfer of knowledge to internal and external stakeholders who are affected by the new service</td>
</tr>
<tr>
<td>○ Records management (centralized database for documents)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Business Logic:</th>
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</thead>
<tbody>
<tr>
<td>• Stages 4 and 5 of the stage gate procedure for high visibility services.</td>
</tr>
<tr>
<td>• Business practices.</td>
</tr>
<tr>
<td>• Develop business, functional and design requirements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Artifacts:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Conservative physical layout but highly personalized spaces to motivate creativity</td>
</tr>
<tr>
<td>• Sometimes PD meets outside the campus to think “outside the box”</td>
</tr>
<tr>
<td>• Campus is big and beautiful with cafés, cigarette corners, picnic tables, gymnasium and kitchens which nurtures informal discussions</td>
</tr>
<tr>
<td>• IT infrastructure is used for formal and informal discussions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Artifacts:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No service experimentation lab</td>
</tr>
<tr>
<td>• Emphasis on real data through pilots</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Artifacts:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Locational proximity</td>
</tr>
<tr>
<td>• IT infrastructure is used for communication</td>
</tr>
<tr>
<td>• PD has built a specific Parcels’ “look n’ feel” area</td>
</tr>
<tr>
<td>• Most senior managers sit together in the Parcels’ area</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Artifacts:</th>
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</thead>
<tbody>
<tr>
<td>• Services are usually built outside PD</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Culture:</th>
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</thead>
<tbody>
<tr>
<td>• Strong social mandate and government regulatory influence on the business</td>
</tr>
<tr>
<td>• Strongly focused on stability/direction which promotes incremental ideas</td>
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</table>

<table>
<thead>
<tr>
<th>Culture:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Conservative culture</td>
</tr>
<tr>
<td>• Extremely rigorous in evaluating ideas</td>
</tr>
<tr>
<td>• Transparency in evaluation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culture:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Employee-oriented and parochial</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Culture:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• An ideology of building capability (i.e., resources and competencies)</td>
</tr>
</tbody>
</table>

**Figure 20: Management of knowledge within the NSD context at PD**
6.7 Identifying Patterns

The previous sections presented findings from the exploring and describing phase (Miles and Huberman, 1994). Both topical and analytical codings were used during this phase, also referred to as first-level coding (described in Chapter 3). Next, an attempt was made to make “complicated things understandable by reducing them to their component parts” (Bernard, 1988) by doing pattern coding, as part of second-level coding (described in Chapter 3). The following section presents findings from this next phase of analysis. Iterations were made between insights from the existing literature on KM and those emerging from in-depth analysis of collected data. KM at PD exhibits the same key aspects as those at TM: articulable (i.e., PD knows “how to manage knowledge” at each stage of knowledge evolution); supportive (i.e., knowledge elements at each stage are purposeful); and equifocused (i.e., PD attends to the management of knowledge at each stage of knowledge evolution without overemphasizing any specific stage). Each of these aspects is described in more detail in the following sections.

6.7.1 Articulable

As defined earlier, articulable means that the KM elements (i.e., process, individuals, roles, business logic, artifact and culture) at each stage of knowledge evolution are well-defined and well understood within the organization either explicitly and/or tacitly. The “tacit” here refers to an understanding that is conscious and can be more or less completely articulated (Balconi, et al., 2007). Articulability of KM elements, thus enables an organization to be aware of how to manage knowledge at each stage of
knowledge evolution. At PD there are articulable KM elements (i.e., process, individuals, roles, business logic, artifact and culture) that exist at the scanning, evaluation, transfer and application stages. In general, through these elements PD knows how to manage the evolving knowledge within the context of NSD. The derivation of the articulable aspect is schematically represented in Figure 21. The aspect was derived by identifying patterns and is organized as first-order, second-order and higher-order concepts.

**Knowledge Scanning Stage**

The knowledge scanning stage is about idea generation and all the KM elements are well-defined and well understood to enable PD to scan for new service ideas. The process of scanning (i.e., search, filter and selection activities) is informally defined and individuals are aware of the process that helps them manage new idea search before it is put through the formal stage gate or business practices procedures for development.

The roles of certain individuals/groups are specifically defined. The Service Development and Management groups have the primary responsibility of formulating their own strategic objectives and generating new service ideas but each group gets help from the other groups including Corporate Strategy, CIO, Marketing/Sales, Customer Value Management, Market Research, and Marketing Strategy and Planning groups at the corporate level and PD levels.
First-Order Concept

Knowledge Scanning Stage

**Process:** Scanning for new service ideas is informally but well-defined and well understood process; PD follows a sequence of search, filter and selection activities

**Individuals/Roles:** Each Service Development and Management group within PD is primarily responsible for formulating its own strategic objectives and generating new service ideas; Scanning is formally enabled by various groups at PD and corporate levels.

**Business Logic:** Formulation of service objectives and the generation of new service ideas is a part of the annual five-year and the “2020” strategy plans

**Artifacts:** Individuals have highly personalized spaces that motivate new ideas; Campus and IT facilitate discussions which nurture generation of new service ideas

**Culture:** Strong social mandate to satisfy customer needs

Knowledge Evaluation Stage

**Process:** The evaluation of new service ideas is formally defined and understood so that PD follows an iterative sequence of theoretical, pilot, and post-mortem activities

**Individuals/Roles:** A multi-functional team is formed at the beginning of this stage which stays together until a service is fully developed; The Management Council is responsible for making prioritization decisions

**Business Logic:** Stages 1, 2 and 3 of stage-gate and business practices procedures provide step-by-step instructions for evaluation

**Artifacts:** (PD has no service experimentation lab, thus, emphasis is on real data through pilot projects. This is typical of service organizations)

**Culture:** Promotes rigorous evaluation of all ideas

Knowledge Transfer Stage

**Process:** The transfer of new service ideas and related knowledge is informally defined and understood so that PD follows a sequence of need identification, source identification and sharing activities

**Individuals/Roles:** Knowledge transfer is everyone’s responsibility as it is set in individual’s performance scorecard

**Business Logic:** Procedures for knowledge transfer include the formation of a multi-functional team, social networking and the mobilization of personnel; Change Management helps transfer knowledge to the internal and external stakeholders who are not involved in the service development but will be affected; Records Management to become critical in knowledge transfer

**Artifacts:** Locational proximity helps knowledge diffusion

**Culture:** Employee-oriented and parochial culture facilitates knowledge transfer

Knowledge Application Stage

**Process:** PD follows a formal sequence of build, launch, and monitor activities to build and execute services

**Individuals/Roles:** Development members in the multi-functional team build and test the service and hand it over to Operations to launch; Marketing/Sales group promotes the service; Customer Value Management group monitors the service performance.

**Business Logic:** Gates 4 and 5 of stage gate and business practices procedures provide step-by-step instructions

**Artifacts:** (The building, launching and monitoring of services is done outside the LOB)

**Culture:** Supports the ideology of building the resources and capabilities required for NSD within PD

Second-Order Concept

KM elements required to scan new service ideas are well-defined and well understood

Higher-Order Concept

KM elements required to evaluate new service ideas are well-defined and well understood

Articulable

KM elements required to transfer new service ideas are well-defined and well understood

KM elements required to implement new service ideas are well-defined and well understood

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Figure 21: An analysis for articulable KM at PD
The service objectives are set by the annual five-year strategy plan and the “2020” strategy plan. This formally aids in identifying short-term and long-term ideas. The artifacts at PD also enable idea scanning. Individuals have highly personalized workspaces to promote creativity in an otherwise conservative environment. Further, the layout of the campus and the availability of IT tools both nurture idea generation through the promotion and support of formal and informal discussions. Finally, PD has a strong social mandate and government influence to satisfy customer needs, which ensure that the LOB is listening to its customers.

Knowledge Evaluation Stage

At this stage, PD has all the KM elements defined and understood as well. This enables PD to evaluate new service ideas. The process of evaluation is formally conducted through the stage gate and business practices procedures, which provide step-by-step instructions. Thus, individuals are aware of the activities that would be involved before the idea is fully developed into a service.

Further, a multi-functional team is formed which has members from various organizational functions. The Management Council regularly monitors the evaluation of ideas and makes prioritization decisions. The role of artifacts is limited during the evaluation as PD emphasizes real data, which they collect from pilot studies. This is typical of service firms. Finally, the organizational has a culture in which all the ideas are rigorously evaluated.
Knowledge Transfer Stage

All the KM elements are well-defined at this stage, which facilitates PD to transfer knowledge. Knowledge transfer involves transferring of service ideas and related knowledge to those who require it. At PD everyone is responsible for knowledge sharing and the process of transferring (i.e., need identification, source identification, and sharing) is informally defined with a greater emphasis on storytelling than on documentation. Various procedures such as the formation of a multi-functional team, mobilization of personnel, social networking and change management exist to facilitate knowledge transfer.

Records Management is another initiative that will create a centralized database of documents and will become a critical mechanism for knowledge sharing within the organization. The proximity (including similarity in knowledge and locational) enables greater knowledge diffusion among individuals. Moreover, the employee oriented and parochial culture fosters knowledge sharing among individuals.

Knowledge Application Stage

At this stage, PD has KM elements that describe a process for how to build and execute services. All the elements (i.e., process, individuals, roles, business logic, artifacts and culture) at this stage of knowledge evolution are articulable (i.e., well-defined and well understood). The process is formally conducted through the stage gate (i.e., gates four and five) and business practices procedures that provide a detailed a step-by-step description of what is involved to get a service built and executed. The
development members within the multi-functional team build the service and hand it over to the Operations group for launch. The Marketing/Sales group at the corporate level works with the LOB to promote the service and the Customer Value Management group monitors the service performance. The majority of actual service development is done outside the LOB but the LOB has the required resources and competencies to efficiently control the building and execution of services. The LOB supports the ideology of building its own resources and capabilities related to controlling the building and execution of services.

### 6.7.2 Supportive

The second aspect identified during analysis is that the KM elements at each stage of knowledge evolution are purposeful. In other words, each stage has a strategic objective to be fulfilled and KM elements enable the fulfillment of those objectives. The derivation of the supportive aspect is schematically presented in Figure 22. The aspect was derived by identifying patterns and it is organized as first-order, second-order and higher-order concepts.
**First-Order Concept**

**Knowledge Scanning Stage**
- **Process**: Scanning activities (i.e., search, filter and selection) for new service ideas are carried out both formally and informally on an ongoing basis at PD; Ideas are acquired from inside and outside the organization; Scanning behavior is narrow
- **Individuals/Roles**: Each Service Development and Management group within PD generates incremental ideas (enabled by the Marketing/Sales, Customer Value Management and Market Research, Corporate Strategy and CIO groups)
- **Business Logic**: The annual five-year and “2020” strategy plans provide a formal platform to think about market opportunities on an ongoing basis
- **Artifacts**: Provisions to personalize offices, participate in informal discussions due to proximity, and meet outside the campus to think “outside the box” promote creative ideas
- **Culture**: Culture of stability/direction promotes risk-averse behavior, which further enables them to scan for incremental ideas

**Knowledge Evaluation Stage**
- **Process**: Service ideas are rigorously put through evaluation activities and it is ensured that the ideas are aligned with PD’s strategy
- **Individuals/Roles**: A multi-functional team brings rigor in evaluation through its subject-matter expertise and the Management Council ensure that the ideas are bring evaluated and prioritized based on the strategic intent
- **Business Logic**: Ideas are evaluated and prioritized based on flexible weighted criteria to ensure that strategic objectives are met
- **Artifacts**: (PD has no service experimentation lab, thus, emphasis is on real data through a pilot project which helps understand services better as it is based on real data from customers. This is typical of service organizations)
- **Culture**: A culture of rigor ensures that the services are evaluated thoroughly and fairly so that they have higher probability of succeeding

**Knowledge Transfer Stage**
- **Process**: Relies more on storytelling than documentation
- **Individuals/Roles**: Individuals are formally encouraged to share knowledge through face to face communication; Some have taken informal initiatives to create archives
- **Business Logic**: Facilitates the building of social ties since personalization is a key knowledge transfer strategy
- **Artifacts**: Proximity helps build social ties and thus enables personalization strategy
- **Culture**: Employee-oriented and open culture promotes personalization strategy

**Knowledge Application Stage**
- **Process**: The implementation activities are rigorously followed to ensure that the service requirements are met
- **Individuals/Roles**: The allocation of responsibilities to various individuals ensures that the right skills are used during build and execute
- **Business Logic**: PD is an integrator of capabilities. As an owner of service they develop business, functional and design requirements
- **Artifacts**: (Services are built outside thus have limited role)
- **Culture**: The ideology of building an organization with all the capabilities and resources to build its own services helps in service build and execute in terms of dependence on common resources required and control over the implementation activities

**Second-Order Concept**
- **Process**: Scans for new service ideas that are incremental, which aligns with its strategic purpose
- **Individuals/Roles**: Evaluates new service ideas rigorously to ensure new ideas are aligned with PD’s business strategy
- **Business Logic**: Uses mix of personalization and codification strategies to transfer knowledge but mostly relies on personalization strategy
- **Artifacts**: Rigorously engages in application of new service ideas

**Higher-Order Concept**

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**Figure 22: An analysis for supportive KM at PD**
Knowledge Scanning Stage

PD’s objective is to launch incremental services, thus the strategic purpose of the knowledge scanning stage is to generate ideas that are incremental. All the KM elements support this purpose. The process of scanning is carried out on an ongoing basis both inside and outside the organization. The activity is carried out formally (e.g., through research) as well as informally (e.g., informal discussions). This helps PD to adapt to its market.

The scanning process is very focused. Scanning narrow segments of the environment leads to building incremental services (Leonard-Barton, 1998). The roles of certain groups are specifically defined during this stage. Each Service Development and Management group within PD generates incremental ideas (enabled by the Marketing/Sales, Customer Value Management and Market Research, Corporate Strategy and CIO groups). The nature of the annual five-year and the “2020” strategy plans ensures that PD has a formal platform to think about market opportunities on an ongoing basis.

Further, the ability to personalize workspaces, participate in informal discussions due to proximity, and meet outside the campus to think “outside the box” promote the generation of ideas. Finally, the culture of stability/direction promotes risk-aversion behavior, which further enables them to scan for service ideas that are incremental.
Knowledge Evaluation Stage

The strategic purpose of the evaluation stage is to evaluate new service ideas rigorously and ensure that they align with the strategic intent of PD (i.e., improving operational efficiency). This rigor and alignment comes from the iterative sequence of theoretical, pilot and post-mortem activities. The multi-functional team provides its subject-matter expertise at each stage of the evaluation process which further contributes to the rigor. The monitoring of the evaluation process by the Management Council ensures that ideas are being evaluated thoroughly and prioritized according to the strategic objectives of PD before implementation.

The use of flexible weighted criteria helps PD to prioritize service ideas in alignment with the LOB’s strategic objectives. There is no experimentation laboratory (which is typical of service organizations) but the ability to conduct pilot studies helps PD to understand services better before they are fully developed and launched on a full scale. Finally, the strong culture of rigor ensures that all the services are evaluated rigorously so that they have the higher probability of success.

Knowledge Transfer Stage

The purpose during the transfer stage is to transfer knowledge to all the stakeholders (i.e., development and support members that become part of a multi-functional team, as well as those who will be affected by the service when implemented) who require it. To transfer the knowledge, PD relies more on a personalization strategy then on a codification strategy. Thus, in order to transfer knowledge, PD depends more
on storytelling than on documentation. Thus, the primary knowledge transfer strategy at PD is personalization. Sharing of knowledge is formally set by personal performance scorecards and face to face communication. Some individuals have also taken informal initiatives to share their work with others.

Since personalization is a key transfer strategy, building and nurturing social ties is critical. PD promotes the building of social ties through various formal and informal procedures (e.g., team building, special interest groups and “lunch and learn”). The similarity in knowledge and locational proximity, as well as an employee oriented and parochial culture, also enables individuals to build social ties which further foster a free-flow of communication and more opportunities to be involved in individual-to-individual knowledge transfer. Some knowledge is also transferred through codification (e.g., change management). In the future, the Records Management (part of the codification strategy) will also supplement the knowledge transfer within the organization.

**Knowledge Application Stage**

The strategic purpose during the application stage is to build and execute services in a way that ensures the requirements of the organizational mandate and business strategy continue to be met. Thus, the implementation rigorously follows building, launching and monitoring activities. Just like TM, PD is an integrator of capabilities and, as an owner of services, it builds its own detailed business, functional and design requirements. All other development responsibilities are allocated within the multi-functional team. This ensures that the appropriate set of skills is available during different
stages of service building and execution. The ideology of building an organization that has the majority of resources and capabilities required to build and execute services (as opposed to being dependent on the resources at the corporate level) makes it less dependent on corporate resources and capabilities. This provides the LOB with more flexibility and control while services development. For example, PD measures its own customer satisfaction index, which helps them to customize their measurement index based on their own needs, as opposed to relying on the corporate services to do the measurement. The corporate measurement process is a standard process with standard indexes which are applied to all the LOBs).

6.7.3 Equifocused

The equifocused aspect characterizes how the organization advances through the knowledge evolution stages. Both articulable and supportive aspects of KM are static in nature; that is, the emphasis is on managing knowledge at a specific stage rather than on how the organization transitions from one knowledge evolution stage to another in a cyclical fashion. In contrast, the equifocused aspect is dynamic in nature and it ensures that an organization attends to managing knowledge at each stage of knowledge evolution without overemphasizing any specific stage. This equifocused aspect along with constituents (i.e., first-order, second-order and higher-order concepts), are represented schematically as data displays in Figure 23 and described below.
Figure 23: An analysis for Equifocused KM at PD

- The Market-to-Fulfill process enables PD to envision how the flow of new ideas turns into new services.
- Stage gate procedures and business practices for NSD provide a roadmap of what is involved at each stage of service development.
- The Management Council constantly reviews service development at each gate and ensures that PD is moving along all the NSD stages.
- Both the Service Development and Management and the Customer Value Management group monitor internal and external environment and the performance of the existing services which provides stimuli to the knowledge evolution cycle.
- The multi-functional team enables diffusion of knowledge among different stages of NSD.

First-Order Concept

- Smooth transitioning from service ideation to implementation.
- Monitoring to ensure that service development is moving to the next stage.
- Mobilizing knowledge to ensure that lessons learned at each stage of service development are carried over to the next stage.
- Equifocused.

Higher-Order Concept
Similar to TM, three properties of KM help PD move along the knowledge evolution cycle. First, KM enables smooth transitioning of services from ideation to implementation. PD has implemented the Market-to-Fulfill business process which helps the LOB envision the flow of service development from start to end. Further, the various steps of service development are formalized with the implementation of stage-gate and business practices procedures.

The second property that contributed to the dynamic nature of KM is the monitoring of the knowledge evolution stages. The Management Council ensures that the development transitions from knowledge scanning to knowledge application stages. Each Service Development and Management group and Customer Value Management group monitors the internal and external environment and the performance of the existing services which provide internal and external stimuli to the knowledge evolution cycle.

Finally, the third property that contributes to the dynamic nature of KM is the ability to mobilize knowledge between the stages of knowledge evolution. During the early stages of service development, a multi-functional team is formed which stays together until the service is completely built and implemented. This practice ensures that the knowledge at each stage diffuses effectively through all the subsequent stages.
6.8 Summary

This chapter has presented a rich description of KM within the context of NSD at PD. At each of the knowledge evolution stages, all the constructs from the conceptual model, that is, process, individuals, roles, business logic, artifacts and culture, were explored in detail. A within-case analysis was also presented. The analysis showed that the KM practices at PD are similar to TM, i.e., articulable, supportive and equifocused. These three aspects collectively ensure that PD knows “how to manage knowledge” at each stage of knowledge evolution, that KM in the organization is purposeful (i.e., strategically aligned, and that KM attends to the management of knowledge at each stage of knowledge evolution without overemphasizing any specific stage.
CHAPTER 7: CASE STUDY THREE – MARKETING

MESSAGING

7.1 Background

Marketing Messaging (MM) competes in the advertising industry and, with more than a billion dollars in revenue, it is one of the largest players in the domestic marketing business. It provides services that differ from traditional mass advertising. Whereas mass advertising is used to push awareness of a particular brand or product, the services provided by MM are used to drive specific actions in a way that is directly measurable at the individual consumer level. Some of its key services enable companies to promote their products and services on a targeted and personalized basis to either individuals or neighborhoods. The LOB provides its services both via the p-channel and the e-channel.

MM has various market opportunities in its service offerings and double digit growth potential compared to the single digit growth potential of TM and PD. The opportunity to grow is captured insightfully by one of the corporate managers,

“The opportunity for [MM] is too big. Let me give you an example, one of their services is way overpriced and if you take a look at service delivery they have the worse service delivery index. So logically, we should be failing dramatically because we are nowhere near our service promise. But guess what! We are growing and you cannot stop it. So what if everything was done properly, we could not have handled the volume.”
The growing popularity of e-marketing and online advertising adds to the LOB’s opportunity to benefit from the enhanced legitimacy of direct marketing. One of the largest opportunities is the possibility of enticing companies to start using MM’s services to improve the effectiveness of marketing. The growing use of the Internet as a marketing tool provides another opportunity for MM services on the e-channel. The strategy of MM is to “profitably grow volumes” by (1) providing new services, (2) improving service quality and (3) increasing the customer base. Of the three strategic objectives listed above, improving service quality is a key objective and a challenge that MM faces.

7.2 Organizational Structure for NSD

The context of this case study is NSD. It is a very mature activity at LOGCO and MM has implemented a business process program to improve its KM regarding service development referred to as Market-to-Fulfill, which entails an end-to-end focus on service development (i.e., the market requirement for a service to the delivery of that service). Compared to other LOBs at LOGCO, MM is the most recent LOB to implement the business process and this is reflected in our analysis.

Structurally, with regard to service development, MM has a Service Development and Management group, an Operations group and a Sales Strategy group. Realizing that its governance structure for service development was deficient, it has recently hired a senior vice president (SVP) for the LOB and created three more groups including two Service Development and Management groups and a Marketing Strategies and Business Development group (see Figure 24). The SVP was hired a year before the case study was
conducted but the three groups were created during the final stages of this case study. The roles and responsibilities of the groups from the corporate level are the same as described in Section 5.2.

In the sections to follow (i.e., sections 7.3 to 7.6), the way in which MM manages its knowledge at each stage of knowledge evolution during NSD--scanning, evaluation, transfer and application--is described in detail. Under each stage, all the constructs from the conceptual model (i.e., process, individuals, roles, business logic, artifacts and culture), are described. The findings of the case study are also presented in Figure 25. In section 7.7, patterns are identified, followed by a summary. This results in an in-depth understanding of how knowledge is managed at MM within the context of NSD.

7.3 Knowledge Scanning Stage

At this stage, MM scans for new service knowledge to assist with addressing new opportunities in services.

7.3.1 Scanning Process

The scanning activities for service ideas are disorganized compared to the other two LOBs. As a manager notes,

“We do not have an organized process for collecting and filtering ideas in our organization.”
### Groups (and responsibilities) at the corporate level that facilitate service development

<table>
<thead>
<tr>
<th>Group</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Strategy</td>
<td>Manages the overall corporate strategy; Each LOB’s strategy feeds into corporate strategy</td>
</tr>
<tr>
<td>Marketing Research</td>
<td>Conducts primary and secondary market researches</td>
</tr>
<tr>
<td>Customer Value Management</td>
<td>Monitors and measures customer satisfaction</td>
</tr>
<tr>
<td>Marketing and Sales</td>
<td>Provides common marketing and sales view to customers</td>
</tr>
<tr>
<td>Project Development</td>
<td>Monitors and provides best service development practices</td>
</tr>
<tr>
<td>Operations and Engineering</td>
<td>Provides and builds delivery services</td>
</tr>
<tr>
<td>Change Management</td>
<td>Provides change management services to internal and external stakeholders</td>
</tr>
<tr>
<td>CIO</td>
<td>Manages informational assets; Provides and develops a common vision of services on the e-channel</td>
</tr>
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</table>

### Organizational structure of Direct Messaging with regard to service development

<table>
<thead>
<tr>
<th>Group</th>
<th>Responsibility</th>
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</thead>
<tbody>
<tr>
<td>Service Development and Management</td>
<td>Develops marketing services</td>
</tr>
<tr>
<td>Service Development and Management *</td>
<td>Develops data services</td>
</tr>
<tr>
<td>Service Development and Management *</td>
<td>Develops online shopping services</td>
</tr>
<tr>
<td>Sales Strategy</td>
<td>Responsible for sales and provides interface to corporate Sales group</td>
</tr>
<tr>
<td>Marketing Strategies and Business Development *</td>
<td>Responsible for developing the marketing strategy and provides interface with corporate marketing</td>
</tr>
<tr>
<td>Direct Messaging Operations</td>
<td>Provides interface to corporate Operations group</td>
</tr>
</tbody>
</table>

* These groups were created at the time the case study was being conducted.

Figure 24: MM’s organizational structure
It is a responsibility of service managers in the Service Development and Management groups who conduct the activity informally and reactively. As a manager further notes,

“The problem that we have here is that we do not have the process regarding how often we develop services, which services we do develop, our threshold for risk, and our plan for service implementation and renewal. The ideal search process doesn’t really exist. It is all very ad hoc, for example, reacting to the market or impulsive ideas.”

The majority of service ideas are generated by current customers’ requests and monitoring current service offerings against those of competitors. As the manager further explains,

“Looking at our competitors and customer requests is our biggest source of ideas.”

This scanning behavior usually results in service ideas that are either extensions of or enhancements to current services (Nelson and Winter, 1982). A manager explains,

“The percentage of our initiatives that should be new to the company and market vs. the enhancement and fixing of existing products is not yet well-defined. We wanted to get organized first and map all the ideas and opportunities that we currently have. The bulk of things that we have on our plate are product enhancements or improvements. We don't have anything innovative or new to the company which means that, as a team, we are at risk. In the future, we are going to try to talk about the criteria regarding what percentage of our work should be innovative. Right now everything is incremental.”
7.3.2 Individuals and Roles

Each Service Development and Management group is expected to develop its own service ideas since they are the ones who are responsible for services. Nonetheless, the generation of new service ideas could be supported by various groups at the MM and corporate levels. The Customer Value Management, Marketing and Sales, Market Research, and Sales Strategy groups play a critical role. With their help MM monitors its customers’ current requirements and its competitors’ current offerings. The recently formed group, Marketing Strategy and Business Development, plays a role in this too by monitoring market and key customers.

The Corporate Strategy and CIO group are there to provide support to MM’s scanning for long-term service ideas just as they do for the other LOBs. However, MM faces a few critical challenges and appears to be inadequately resourced in terms of individuals. As a service manager explains,

“One reason we have been slow to develop ideas is that we don’t have a separate group for innovation. Those who are responsible for new service ideas are the service managers, who are busy managing the existing services on a day-to-day basis. This means they have to take on additional roles to create new service ideas and then develop them. This is not easy given how busy we are. We have created a role and position for innovation but it has not yet been filled.”

He further explains,

“As I mentioned earlier, we don’t have an organized process for collecting and filtering ideas. It is up to the service managers to keep a running list. I know that
is what I do. Without having a dedicated staff you cannot have ideas flowing. Lots of times when we get an idea we implement it whether it is good or not.”

7.3.3 Business Logic

The scanning for new service ideas is an extremely important activity given that huge growth is expected from this LOB. However, although it is also a part of the five-year strategic plan that is prepared and updated on an annual basis, the activity is conducted informally on an ongoing basis. As a manager explains,

“It is not formalized at all. At one point we were thinking about having a process that would ensure a certain number of service ideas going through the process each year, to keep the funnel going. But then, because of the reorganization a few years ago, everything changed. With a 35% target growth for the next five years, we need to have that process in place but nothing is formalized yet.”

7.3.4 Artifacts

From the artifacts point-of-view, MM is similar to the other two LOBs. The organizational workspace reflects conservatism but individuals throughout the organization have personalized their office to motivate creativity (please refer to section 5.3.4 for details). A manager explains,

“We are not any different from the other two LOBs [PD and TM]. For example, some time ago we did strategy in a building in which there was no barriers or positions. We were all the same. But when it comes to really implementing
services, I think the environment that we have is good. It allows you to focus and not get lost in everyday creativity. It lets us get things done. At the operational level at which you need to get things done we need this focused environment. The openness can be a hindrance.”

7.3.5 Culture

As mentioned earlier, due to a strong social mandate and government regulatory influence, the overall culture at LOGCO is one of stability and control. The culture is promoted in MM too. A manager observes,

“We have a social mandate to fulfill; any commercialization of a service has to be balanced with the mandate. It may be a business savvy thing to do but it may not make political sense or social sense. This prevents us from being totally bold in our service commercialization. That is why we are a profitable but not a highly profitable company.”

Yet, amidst this culture, MM’s ability to sustain high standards of stability and control has been hindered. Individuals within MM know this but the ability to circumvent the issue has been attributed to a lack of adequate resources and the newness of senior leadership. This is also affecting their growth prospects. As noted by a manager,

“We have a target of 35% growth to achieve in the next five years. But we have very little support to get there. For instance, filling up the organizational structure was one of many key activities, and we have not yet fully done that. Similarly, a few other key activities have come to a dead-end too.”
7.4 Knowledge Evaluation Stage

The objective behind this stage is to subject new service ideas to selection mechanisms through which ideas are screened and prioritized. Even the service ideas that are under development could be again put through this process. Ideas are selected based on their expected benefits.

7.4.1 Evaluation Process

The evaluation activity is similar to TM and PD (described in section 5.3.2). MM evaluates its new knowledge through a sequence of theoretical, pilot and postmortem activities. The theoretical and pilot evaluations are fundamentally conducted to critically analyze whether or not the new service idea is valid and can solve current challenges. A manager explains,

“In the past somebody would have an idea and they would implement it, whether it was a good idea or not. Our philosophy is little bit more focused now, we are trying something different. Ideas are tested with a few customers and monitored before we decide to do a full implementation.”

The postmortem of results is conducted to analyze the results obtained from theoretical and/or pilot evaluations to make a “Go” or “Kill” decision on a service initiative.

However, the evaluation process at MM is not as rigorous as it is at TM and PD. A manager from Customer Value Management explains,

“Recently [MM] launched a service, which has the lowest customer satisfaction ever in the company’s history. They quickly tested the service with a couple of
customers and assumed that it will work as a generic offering. So they just went ahead and launched it for everyone.”

7.4.2 Individuals/Roles

Similar to the other two LOBs, MM also forms a multi-functional team during service development and has a Management Council consisting of senior members from the LOB to make a “Go/Kill” decision on the ideas. The multi-functional team members represent stakeholders from various functional departments. The team has two types of members: the development members and the support members. The development members develop the services, whereas support members provide their expertise when required (e.g., marketing research, pricing decisions). This structure of a multi-functional team is similar to that of the teams formed in the other two LOBs but MM often has fewer members of its own on the multi-functional team because it is inadequately resourced in terms of individuals. This impacts the coordination of evaluation activities.

7.4.3 Business Logic

MM follows the same organizational procedures for service development: business practices and stage gate (Figure 13 and Figure 14). If the service to be developed is about changing or developing a new service policy or developing a customized offering for customers then MM follows the business practice procedure. But for a generic offering the stage gate procedure is strictly followed. However, according to a manager, the actual decision to “Go” or “Kill” an idea is
“very informal. There is a general margin of threshold we look for and it comes a little more into play during the middle stages of stage gate. We also look at things such as whether or not there is a big customer issue causing the pain, a lot of noise that we need to address, or an opportunity that has shown up in the marketplace that would apply to more than one customer. Generally, what would an opportunity look like from a profitability perspective? So it is not mathematics but, rather, a rough look at the opportunity. Typically, there isn’t a set criteria for us but that will be established over time as we are still early in the evolution compared to [TM and PD.]”

7.4.4 Artifacts

MM also emphasizes “real” data as opposed to “controlled” data. Thus, from the artifacts point-of-view, MM is not different from TM and PD.

7.4.5 Culture

Relative to other LOBs, MM is less rigorous in evaluating ideas. The stage gate and business practices procedures contribute to the little bit of rigor. The formation of a multi-functional team of experts contributes to making informed decisions. In addition, these steps improve the transparency of evaluations and curb any political maneuvering. However, MM is in the early stages of building rigor in its evaluation process. As a manager describes,

“We have numerous ideas. Our biggest challenge is how we actually choose from
those ideas. We don’t have any specific criteria. Often, we pick up ideas that are creating the most noise in the market and we put them through the stage gate. We have not formalized in terms of how we measure success, what is the performance scorecard and what percentage of our initiatives should be new vs. enhancements vs. fix. We just want to get organized first as a LOB.”

7.5 Knowledge Transferring Stage

This stage of knowledge evolution deals with the transfer of newly evaluated service knowledge and the related knowledge to relevant stakeholders within and outside MM.

7.5.1 Transfer Process

Similar to TM and PD, knowledge transfer at MM follows a sequence of need identification, source identification and knowledge sharing activities. The sharing of knowledge is done in two ways: documentation and storytelling. Further, storytelling in MM is the more important mode of knowledge transfer for the same reasons as in the other two LOBs.

While speaking about the records management initiative, which is a LOGCO-wide initiative, a manager admits,

“From MM’s perspective, it is probably not in very good shape. We don't own a lot of records. So the first thing we have to understand is what records we do
really own. We own the product specifications but we don't own the record-keeping of the product specifications. The company as a whole has not focused very well on issues such as the location of records or who is accountable for them."

She further adds,

"Individuals in general keep documents with them. Thus, most teams will be fine because with Records Management all they have to do is to put them in one place. The problem arises for the teams which are new. They are more at risk. In other LOBs, the same teams and individuals have worked there for a very long time, so they are at a different stage in terms of records management. But here in our LOB, 50% of people are new to the company and they have no idea what record they need and what they own. So we have a little bit of work to do."

In summary, at MM, individuals rely heavily on personalization and less on codification for transferring knowledge (Hansen, et al., 1999).

**7.5.2 Individuals and Roles**

To an extent, the transfer of knowledge in MM is everyone’s responsibility, as it is formally measured on their personal scorecard; however, no specific initiatives have been taken. While commenting on the codification of a KM strategy (Hansen, et al., 1999), a manager said,

"So many things work here based on social contacts. If you know the right people, things will work well. The “Yellow Pages” strategy you suggested will really
work here because often not knowing something and not being able to inform a person who will be impacted by a service idea is important. I have been here for 20 years and I still don't understand who needs to be involved, on a day-to-day basis. So, for new employees, I can see the challenge.”

7.5.3 Business Logic

MM relies on the personalization strategy and less on the codification strategy for knowledge transfer. Under a personalization strategy, the activities used to transfer knowledge are the same as TM and PD: formation of multi-functional teams, mobility of individuals, and the appropriation of formal/informal social networks. Of the three mechanisms, the formal/informal social networking is the most important, just as in TM and PD. One manager reports,

“If you have spent a lot of time in this company you know who to approach and you know who knows what. Networking in this company plays a big part in knowledge transfer.

Other managers agree,

“When you come to the new team, the first question you have in mind is who knows what and where can I get the information. I have done this often enough in this organization that I know exactly where to go. You always have to find a person who knows those things you are looking for. One of my key roles is that of a ‘traffic director.’ I am known for knowing who knows what, at least in this building.”
“We do a lot of networking. Who you know and the relationships you have are very important. The people on my team will develop their own relationships. Sometimes we talk about things such as who can solve a given problem and we identify a person. It is all informal. In a big company like this we have to do that.”

MM also nurtures these social networks among their members using all the mechanisms that were explained in the context of TM and PD. For example, to encourage networking, a manager acknowledges,

“Our team meets once a month in a cafeteria for two hours. In addition, we bring people from other areas of the company to come to us and present their work. We also keep a list of people and invite who we think are doing projects that are of interest to us. [LOGCO] is a big company and we try to keep up on what is going on.”

However, they have a few challenges in building social networks. One of the corporate managers, while comparing the knowledge sharing practices of all the LOBs, comments,

“In general, [MM] is a silo organization. Their knowledge sharing is not as rich as in other LOBs. Often they are not building any new knowledge or network. It is more like an “old boys club.” My perception is that since they have a huge market opportunity, their mindset is ‘why bother’.”

The codification strategy encompasses the same Records Management initiative and the knowledge transfer within the context of change management.
7.5.4 Artifacts

From the artifacts point-of-view, MM’s position is similar to TM and PD. For instance, as described earlier, knowledge transfer is facilitated by the similarity in the knowledge bases across the organization and the extensive linkages between individuals that develop due to locational proximity. However, MM has a challenge as a manager acknowledges,

“Half of the line of business is in [a different city] and those who are here [on this campus] are all over the floors. Our SVP goes back and forth between [the two cities].”

7.5.5 Culture

The culture is similar to that of TM and PD, that is, employee-oriented and parochial, because this is fostered throughout LOGCO. But, according to LOGCO’s employee satisfaction index, the employees in MM are often less satisfied than those in the other LOBs, which affects their knowledge sharing. While talking about knowledge transfer within MM, a manager explains,

“We are not there yet, but things are much better now than what we had in the past. People share knowledge with each other more often.”

While another adds,

“I think the culture is a lot better now. We have evolved in the last few years as an organization, but, again, the fact is that you have to have relationships to know where to get the information and who to tap into. I think people are a lot more open, and if I go to somebody today and say I need this information, people are
very open in terms of sharing, but you need to know to whom to go. It is not a question of people hiding the stuff. I don't feel that. You should just know who to contact. In the past, people were possessive, but not today.”

7.6 Knowledge Application Stage

Within the context of this study, the application stage refers to when services are built and executed.

7.6.1 Application Process

Like TM and PD, MM essentially follows the same sequence of activities to develop services, that is, build, launch and monitor. During the build, a service is designed, developed and rigorously tested and validated. The service is then rolled out to operations for a market launch, followed by monitoring to ensure that MM is getting feedback from its customers. Feedback is an important source of improvement and new service ideas but, as a manager from the Customer Value Management group notes, MM “often ignores the feedback from its customers regarding their services. There are usually phases to accepting the feedback. [MM], compared to other LOBs, is still in a denial phase.”

MM also faces unique legitimacy challenges with operations since they are often treated as a low priority business while delivering messages and many of their messages are undelivered. Essentially, the Operations group delivers messages for all three LOBs
but the group treats messages from MM as “junk messages.” The legitimacy issues arise because of the misalignment of the goals of MM and Operations. The other reason that is affecting MM is, as explained by a manager,

“Ever since we have become a process oriented organization, we have created multiple points of contact (i.e., process owners) in Operations. Earlier there was only one point of contact but now there are many points of contact. We don’t have enough resources to keep in touch with all the contacts.”

7.6.2 Individuals and Roles

The individuals from MM are also integrators of expertise of a multi-functional team. The services are not really built within the LOB; for example, most often the services are built and executed by Operation and Engineering groups. In addition, unlike other LOBs, MM will also go outside LOGCO to develop their services due to a lack of resources within the LOB and LOGCO. The nature of roles and responsibilities within the multi-functional team is similar to a multi-function team within TM and PD.

7.6.3 Business Logic

The procedures followed to develop services are the same as those in TM and PD. Stage gate and business practices are standard procedures for developing services throughout LOGCO. The activities (i.e., build, launch and monitor) illustrated above are performed as part of the stage gate and business practice procedures.
7.6.4 Artifacts

The role of artifacts within MM was not found to be significant either, since the LOB is basically an integrator of expertise. The actual development of a service is developed outside the LOB, the launch of a service is handled by operations, and the monitoring activity is done by Customer Value Management.

7.6.5 Culture

As described earlier, PD and TM have become more self-reliant with regard to resources and competencies for NSD. However, MM is unable to adopt this strategy as they are dependent on the corporate enterprise for resources. Ideologically, MM believes very strongly in shared resources, which is in contrast to TM and PD. A manager explains,

“The resources need to be available but we don’t think that they need to belong to us to be effective. So there are different schools of thought. Other LOBs are building more internal capability so that they can control the activity. Our philosophy is that we should tap inside [LOGCO]. Each LOB was allowed to define, within its own organization and within reason, what they needed. We chose matrix management or, in other words, shared resources and competencies. It is perhaps not working very well for us but we are not ready to give up just yet. Come back next year and I might have a definite answer for you.”
In addition, MM often have fewer members from their own LOB in a multi-functional team due to deficient MM organizational structure. A manager comments while talking about the team structure,

“It will vary from project to project but the project manager from MM is the business lead during service development. And, depending upon the requirement of resources, which in my case, I don't have, I usually go to shared resources to work on an initiative.”

This is a challenge because during this stage of service development, members from other functional groups within the multi-functional group are often more rigid and do not go beyond their roles. The managers, while commenting on having the capability, explain,

“Most of the engagement of the other areas is very well formalized. If you look at IT, they do a statement of requirements and then they write a proposal. You accept their proposal and go through the stage gate process. There is lot of paperwork. Similar things happen within the marketing communications and advertising group. There is a lot of very formal engagement. Everybody gets a set of roles and processes that they go through when trying to access actual resources and their funds; there is no informality. For us, this is a challenge because often we have just one member from our LOB on a multi-functional team who is not only trying to coordinate all this but also trying to manage unplanned activities because other non-LOB members will not go beyond their roles”

“We do pick people from other areas depending on the project. Once we get to the concept initiation phase and the requirements done, we will identify which areas
of the company should be involved on the team. The challenge with that is to get
the right person with the right knowledge onto the team to support you and make
sure that they stay there for the duration of the project and that it will become
their priority. If it is not on their scorecard then the support is very difficult. So I
have to say that the biggest challenge I have now in implementing anything is
getting the right person on the team to help us deliver a project. We cannot do it
on our own within the line of business. A lot of resources are shared; you are
sponsoring something but you need to get all the players from ten different places
within the company. You can have someone from the billing department, someone
from customer service, from operations, and someone from sales but you basically
beg to get them onboard. These support groups do not do planning very well, and
we plan a year ahead of them. We will identify some opportunities to work in the
following year but our plans are not aligned with theirs. For example, operations
can follow their plan on their own for the next year and I can follow my plan on
my own in isolation, but if these two are not linked together and if I need help
from the operations team, they will say that we are already booked for this year.”

Thus, flexibility by team members is often required because it allows resolving dynamic
issues that often arise during this stage of service development and the flexibility can
only come from MM’s own members. This point was also emphasized by other LOBs.

Moreover, as a manager from PD comments,

“[MM] not trying to build capability will be absolutely crazy because each LOB is
providing unique services in the market and hence we need to build unique
knowledge and resources within each LOB. I can understand that for certain things,
for example, campaigning during Christmas holidays, is a common activity with them but we do lot of things that are specific to [PD].”

A summary of key findings is presented in Figure 25.
Knowledge Processes

- Scanning is disorganized
- Ad hoc and reactive

OM Infrastructures

- Scanning is disorganized
- Ad hoc and reactive

Knowledge Processes

- New service ideas are evaluated through a formal iterative sequence of theoretical, pilot and postmortem activities for screening and prioritization
- The evaluation process is less rigorous

OM Infrastructures

- New service ideas are evaluated through an informal sequence of need identification, source identification and sharing activities
- There is a heavy reliance on personalization and less on codification
- Story-telling is used more than documentation
- Problems with Record Management

Individuals, Roles, Business Logic, Artifacts, Culture

- Evaluation process is less rigorous
- Knowledge transfer is through an informal sequence of need identification, source identification and sharing activities
- There is a heavy reliance on personalization and less on codification
- Story-telling is used more than documentation
- Problems with Record Management

Knowledge Processes

- New services are implemented through a formal sequence of build, launch and monitor activities
- Legitimacy issues with operations which affects launch
- In a denial phase of taking feedback from monitoring activity

OM Infrastructures

- Knowledge sharing expectation is formally set by personal performance scorecards
- No specific initiatives

Individuals, Roles, Business Logic, Artifacts, Culture

- New services are implemented through a formal sequence of build, launch and monitor activities
- Legitimacy issues with operations which affects launch
- In a denial phase of taking feedback from monitoring activity

Knowledge Processes

- Individuals/Roles:
  - Each Service Development and Management group is primarily responsible for formulating its own strategic objectives and generating new service ideas
  - Idea generation is facilitated by other corporate level groups, i.e., Corporate Strategy and CIO, Marketing/Sales, Customer Value Management, Market Research
  - Idea generation is also enabled and managed by MM’s Marketing Strategy and Business Development group
  - Lack of resources (i.e., individuals)

OM Infrastructures

- Individuals/Roles:
  - A Multi-functional team with development and support members who provide their subject matter expertise during evaluation
  - Management Council monitors the projects and makes “Go” and “Kill” decisions
  - Often has fewer members of its own in a multi-functional team

Individuals, Roles, Business Logic, Artifacts, Culture

- Individuals/Roles:
  - Knowledge sharing expectation is formally set by personal performance scorecards
  - No specific initiatives

OM Infrastructures

- Individuals/Roles:
  - Integrators (for instance, development members within the multi-functional team build and test a service and hand it over to Operations to launch; Marketing/Sales promote the service; Customer Value Management monitors the service performance)
  - Often goes outside LOGCO to develop services due to lack of resources
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<tr>
<th>Business Logic:</th>
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<tr>
<td>• Ideas are acquired on an ongoing basis</td>
<td>• Stages 1, 2 and 3 of stage gate procedure</td>
<td>• Personalization (i.e., individual-to-individual)</td>
<td>• Stages 4 and 5 of the stage gate procedure for high visibility services</td>
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<td>• Ideas are acquired informally</td>
<td>• Business practices</td>
<td>o Knowledge transfer is done through social networking, multi-functional team,</td>
<td>• Business practices</td>
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<td>• The formulation of service objectives and the generation of new service</td>
<td>• No selection criteria</td>
<td>and mobilization of personnel</td>
<td>• Develop business, functional and design requirements</td>
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<td>ideas is part of a flexible annual five-year strategy plan</td>
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<td>• Codification (i.e., individual-to-documentation)</td>
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<td>• “lack of richness” in knowledge transfer</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Artifacts:</th>
<th>Artifacts:</th>
<th>Artifacts:</th>
<th>Artifacts:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Conservative physical layout but highly personalized spaces to motivate</td>
<td>• No service experimentation lab</td>
<td>• Locational proximity with other LOBs</td>
<td>• Services are built outside MM</td>
</tr>
<tr>
<td>creativity</td>
<td>• Emphasis on real data through pilots.</td>
<td>• Half the LOB is not on the same campus</td>
<td></td>
</tr>
<tr>
<td>• Sometimes TM meets outside the campus to think “outside the box”</td>
<td>• The IT infrastructure is used for simulation</td>
<td>• The IT infrastructure is used for communication</td>
<td></td>
</tr>
<tr>
<td>• Campus is big and beautiful with cafés, cigarette corners, picnic tables,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gymnasium and kitchens which nurtures informal discussions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• IT infrastructure is used for formal and informal discussions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culture:</td>
<td>Culture:</td>
<td>Culture:</td>
<td>Culture:</td>
</tr>
<tr>
<td>• Strong social mandate and government regulatory influence on the business</td>
<td>• Lack of rigor</td>
<td>• Compared to the other two LOBs, the culture is a little less employee-</td>
<td>• Ideology of sharing capability (i.e., resources and competencies) which is</td>
</tr>
<tr>
<td>• But has challenges in maintaining the culture of stability and direction</td>
<td></td>
<td>oriented and parochial (employee satisfaction is low)</td>
<td>causing challenges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Figure 25:** Management of knowledge within the NSD context at MM
7.7 Identifying Patterns

The previous sections presented findings from the exploring and describing phase (Miles and Huberman, 1994). Both topical and analytical codings were used during this phase, also referred to as first-level coding (described in Chapter 3). Next, an attempt was made to make “complicated things understandable by reducing them to their component parts” (Bernard, 1988) by doing pattern coding, as part of second-level coding (described in Chapter 3). The following section presents findings from this next phase of analysis. Iterations were made between insights from the existing literature on KM and those emerging from in-depth analysis of collected data. KM at MM differs from TM and PD with respect to all three key aspects: articulable (i.e., their ability to “manage knowledge” at each stage is underdeveloped); supportive (management of knowledge at each stage is less supportive than TM and PD), and equifocused (i.e., MM experiences difficulty advancing new ideas through to completion).

7.7.1 Articulable

Articulable means that the KM elements (i.e., process, individuals, roles, business logic, artifact and culture) at each stage of knowledge evolution are well-defined and well understood within the organization either explicitly and/or tacitly. The “tacit” here refers to an understanding that is conscious and can be more or less completely articulated. Articulability of KM elements, thus, enables an organization to be aware of how to manage knowledge at each stage of knowledge evolution. At MM, not all KM elements that exist at scanning, evaluation, transfer and application stages are well-defined and well understood. In general, the elements do not enable MM to know how to manage the
knowledge within the context of NSD. This poorly articulable aspect of KM practices at each stage, along with constituents (i.e., first-order, second-order, and higher-order concepts), are represented schematically in Figure 26 and described below.

**Knowledge Scanning Stage**

The knowledge scanning stage is about idea generation and not all the KM elements (i.e., process, individuals, roles, business logic, artifacts and culture) are sufficiently defined and understood to enable MM to scan effectively for new service ideas. The process of scanning is disorganized and the ideas usually come from customer requests or simply by copying LOGCO’s competition. Individuals do not have any process to manage a new idea search before it is put through the formal stage gate or business practices procedures for development.

The roles of some groups are specifically defined. The Service Development and Management groups have primary responsibility for formulating their own strategic objectives and generating new service ideas. Each group could also get help from the other groups including Corporate Strategy, CIO, Marketing/Sales, Customer Value Management, Market Research, and Marketing Strategy and Business Development groups at the corporate level and MM levels. However, MM lacks resources (i.e., individuals with roles) within each Service Development and Management group specifically focused on scanning for new ideas.
<table>
<thead>
<tr>
<th>First-Order Concept</th>
<th>Knowledge Scanning Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process:</strong> Scanning for new service ideas is disorganized</td>
<td></td>
</tr>
<tr>
<td><strong>Individuals/Roles:</strong> Each Service Development and Management group within MM is primarily responsible for formulating its own strategic objectives and generating new service ideas; Scanning is enabled by various groups at MM and corporate levels; Within each Service Development and Management group there are no individuals who are responsible for idea scanning</td>
<td></td>
</tr>
<tr>
<td><strong>Business Logic:</strong> The formulation of service objectives and generation of new service ideas is a part of the annual five-year strategy plan but it does not formally drive idea generation</td>
<td></td>
</tr>
<tr>
<td><strong>Artifacts:</strong> Individuals have created highly personalized spaces; Campus and IT nurtures informal discussion</td>
<td></td>
</tr>
<tr>
<td><strong>Culture:</strong> Strong social mandate to satisfy customer needs</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge Transfer Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process:</strong> The transfer of new service ideas and related knowledge is an informally defined process in which PD follows a sequence of need identification, source identification and sharing activities</td>
</tr>
<tr>
<td><strong>Individuals/Roles:</strong> Knowledge transfer is everyone’s responsibility</td>
</tr>
<tr>
<td><strong>Business Logic:</strong> Procedures for knowledge transfer include the formation of a multi-functional team, social networking and mobilization of personnel; Change Management helps transfer knowledge to the internal and external stakeholders who are not involved in the service development but will be affected; Records Management is not is good shape</td>
</tr>
<tr>
<td><strong>Artifacts:</strong> Locational proximity helps knowledge diffusion but half the LOB is in a different city</td>
</tr>
<tr>
<td><strong>Culture:</strong> Less employee-oriented and parochial</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge Application Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process:</strong> PD follows a sequence of build, launch, and monitor activities to build and execute services</td>
</tr>
<tr>
<td><strong>Individuals/Roles:</strong> Development members on the multi-functional team build and test the service and hand it over to Operations to launch; Marketing/Sales group promotes the service; Customer Value Management group monitors the service performance. There is a problem with launching and monitoring</td>
</tr>
<tr>
<td><strong>Business Logic:</strong> Gates 4 and 5 of stage gate and business practices procedures provide step-by-step description</td>
</tr>
<tr>
<td><strong>Artifacts:</strong> (Building, launching and monitoring of services is done outside the LOB)</td>
</tr>
<tr>
<td><strong>Culture:</strong> Due to ideological stance, majority of resources and capabilities required for NSD are borrowed at the corporate level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second-Order Concept</th>
<th>Higher-Order Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not all KM elements (i.e., process, individuals/roles, business logic) required to scan for new service ideas are well-defined and well understood</td>
<td></td>
</tr>
<tr>
<td>Not all KM elements (i.e., individuals/role, business logic, culture) required to evaluate new service ideas are well-defined and well understood</td>
<td></td>
</tr>
<tr>
<td>Not all KM elements (i.e., business logic, artifacts, culture) required to transfer new service ideas are well-defined and well understood</td>
<td></td>
</tr>
<tr>
<td>Not all KM elements (i.e., individuals/roles, culture) required to implement new service ideas are well-defined and well understood</td>
<td></td>
</tr>
</tbody>
</table>

Figure 26: An analysis for articulable KM at MM
While a five-year strategy plan exists within MM, it does not formally drive idea generation. In other respects MM resembles PD and TM. That is, individuals create highly personalized workspaces in a conservative environment that promotes some idea generation. The campus and IT tools also nurture idea generation through the promotion of formal and informal discussions. Finally, MM inherits LOGCO’s strong social mandate and government influence to satisfy customer needs, though they have difficulties in meeting the mandate.

**Knowledge Evaluation Stage**

During the evaluation stage, MM determines the potential of new service ideas. At this stage too, not all the KM elements are defined and understood. This hinders MM’s evaluation of new service ideas. For instance, the process of evaluation (i.e., theoretical, pilot and post-mortem activities) is formally conducted through the stage gate and business practices procedures, which provide step-by-step instructions. Thus, individuals are aware of the activities that would be involved before the idea is fully implemented into a service. But the steps are not rigorously followed due to their recent adoption (and thus incomplete understanding) of these procedures.

MM is similar to the other two LOBs in several way: a multi-functional team is formed which conscripts members from various organizational functions to provide subject-matter expertise during evaluation; the Management Council regularly monitors the evaluation of ideas and makes prioritization decisions; and the role of artifacts is limited during an evaluation as MM emphasizes real data through pilot studies. This is
typical of service firms. However, unlike the other two LOBs, the new ideas are not rigorously evaluated.

**Knowledge Transfer Stage**

Knowledge transfer involves the transfer of service ideas and related knowledge to those who require it. At MM everyone is responsible for knowledge sharing and the process of transferring (i.e., need identification, source identification, and sharing) is informally defined with a strong emphasis on storytelling as opposed to documentation. Various formal and informal procedures exist to facilitate knowledge transfer. The formation of multi-functional teams and the mobilization of personnel are formal procedures, whereas social networking is an informal procedure for knowledge transfer during service development. These procedures are used to share knowledge among stakeholders who are involved in service development. The change management procedure is used to transfer knowledge to the stakeholders who will be affected by the service once implemented. The procedure is used to transfer knowledge to both external and internal stakeholders.

However, various problems exist compared to the other two LOBs. Records Management, a formal initiative that will create a centralized database of documents and will become a critical means of knowledge sharing within the organization does not exist. The proximity (including similarity in knowledge and locational) enables knowledge diffusion among individuals but MM has half the individuals work in a different city. In
addition, the organization is a little less employee-oriented and parochial, which affects knowledge sharing among individuals.

**Knowledge Application Stage**

Not all the KM elements at this stage of knowledge evolution are well-defined and well understood. For example, the development members within the multi-functional team build the service and hand it over to the Operations group for launch. However, MM has a legitimacy issue with the Operations group. The Marketing/Sales group at the corporate level works with the LOB to promote the services and the Customer Value Management group monitors the service performance. But MM ignores the customer feedback from the Customer Value Management group. As described, the LOBs are essentially integrators when it comes to building and execution of services, as the majority of services are built and executed outside the LOB. Furthermore, MM does not even have sufficient resources and capabilities to coordinate these activities. The LOB does not support the ideology of building its own resources and capabilities.

Despite the problems, the process is formally conducted through the stage gate (i.e., gates four and five) and business practices procedures. These procedures provide a detailed step-by-step description of what is involved to get service built and executed.
7.7.2 Supportive

The second aspect identified during the analysis is that the KM elements at each stage of knowledge evolution are not strategically purposeful. In other words, each stage has a strategic objective to be fulfilled and KM elements are less supportive of the objectives at each stage. The derivation of the supportive aspect is schematically presented in Figure 27. The aspect was derived by identifying patterns and it is organized as first-order, second-order and higher-order concepts.

Knowledge Scanning Stage

MM has a growth mandate with the expressed objective of providing new services, improving service quality and increasing their customer base. Thus, the LOB should be actively looking for new service ideas and listening to their customers. However, not all the KM elements support this purpose. The process of scanning is ad hoc and reactive. Each Service Development and Management group within MM is responsible for generating ideas and they get help from the other groups at the corporate and MM levels, but within each Service Development and Management group there are no individuals with the assigned role to actively drive the process of idea scanning. Thus, scanning is an informal and unstructured activity for individuals. The annual five-year plan does not provide the formal platform to think about market opportunities either.
Figure 27: An analysis for supportive KM at MM
However, the provisions to personalize offices, participate in informal discussions due to proximity, and meet outside the campus to think “outside the box” promotes the generation of some ideas. But MM has challenges in maintaining LOGCO’s culture of stability/direction due to the lack of adequate resources (a sort of knowing-doing gap (Pfeffer and Sutton, 2000)) which is directly affecting their ability to capture growth opportunities.

**Knowledge Evaluation Stage**

The strategic purpose during the evaluation activities (i.e., iterative sequence of theoretical, pilot and post-mortem) is to evaluate new service ideas rigorously and ensure that they align with the strategic objective of MM. However, the evaluation activities lack rigor. MM has fewer members of its own on the multi-functional team resulting in less control over evaluation and coordination of activities during evaluation.

The monitoring of the evaluation process by the Management Council ensures that ideas are being evaluated and prioritized as per MM’s objectives before implementation but the council does not use any selection criteria. The actual selection is based on “gut feeling” as opposed to established selection criteria. The ability to conduct pilot studies helps MM to understand services better as it is based on real data from customers, but it lacks the rigor to ensure that the services are evaluated thoroughly so that they have a higher probability of success.
Knowledge Transfer Stage

The strategic purpose during the transfer stage is to transfer knowledge to all the stakeholders who require it (i.e., development and support members that become part of a multi-functional team, as well as those who will be affected by the service when implemented). To transfer the knowledge, MM relies more on storytelling than documentation as the primary knowledge transfer strategy at MM is personalization. Sharing of knowledge is formally set by personal performance scorecards but individuals have not taken any informal initiatives to share their work with others (unlike the other two LOBs). In other words, they are not going beyond what is minimally required to transfer knowledge.

Since personalization is a key transfer strategy, building social ties, which MM nurtures through various formal and informal procedures (e.g., team building, special interest groups and lunch and learns), is very important. However, Records Management does not exist despite the fact that it will become a critical means of knowledge sharing within the organization in future. Due to the lack of locational proximity among half of its employees and the absence of an employee oriented and parochial culture, individuals at MM are hindered in their ability to build social ties which could foster rich communication and more opportunities to be involved in individual-to-individual knowledge transfer within the LOB.
**Knowledge Application Stage**

The goal of the application stage is to build and execute services in a way to ensure that the requirements of the organizational mandate and business strategy are met. However, this is not achieved at MM. Although MM follows the build, launch and monitor activities, it has issues with the Operations group due to which their service execution is poor (e.g., not on time delivery and undelivered messages). In addition, they do not respond to the customer feedback from the Customer Value Management group regarding their service performance which hinders their ability to improve existing services. The Customer Value Management group provides the required stimuli in the knowledge evolution cycle.

As an integrator of capabilities and as an owner of services, MM builds its own detailed business, functional and design requirements. Other responsibilities are allocated to the multi-functional team to ensure that the appropriate set of skills is available during different stages of service building and executing. But MM lacks sufficient resources to coordinate these activities effectively. In addition, the ideology of using shared corporate resources causes difficulties as these are not always made available for building specific MM services.

**7.7.3 Equifocused**

The equifocused aspect highlights how the organization moves along the knowledge evolution stages in a cyclical fashion without overemphasizing any specific stage. MM appears to be doing better but it has a challenge with this aspect too. This
equifocused aspect along with constituents (i.e., first-order informant, second-order and higher-order concepts) are represented schematically in Figure 28 and described below.

First, KM enables smooth transitioning of services from ideation to implementation. MM has implemented the Market-to-Fulfill business process which helps the LOB envision the flow of service development from beginning to end. The various steps of service development are formalized with the implementation of stage-gate and business practices procedures.

The second property that contributed to the dynamic nature of KM is the monitoring of the knowledge evolution stages. The Management Council ensures that the development is transitioning from one stage of development to the next. However, MM fails to get the internal stimuli from the Customer Value Management group regarding the performance of the existing services.

Finally, the property that contributed to the dynamic nature of KM is the ability to mobilize knowledge between the stages of knowledge evolution. During the early stages of service development, a multi-functional team is formed which stays together until the service is completely built and implemented. Thus the knowledge diffuses between stages through this team.
Figure 28: An analysis for Equifocused KM at MM

- The Market-to-Fulfill process enables MM to envision the flow of how new ideas turn into new services
- Stage gate procedures and business practices for NSD provide a roadmap of what is involved at each stage of service development

- The Management Council reviews service development and ensures that MM is moving along all the NSD stages
- Feedback from the Customer Value Management group fails to provide the stimuli to the knowledge evolution cycle

- A multi-functional team enables diffusion of knowledge among different stages of NSD

Smooth transitioning from service ideation to implementation

Monitoring to ensure that service development is moving to the next stage but it breaks down to provide an internal stimuli

Mobilizing knowledge to ensure that lessons learned at each stage of service development are carried over to the next stage

Less Equifocused
In summary, only the first property (i.e., smooth transitioning) and the third property (i.e., mobilizing knowledge) contribute to the equifocused aspect but the second property (i.e., monitoring) breaks down the cycle.

7.8 Summary

This chapter has presented a rich description of the KM within the context of NSD at MM. At each of the knowledge evolution stages, all the constructs from the conceptual model, that is, process, individuals, roles, business logic, artifacts and culture, were explored in detail. A within-case analysis was also presented. The analysis showed that the KM at MM is dissimilar to TM and PD, that is, less articulable, less supportive and less equifocused. The aspect of less articulable hinders MM in “how to manage knowledge”. The aspect of less supportive hinders MM in having KM that is not purposeful. Finally, the aspect of less equifocused hinders MM from moving along the various stages of knowledge evolution.
CHAPTER 8: CROSS-CASE COMPARISON

The previous three chapters provided rich description of the three cases and presented within-case analyses. In this chapter, a cross-case analysis is presented. The patterns identified in each case formed the foundation for the analysis. As mentioned earlier, pattern coding is useful for cross case analysis (See Chapter 3, section Data Analysis). A cross-case analysis deepens our understanding and explanation (Miles and Huberman, 1994). In previous chapters, the way knowledge is managed as it evolves through the scanning, evaluation, transfer and application stages during NSD was described in detail for each LOB. Within each case, three critical aspects of KM practices (i.e., articulable, supportive and equifocused) were deduced.

In this chapter, first the insights regarding how the management of knowledge unfolds through each stage of knowledge evolution are described. Second, a look at the knowledge management capability of each LOB is taken. Third, three theoretical principles that emerge from this research are developed, followed by a summary.

8.1 How Management of Knowledge Unfolds

NSD is standardized across LOGCO, yet critical differences emerged between TM/PD and MM. The analysis reveals that both TM and PD are relatively more capable than MM in managing knowledge as it evolves through different stages. To facilitate understanding, the second-order and higher-order concepts identified for each case are
illustrated in Table 5 and 6. The critical differences that emerged at each stage of knowledge evolution are discussed below.

**Knowledge Scanning Stage**

Scanning is the activity of acquiring knowledge and it involves an exposure to and perception of knowledge (Aguilar, 1967). It is inherent in the selection of “best” knowledge (Bourgeois and Eisenhardt, 1988). At TM and PD, KM elements for scanning are both articulable and supportive (see Table 5), in other words, the process, individuals, roles, business logic, artifacts and culture are well-defined, well-understood and purposeful. Whereas the articulable aspect enables knowledge scanning (i.e., how to scan for knowledge), the supportive aspect ensures that the knowledge scanning is purposeful and aligned with the objectives of a given stage. For instance, due to the strategic choice of being an analyzer (Miles and Snow, 1978) and the strategic requirement to launch incremental and radical services, the elements of KM at TM facilitate scanning for such purposes. On the other hand, due to the strategic choice of being a defender (Miles and Snow, 1978) and the strategic requirement to launch incremental services, the elements of KM at PD facilitate scanning for ideas that are incremental. However, KM elements at MM are less articulable and supportive. Essentially, MM lacks both aspects and, as a result, fails to manage knowledge effectively during knowledge scanning. As a consequence, scanning is mostly disorganized and reactive to the market (as was shown by the analysis in Chapter 7).
<table>
<thead>
<tr>
<th>Knowledge Evolution Stage</th>
<th>Articulable</th>
<th>Supportive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>TM</strong></td>
<td><strong>PD</strong></td>
</tr>
<tr>
<td>Scanning</td>
<td>KM elements to scan for new service ideas are well-defined and well understood</td>
<td>KM elements required to scan new service ideas are well-defined and well understood</td>
</tr>
<tr>
<td>Evaluation</td>
<td>KM elements required to evaluate new service ideas are well-defined and well understood</td>
<td>Not all KM elements (i.e., individuals/role, business logic, culture) required to evaluate new service ideas are well-defined and well understood</td>
</tr>
<tr>
<td>Transfer</td>
<td>KM elements required to transfer new service ideas are well-defined and well understood</td>
<td>KM elements required to transfer new service ideas are well-defined and well understood</td>
</tr>
<tr>
<td>Application</td>
<td>KM elements required to implement new service ideas are well-defined and well understood</td>
<td>KM elements required to implement new service ideas are well-defined and well understood</td>
</tr>
</tbody>
</table>

Notes: The shaded cells under MM highlights the differences compared to TM and PD.

Table 5: Cross-case comparison of the articulable and supportive aspects
Smooth transitioning from service ideation to implementation

Monitoring to ensure that service development is moving to the next stage

Mobilizing knowledge to ensure that lessons learned at each stage of service development are carried over to the next stage

Note: The shaded cells under MM highlights the differences compared to TM and PD.

Table 6: Cross-case comparison of the equifocused aspect

Thus, the management of knowledge during this stage of knowledge evolution is relatively better at TM and PD compared to MM. This finding was also validated through a survey. In the survey, managers from each LOB were asked to give numerically scaled responses (where 1 represents low, 4 neutral, and 7 high) regarding the existence of various elements of KM (i.e., process, individuals, roles, business logic, artifacts and culture) to facilitate knowledge scanning. In addition, respondents were also asked to provide numerically scaled responses regarding the extent to which scanning was aligned with their business strategy. The mean values of responses are provided below (Table 7). The highlighted mean value in any column is the lowest value compared to the other two values in the same column. It is evident from the table that in general MM shows a pattern of lower mean values. This provides evidence that the elements of KM do not facilitate knowledge scanning at MM as effectively as they do at TM and PD.
Knowledge Evaluation Stage

The evaluation of new knowledge generally includes various activities such as systematically trying new approaches to problem-solving, initiating pilot projects, and doing things by trial-and-error (Thomke, 1998). At TM and PD, elements of KM that carry out such activities are both articulable and supportive (see Table 5). Whereas the articulable aspect informs how to formally evaluate knowledge, the supportive aspect ensures that the knowledge being evaluated is rigorously evaluated and that it is aligned with the LOB’s strategic intent. For instance, the elements of KM at TM are such that they enable TM to evaluate both incremental and radical ideas rigorously. However, the KM elements at PD enable rigorous evaluation of incremental ideas, which is also aligned with their strategic intent. On the other hand, although MM has adopted similar practices to TM and PD, it still has challenges to overcome (e.g., lack of rigor and resources) to ensure that the knowledge evaluated will result in a service that aligns with MM’s strategic intent.

Table 7: Cross-case comparison of the scanning stage (survey results)

<table>
<thead>
<tr>
<th>LOB</th>
<th>Process</th>
<th>Individuals</th>
<th>Roles</th>
<th>Business Logic</th>
<th>Artifact</th>
<th>Culture</th>
<th>Alignment with Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM</td>
<td>5.22</td>
<td>5.61</td>
<td>5.72</td>
<td>5.17</td>
<td>3.44</td>
<td>4.78</td>
<td>5.88</td>
</tr>
<tr>
<td>PD</td>
<td>5.68</td>
<td>4.68</td>
<td>6.00</td>
<td>5.23</td>
<td>3.52</td>
<td>4.64</td>
<td>5.68</td>
</tr>
<tr>
<td>MM</td>
<td>4.75</td>
<td>4.80</td>
<td>5.75</td>
<td>4.20</td>
<td>2.80</td>
<td>4.00</td>
<td>5.67</td>
</tr>
</tbody>
</table>

7 Statistical significance for values was not calculated. This research was more interested in seeing the value patterns, which supports other qualitative evidence. Also, the sample size was small too.
Thus, the management of knowledge during knowledge evaluation is relatively better at TM and PD than at MM. This finding was further validated by survey results. In the survey, managers from each LOB were asked to give numerically scaled responses (where 1 represents low, 4 neutral, and 7 high) regarding the existence of elements of KM (i.e., process, individuals, roles, business logic, artifacts and culture) to facilitate knowledge evaluation. In addition, the respondents were asked to provide a numerically scaled response regarding the extent to which evaluation was aligned with their business strategy. The mean values of responses are provided in the table below (Table 8). The highlighted mean value in any column is the lowest value compared to the other two values in the same column. It is evident that MM shows a pattern of lower mean values for all the KM elements. This suggests that the elements of KM do not facilitate knowledge evaluation at MM as effectively as they do at TM and PD.

<table>
<thead>
<tr>
<th>LOB</th>
<th>Process</th>
<th>Individuals</th>
<th>Roles</th>
<th>Business Logic</th>
<th>Artifact</th>
<th>Culture</th>
<th>Alignment with Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM</td>
<td>5.11</td>
<td>5.83</td>
<td>5.78</td>
<td>5.11</td>
<td>3.78</td>
<td>4.78</td>
<td>5.71</td>
</tr>
<tr>
<td>PD</td>
<td>5.59</td>
<td>5.00</td>
<td>6.14</td>
<td>5.55</td>
<td>3.38</td>
<td>5.18</td>
<td>5.62</td>
</tr>
<tr>
<td>MM</td>
<td>4.70</td>
<td>4.40</td>
<td>5.45</td>
<td>4.30</td>
<td>2.90</td>
<td>3.90</td>
<td>5.53</td>
</tr>
</tbody>
</table>

Table 8: Cross-case comparison of the evaluation stage (survey results)

**Knowledge Transfer Stage**

Within the knowledge transfer stage, the primary task is to transfer knowledge to those who require it, which could include stakeholders inside or outside the organization. In each LOB, the knowledge transfer strategy is primarily driven by personalization
rather than documentation. Relative to MM, at TM and PD, the elements of KM that carry out knowledge transfer are both articulable and supportive (see Table 5). The articulable aspect informs how to transfer knowledge and the supportive aspect ensures that the required knowledge is transferred to those who require it including stakeholders within or outside the organization. 

On the other hand, KM elements at MM are less articulable and supportive. For instance, Records Management which will become a key mechanism for knowledge transfer in the future is currently inadequate, underused and, as a result, ineffective. MM also suffers from low employee satisfaction compared to the other LOBs. Knowledge sharing among individuals within MM is characterized as “lacking in richness.” Essentially, MM fails with respect to both aspects and, as a consequence, knowledge transfer is not very effective. 

Thus, the management of knowledge during knowledge transfer is relatively better at TM and PD than at MM. This finding was further validated through survey results. In the survey, managers from each LOB were asked to give numerically scaled responses (where 1 represents low, 4 neutral, and 7 high) regarding the existence of element of KM (i.e., process, individuals, roles, business logic, artifacts and culture) to facilitate knowledge transfer. The respondents were also asked to provide numerically scaled responses regarding the extent to which knowledge transfer was aligned with their business strategy requirements. The mean values of responses are provided in the table below (Table 9). The highlighted mean value in any column is the lowest value compared
to the other two values in the same column. It is evident that MM has lower mean values for all the KM elements. This suggests that the elements of KM do not facilitate knowledge transfer at MM as much as they do at TM and PD.

<table>
<thead>
<tr>
<th>LOB</th>
<th>Existence of Elements of KM to Facilitate Transfer Stage</th>
<th>Alignment with Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Process</td>
<td>Individuals</td>
</tr>
<tr>
<td>TM</td>
<td>5.11</td>
<td>5.78</td>
</tr>
<tr>
<td>PD</td>
<td>4.68</td>
<td>4.36</td>
</tr>
<tr>
<td>MM</td>
<td>4.30</td>
<td>3.85</td>
</tr>
</tbody>
</table>

Table 9: Cross-case comparison of the transfer stage (survey results)

**Knowledge Application Stage**

Application is an important stage in the evolution of organizational knowledge since it results in value creation. TM and PD have KM elements that are both articulable and supportive at this stage (see Table 5); in other words, the process, individuals, roles, business logic, artifacts and culture are well-defined, well understood and purposeful. The articulable aspect enables the building and executing of a service and the supportive aspect ensures that the requirements of the organizational mandate and business strategy are reflected within that service. In contrast, KM at MM is less articulable and supportive. For instance, MM have problems with both launching and monitoring activities. Further, their ideology of resource sharing is also hurting them.

Thus, the management of knowledge during this state of knowledge evolution is relatively better at TM and PD compared to MM. The finding is also validated by survey results. In the survey, managers from each LOB were asked to give numerically scaled
responses (where 1 represents low, 4 neutral, and 7 high) regarding the existence of elements of KM that facilitate knowledge application (i.e., process, individuals, roles, business logic, artifacts and culture). The respondents were also asked to provide numerically scaled responses regarding the extent to which application was aligned with their business strategy. The mean values of responses are provided in the table below (Table 10). The highlighted mean value in any column is the lowest value compared to the other two values in the same column. It is evident that MM has lower mean values for all the KM elements. This suggests that the elements of KM do not facilitate knowledge application at MM as much as they do at TM and PD.

<table>
<thead>
<tr>
<th>LOB</th>
<th>Existence of Elements of KM to Facilitate Application Stage</th>
<th>Alignment with Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Process</td>
<td>Individuals</td>
</tr>
<tr>
<td>TM</td>
<td>5.33</td>
<td>5.44</td>
</tr>
<tr>
<td>PD</td>
<td>5.32</td>
<td>4.45</td>
</tr>
<tr>
<td>MM</td>
<td>4.65</td>
<td>4.25</td>
</tr>
</tbody>
</table>

Table 10: Cross-case comparison of the implementation stage

In addition to being articulable and supportive, KM at TM and PD is also equifocused (see Table 6). It helps the two LOBs move along the knowledge evolution cycle in a cyclical fashion. In contrast, MM faces challenges. Although it is focused on all the stages (though not as well as TM and PD as is evident from articulable and supportive aspects), the knowledge cycle breaks down during monitoring as it fails to respond to the internal stimuli from the Customer Value Management group. The Customer Value Management group provides important feedback regarding MM’s
current services. This perhaps contributes to their low customer satisfaction (to be explained later).

In summary, there are critical differences regarding the three key aspects of KM between TM/PD and MM. At MM, these aspects are present to a lesser degree at each stage of knowledge evolution which limits its knowledge management capability. The differences are also depicted in Figure 29.

8.2 Knowledge Management Capability

From the discussion presented above, it is evident that both TM and PD manage their knowledge better than MM within the context of NSD. Thus, TM and PD exhibit relatively higher capability in managing knowledge (i.e., KMC) compared to MM. In order to triangulate this finding further, various methods were used which are described below.
Figure 29: KM at TM, PD and MM

Diagrammatic Note:
“A” refers to Articulable; “S” refers to Supportive and; “E” refers to Equifocused.
Dashed line signifies that the aspect was present to a lesser degree.
Survey

The KMC of each LOB was also measured by means of a survey. The mean values of responses provide further support of the findings (Tables 11 and 12). Table 11 shows the result of how much each LOB supports or engages in knowledge activities and Table 12 shows the result of how each LOB performs on knowledge activities (where 1 represents low, 4 neutral, and 7 high). The low values are highlighted and they show that MM is relatively less capable in managing knowledge at each stage of knowledge evolution.

<table>
<thead>
<tr>
<th>Knowledge Evolution Stage</th>
<th>LOB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TM</td>
</tr>
<tr>
<td>Scanning</td>
<td>5.67</td>
</tr>
<tr>
<td>Evaluation</td>
<td>5.56</td>
</tr>
<tr>
<td>Transfer</td>
<td>5.61</td>
</tr>
<tr>
<td>Application</td>
<td>5.56</td>
</tr>
</tbody>
</table>

Table 11: KMC

<table>
<thead>
<tr>
<th>Knowledge Evolution Stage</th>
<th>LOB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TM</td>
</tr>
<tr>
<td>Scanning</td>
<td>5.39</td>
</tr>
<tr>
<td>Evaluation</td>
<td>5.06</td>
</tr>
<tr>
<td>Transfer</td>
<td>4.78</td>
</tr>
<tr>
<td>Application</td>
<td>4.89</td>
</tr>
</tbody>
</table>

Table 12: KMC
“Direct Encounter” Evidence

During the interviews, the participants were often asked to comment on their LOB’s and other LOBs’ capabilities in managing knowledge during NSD. This revealed various insights, as described below, further confirming the findings.

**LOGCO’s past emphasis.** Although LOGCO has been in the TM, PD and MM businesses for a very long time, its business focus has always been more on TM and PD. With the creation of LOBs, MM is now getting equal corporate attention. However, building capabilities often takes time as an organization learns, accumulates and leverages knowledge (Ethiraj, et al., 2005; Zollo and Winter, 2002).

**New leadership.** MM has only recently started building up its senior leadership team. Their Senior Vice President (SVP) was hired less than two years ago, in contrast to the SVPs in TM and PD who have both worked at LOGCO for many years. Even during the period in which the case study was conducted, the governance structure of MM was evolving. Nearly one-third of the senior positions were filled during that time (Figure 24). The lack of consistent and stable leadership has hindered the development of adequate resources and capabilities that are required during the development of services. A manager acknowledges,

“For us, it was the leadership that was lacking. We did not have any strong leader and there was no one there for over a year and half. So the organization was struggling. But now, [LOGCO] is looking at us for growth. The corporation is relying on our business to offset the expected decrease in [TM’s] business.”
There are a lot of expectations of us and this creates pressure. Last year we did extremely well. Our products grew by 10-15%. We did a great job last year. Now that we have our SVP, she is creating her own team. We now have lot of opportunities; we have just hired two General Managers. My General Manager was appointed just a few months ago.”

Cross validation. During interviews, managers often commented on each others’ capability within the context of service development. A manager commented on the overall process of service development within each LOB,

“I don't think MM gets it, honestly! The people who do get it are in TM and Parcels. It is hard for me to figure out if we are doing all these stages in a sexy way but we are doing scanning, experimenting and developing services… we are meeting our objectives but [MM] is not.”

He further adds,

“For example, MM launched a service that does not fit the operation’s requirement. They have not yet figured out how to carry out their message pieces. They have the concession from the operations to carry bigger pieces. Their competition is with newspapers that have a different core competency than we do. We should have figured that out a long time ago then built and marketed products that actually have the competitive advantage…I am not sure if the [MM] people are on top of all this.”

“If you look at their service indices, I wonder why [MM] doesn’t hit it. Their service performance history is pretty bad. Why is it so bad, why do they not
improve it? Have they gone the right way to improve it? Even if they have a
decent product, they will be limited to what they can market because of the quality
of products. But at the same time they are trying to expand their product offerings.
They are doing it on a pretty weak foundation. So I sometimes wonder what they
are up to.”

Another manager, while commenting on capability, remarks,

“In terms of capability, I don’t get it. I don’t know why MM doesn’t have the
capability. All the groups were created equal. They have a lot of tasks in front of
them and they are supposed to bring in a lot of revenue. I don’t know why they
cannot set up. They have the support of the company behind them. It is always the
same thing - lack of leadership. I think they are not looking at the market with a
solid amount of understanding. I don’t think they have a solid product in a lot of
cases. I don’t think that you can build from something that is broken. They are
building on a product that has got a 60-70% performance standard. It is not good.
Their product people don’t get deep enough on the operations side. They have
huge problems in operations.”

Similar comments were heard from various corporate managers as well. However,
the biggest validation came when very senior managers from MM accepted that TM and
PD do a better job on service development:

“The MM team has only in the last three months really started using the [NSD]
process…the majority of our services are broken.”
**Proxy Measures**

LOGCO monitors its service performance through two key measures: a service delivery index and a customer value index. These two measures are quality measures (Voss, et al., 1992). The service delivery index measures the percentage of messages/packages delivered on time, whereas the customer value index measures overall customer satisfaction with LOGCO’s services. The customer value index percentage represents the number of full scores on the various dimensions of customer satisfaction.

These two indices represent proxy measures for KMC. The literature has various examples that show clearly that higher capability is often related to higher performance (e.g., Bharadwaj, 2000; Tippins and Sohi, 2003). In addition, the indices also represent intermediate performance measures that are directly affected by KMC. The customer value index (Table 13) and service delivery index (Table 14) for the three LOBs confirm that MM has a relatively lower capability than TM and PD (cells are highlighted).

<table>
<thead>
<tr>
<th>LOB</th>
<th>Years</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2004</td>
<td>2005</td>
<td>2006</td>
</tr>
<tr>
<td>TM</td>
<td>n/a</td>
<td>n/a</td>
<td>25%</td>
</tr>
<tr>
<td>PD</td>
<td>n/a</td>
<td>21%</td>
<td>24%</td>
</tr>
<tr>
<td>MM</td>
<td>10%</td>
<td>11%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Table 13: Customer value index
<table>
<thead>
<tr>
<th>LOB</th>
<th>2006</th>
<th>2007 (during the time of the case study)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM</td>
<td>96.4%</td>
<td>93.8%</td>
</tr>
<tr>
<td>PD</td>
<td>94.4%</td>
<td>89%</td>
</tr>
<tr>
<td>MM</td>
<td>&lt; 70%</td>
<td>&lt;70%</td>
</tr>
</tbody>
</table>

Table 14: Service delivery index

8.3 Emerging Theory

The concept of a knowledge organization can be traced back to as early as the 1960s when phrases such as “knowledge work” and “knowledge worker” were came into use (Drucker, 1993). But it was not until the 1990s that the debate about knowledge management became established. Early predictions such as “[the] basic economic resource…is and will be knowledge” (p.7) and that knowledge “has become the resource, rather than a resource” (p.41) have become true (Drucker, 1993). Knowledge is a fundamental asset for organizations in the contemporary economy and the centrality of knowledge in organizations is a primary theme in the emergence of a knowledge-based view (Conner and Prahalad, 1996). Therefore, the ability to manage knowledge within an organization has emerged as a fundamental organizational capability. This research sheds insights into this capability (i.e., KMC).

This research demonstrates how each of the knowledge processes and the OM infrastructure function to contribute to the management of organizational knowledge. Contrasting TM, PD and MM with each other on a common set of KM elements, suggests that
“The organizations with higher knowledge management capability have knowledge management that is articulable, supportive and equifocused.”

The three aspects – articulable, supportive and equifocused – are further discussed below.

An attempt is also made to situate the findings within the existing concepts in order to derive key insights. According to Eisenhardt (1989), “Tying the emergent [concepts] to existing literature enhances the internal validity, generalizability, and theoretical level of theory building from case research” (p. 545).

Articulable Aspect

It is critical that an organization has well-defined and well understood KM elements (i.e., process, individuals, roles, business logic, artifacts and culture) at each stage of knowledge evolution (i.e., scanning, evaluation, transfer, and application). The elements can exist either in an explicit form (e.g., clear written policies or rules) or in a tacit form (e.g., commonly understood policies or rules, shared values) that is conscious and can be more or less completely articulated. This articulable aspect of KM elements ensures that an organization knows how to manage knowledge at each stage of knowledge evolution. Both TM and PD have KM elements that are articulable either in the tacit form or in the explicit form at each stage of knowledge evolution. This enables TM and PD to manage knowledge better than MM. For example, at TM and PD, the scanning process is an informally defined process (i.e., in a tacit form) which is well understood within the LOBs. Similarly, the roles of individuals for scanning are specifically defined during this stage. In contrast, the scanning process and the roles of individuals at MM are not well defined or understood. In fact, violations of the articulable
aspect are found at each stage, which affects their ability to manage knowledge (see Figure 29).

Although the importance of the articulable aspect has been discussed in various studies, the focus of these studies has been strictly on knowledge application (De Boer, et al., 1999; Grant, 1996; Van den Bosch, et al., 1999). For instance, Grant (1996) suggests that there are two mechanisms to apply knowledge–direction and routinization. Direction refers to the means by which knowledge can be communicated between specialists and non-specialists. One way is to embody such knowledge in standard operating rules. Direction involves codifying tacit knowledge into explicit rules and instructions. Routinization provides a mechanism for coordination which is not dependent upon the need for the communication of knowledge in an explicit form. It refers to the development of a sequence of individual or organizational actions that require relatively little attention during execution. This coordination relies heavily upon informal procedures in the form of commonly understood rules. Similarly De Boer et al. (1999) and Van den Bosch et al. (1999) explain that there are three mechanisms for knowledge integration–systems, coordination and socialization. The system mechanism refers to directions, policies, procedures and manual used to integrate knowledge. The coordination mechanism is based on the relationships between units. It develops in a firm as a result of training, job-rotation, and participation. The socialization mechanism refers to the integration of knowledge by specifying broad, tacitly understood rules for appropriate action. This mechanism is produced as a result of a shared ideology and identity among units.
This research shows that such mechanisms must be devised for all the elements of KM at each stage of knowledge evolution including scanning, evaluation, transfer and application. As one of the managers from PD, during interviews insisted,

“The best thing about having well-defined practices for developing services is that we know exactly what we want to do and how we want to do it on a consistent basis”

Supportive Aspect

In addition to being articulable, it is important that the KM elements at each stage of knowledge evolution are supportive; that is, purposeful. It is important for organizations that they identify the most important objective(s) at each stage of knowledge evolution and ensure that KM elements support those objective(s). Both TM and PD exhibit this aspect. For instance, the strategic intent of TM is to scan for ideas that are both incremental and radical, which in turn is aligned with their strategy of “defend, build and grow.” In order to further this goal, TM is creating a culture in which individuals are encouraged to consider innovation and efficiency during the scanning stage. Among other things they have also designed weighted flexible criteria to evaluate both radical and incremental ideas during the evaluation stage. Similarly, PD has created a culture in which individuals are encouraged to think only about efficiency both during the scanning and evaluation stages. Further, PD’s weighted flexible criteria used during the evaluation stage screens only incremental ideas. Thus, having supportive KM elements enables management of knowledge. As one of the managers from TM pointed out,
“We are a process-centric company that provides services, so we have a systematic process and supporting infrastructure for service development. But the fact that these processes and infrastructure are linked to our overall strategy is absolutely critical. Our flexible weighted criteria are a perfect example that reflects our strategy.”

In contrast, MM does not satisfy this aspect at any stage (i.e., scanning, evaluation, transfer, and application).

KM should be tightly related to strategic objectives. This supportive aspect has been advanced in the KM strategy (Davenport, et al., 1998; Grieiner, et al., 2007; Hansen, et al., 1999), knowledge strategy (Zack, 1999) and alignment (Sabeherwal and Sabeherwal, 2007) literatures. The focus of these studies has been on knowledge management supporting or aligned with overall business strategy, which leads to positive organizational performance. This research makes a similar argument but provides micro-level descriptions (at the level of KM elements) about what it means to be supportive or aligned.

**Equifocused Aspect**

The focus of articulable and supportive aspects of KM elements is static in nature. The emphasis is on managing knowledge at each stage of knowledge evolution rather than on how the organization continuously moves along the knowledge evolution cycle. The equifocused aspect ensures that the knowledge is continuously managed in a cyclical manner from the scanning stage to the application stage and back to the scanning stage.
Within the context of NSD, it enables them to manage the complete life cycle of services. In this study, it is evident that both TM and PD are equifocused, which helps them advance from the scanning stage to the application stage during NSD and also mobilize knowledge between stages. Further, during the application stage, they listen to their customers through monitoring; this enables them to scan for new ideas to improve their service offerings. This also facilitates the life cycle management of their services.

By focusing on all stages and mobilizing knowledge between stages, TM and PD are able to explore and exploit new knowledge in a cyclical fashion (March, 1991). The exploration activities are carried out at the knowledge scanning and the knowledge evaluation stages when the necessary and appropriate knowledge is selected. Exploitation activities, by contrast, are conducted during the knowledge transfer (to replicate knowledge in diverse contexts) and knowledge application stages (to absorb transferred knowledge into existing knowledge). However, MM, although focused equally on all the stages of knowledge evolution, eventually violates the equifocused principal by not paying attention to monitoring, which, in turn, affects their service offerings. Thus, as one of the managers from TM revealed during an interview, being equifocused is very critical:

“The ability to move from ideation to a market offering and then back to ideation is extremely important. You cannot afford to be stuck at one stage. Before we implemented Market-to-Fulfill, we often were stuck at various stages of service development and it did not add any value to our bottom line.”
8.4 Summary

This chapter compared patterns from each case and found that the organizations with higher knowledge management capability have knowledge management that is articulable, supportive and equifocused. The articulable aspect refers to the fact that an organization has well-defined and well understood KM elements at each stage of knowledge evolution. The elements can exist either in an explicit form or in a tacit form that is conscious and can be more or less completely articulated. This articulable aspect of KM elements ensures that an organization knows how to manage knowledge at each stage of knowledge evolution. In addition to being articulable, it is important that the KM elements at each stage of knowledge evolution are supportive. It is important for organizations that they identify the objective(s) of each stage of knowledge evolution and ensure that all KM elements support those objective(s). Finally, the equifocused aspect ensures that the knowledge is continuously managed in a cyclical manner from the scanning stage to the application stage and back to the scanning stage.
CHAPTER 9: CONCLUSION

This research was inspired by the state of KM in both the literature and in practice. Despite being a key practice in the management of the most important resource, “knowledge,” the understanding of KM has suffered various shortcomings. One of the key shortcomings in the field is the lack of theoretically grounded conceptualizations of KM. In addition, there is a lack of an understanding as to “why some organizations succeed with their KM initiatives and others do not.” All this has resulted in the chaotic growth and a proliferation of KM and models. This has also hindered the development of a cumulative tradition in KM research. As a result, this research is an attempt to build a theory that will address these two shortcomings. First, an integrative conceptual model for KM which is grounded in evolutionary theory, organizational learning and organizational memory is built. Second, the model is investigated to build three critical aspects of KM.

This study provides some key insights for the field of KM. It also confronted some challenges. Both the challenges and contributions are described below.

9.1 Overcoming Challenges

Validity and reliability are always a concern in any research. Yin (1994) offers recommendations for establishing validity and reliability in case-method research conducted in a positivist paradigm. These recommendations were closely followed in this study. Construct validity was addressed by using multiple approaches to data collection,
establishing a chain of evidence, and having key staff at LOGCO review drafts of the manuscript. Internal validity was addressed through pattern matching and explanation building in the analysis of qualitative data. Reliability was established through the use of a structured methodological protocol and a qualitative analysis tool (NVIVO) to assist in maintaining and structuring the data in an auditable fashion. In order to enforce external validity, a multiple case study design was used. Whereas, the TM and PD cases provided literal replication, MM provided theoretical replication. Specific procedures used to address these concerns are shown in Table 15.

<table>
<thead>
<tr>
<th>Threat</th>
<th>Procedures to address concerns</th>
</tr>
</thead>
</table>
| Construct Validity | • Multiple perspectives on concepts (multi-informant, multi-organizational level)  
                     • Triangulation of multiple sources of evidence (interviews, performance data, internal and external documents)  
                     • Chain of evidence  
                     • Multiple reviews by key informants |
| Internal Validity  | • Explanation-building through iteration between within-case and cross-case pattern matching. |
| External Validity  | Through multiple case studies that provide theoretical and literal replications |
| Reliability        | • Use of case study protocol  
                     • Use of semi-structured interview protocol  
                     • Taped and transcribed interviews  
                     • Qualitative analysis software to assist in record-keeping |

Table 15: Validity

Further, an attempt was made to achieve a balance between the control of context and variance in KMC. In order to control the extraneous effects on KMC, three LOBs from the same organization were sought. The LOBs are managed in a similar way and compete in similar markets. It is possible that this reduced the extent of variance in KMC.
that would have been preferred in this research. However, critical differences were still identified and it was possible to provide theoretical and literal replications. Although an attempt was made to select three different companies from the same product and market segments, due to competition and time restrictions, this effort was unsuccessful. However, this provides an interesting avenue for further research: a study of multiple companies within the same product market segment (most likely competitors). It is hoped, therefore, that a stream of research will provide further insights to both researchers and practitioners.

Further, the research question suggested a research design in which we build rather than test theory. Thus, Eisenhardt’s (1989) guidelines for theory building case study research were also used to further improve the research process. Table 16 summarizes the study design, comparing it to recommendations made by Eisenhardt’s (1989).

<table>
<thead>
<tr>
<th>Eisenhardt’s (1989) Recommended Steps</th>
<th>Research Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Getting started: define research question with <em>a priori</em> constructs</td>
<td>A research was defined. Built a theoretically grounded KM model</td>
</tr>
<tr>
<td>2 Select cases based on specific population and sampling to replicate or extend emergent theory</td>
<td>Selected three cases based on their variability to manage knowledge within the context of NSD</td>
</tr>
<tr>
<td>3 Craft instruments to promote triangulation and among data sources and investigators</td>
<td>Pilot was conducted to build a semi-structured questionnaire; various data sources were utilized</td>
</tr>
<tr>
<td>4 Enter field in such a way as to overlap data collection and analysis</td>
<td>Data collection and the analysis of the data were conducted in parallel; this also helped to identify new questions and new informants</td>
</tr>
<tr>
<td>5 Analyze data within and across cases</td>
<td>Wrote up each case separately. Created tables to identify patterns across cases</td>
</tr>
<tr>
<td>6 Shape hypotheses by looking for replication not sampling logic; iterative</td>
<td>As each case unfolded, discussed and took extensive notes to shape emerging</td>
</tr>
</tbody>
</table>
tabulation of evidence for each construct
refine definition of constructs
relationships among constructs; used theoretical and literal replications

7  Enfold literature by comparing results with conflicting and similar literature
   Compared emerging theory with NSD, as well as KM, OL and OM literatures

8  Reach closure about when to stop iterating between theory and data
   Stopped collecting data and iterating when conclusions matched evidence, were practical, and interpretable to participants not involved in analysis

Table 16: The research design compared to Eisenhardt's (1989) recommendations

9.2 Contributions to Theory

Notwithstanding the challenges, the research makes a number of contributions toward the development of a theory for KM. The major contribution of this study is the finding found that organizations with higher knowledge management capability have knowledge management that is articulable, supportive and equifocused. The articulable aspect refers to organizations having well-defined and well understood KM elements at each stage of knowledge evolution. The elements can exist either in an explicit form or in a tacit form that is conscious and can be more or less completely articulated (Balconi et al., 2007). This articulable aspect of KM elements ensures that an organization knows how to manage knowledge at each stage of knowledge evolution. In addition to being articulable, it is important that the KM elements at each stage of knowledge evolution are supportive. The supportive aspect refers to organizations having all the KM elements supporting objectives of each stage of knowledge evolution. Finally, the equifocused aspect refers to organization being able to continuously manage knowledge in a recursive manner from the scanning stage to the application stage and back to the scanning stage.
Given our observation of the co-existence of LOBs with higher KMC and the three aspects, an argument can be made that the three aspects actually lead to higher KMC. Within the context of NSD, the well-defined and well understood KM elements ensure that organizations know how to manage knowledge at each stage of NSD; the supportive nature of KM elements ensure that the objectives at each stage of NSD are rigorously met, and; the organization is able to move along NSD, which in turn is leads to better services, in other words, to higher KMC. This has implications for future research, in which such a causal relationship between the three aspects of KM elements and KMC (or performance) can be tested and, if corroborated, would indicate that organizations implementing KM should ensure that their KM initiatives lead to articulable, supportive and equifocused KM.

The research makes another critical contribution. El Sawy and Josefek (2003) argue that management of knowledge around key business processes should be the focus of KM studies in the future. There are two ways to view KM within an organization – a functional view and a process view. From a functional view, KM can be implemented to support the effective application of existing knowledge across different (corporate) functions/branches and the creation of new knowledge. The goal of such KM initiatives is usually fourfold: “to ensure that knowledge from one part of the organization is applied to activities in other parts; to ensure that knowledge is shared over time so that the organization benefits from past experience; to make it possible for people from various parts of the organization to find each other and collaborate to create new knowledge; and to provide opportunities and incentives for experimentation and learning” (Zack, 2003,
p.68). On the other hand, from a process perspective, KM can be implemented to support key business processes at the organization. Basically, KM is implemented to make a process more efficient and effective by managing knowledge around various stages of the process. The focus of this research was a process view focused on NSD. The goal of this view of KM could be the same as those mentioned above but the scope of this KM is more on a given process than on functions.

The research makes additional contributions. First, as mentioned earlier, various researchers have voiced their concern regarding the practice driven nature of KM and the scarcity of studies on the underlying paradigms of KM. They have suggested that there is a need for comprehensive studies that look at the theoretical underpinnings of KM (Alvesson and Karreman, 2001; Hazlett, et al., 2005). This research identifies three theoretical aspects of KM where the conceptualization of KM is itself theoretically grounded and is built on the tenets of rich evolutionary theory, OL and OM literatures.

Second, the conceptual KM model is built on a life cycle model of organizational learning. This enables the exploration of various stages of knowledge evolution, as opposed to just thinking about, for example, knowledge transfer and sharing. Although the model built in this research resembles other OL and KM models in the literature, its conceptual framework is distinct. It enhances other “pure process” models by explicitly incorporating the key elements of OM infrastructures. Within the realm of KM, this is important because it allows researchers and organizations to think about contextual variables including individuals, culture and other critical aspects of KM (Rubenstein-
Montano, et al., 2001; Tsoukas and Vladimirov, 2001). According to Thompson and Walsham (2004b), the failure to consider concepts such as these imposes a distinct limitation on various KM conceptualizations.

Third, despite belonging to the same organization and sharing similar markets, all three LOBs exhibited distinct strategies (i.e., TM is an analyzer, PD is a defender and MM is a reactor). This research provides insights into the KM practices using the well established typology by Miles and Snow. Both TM and PD are equally capable in managing knowledge but they both exhibit distinct KM practices. For instance, the culture at TM during scanning is about promoting balance between innovation and operational excellence, whereas at PD it is all about promoting operational excellence. Similarly the flexible weighted criteria for project selection within both LOBs are very different. This suggests that firms with different business strategies require different KM efforts.

Fourth, it appears from the research that the impact of KM on organizational performance is intermediate which corroborates the findings of other researchers (McKeen et al, 2006). Both TM and PD have higher service delivery and customer value indices, but the financial growth rate of these two LOBs is much lower than that of MM. However, in terms of revenue, while both PD and MM have similar revenues, TM has much higher revenue. To a large extent, both these financial measures are attributed to the markets within which the LOBs compete. This is a significant finding given the fact that the research studying the impacts of KM on organizational performance is still in its
infancy and has not been carefully demonstrated (Foss and Mahnke, 2003; Singh, et al., 2006). Some researchers (Tanriverdi, 2005) have shown that KM has a positive impact on organizational performance but at the same time others have demonstrated that it can also have a negative effect (Chakravarthy, et al., 2003).

Fifth, although NSD is an important context in the service industry, which is growing at a very rapid rate, in the past, less attention has been paid to it in comparison with NPD. This research has attempted to bring NSD to the foreground.

9.3 Contributions to Practice

The research also makes various contributions to practice. First, the research suggests that organizations must think about knowledge from a life cycle perspective. This research proposed that organizational knowledge evolves through four stages chained in a recursive knowledge cycle. Thus, four knowledge processes are required to manage evolving knowledge: the knowledge scanning process, knowledge evaluation process, knowledge transfer process, and knowledge application process. The model further proposes that, as knowledge evolves, it is enabled by and embedded in five OM infrastructures: individuals, culture, roles, business logic and artifacts. As a result, KM should be understood as the collection of knowledge processes and OM infrastructures engaged in by an organization to manage its knowledge. This view of KM suggests that organizations must pay equal attention to knowledge processes and OM infrastructures and the interactions between them. This view of KM differs from the traditional process-oriented views (e.g. Alavi and Leidner, 2001), which emphasize knowledge processes.
exclusively. Often organizations build knowledge processes but under-invest in the infrastructure in which the knowledge resides, or vice versa. Organizations must achieve a balance between their knowledge processes and OM infrastructures.

Second, organizations must attain an adequate level of competence in all the knowledge processes and OM infrastructures. For instance, organizations cannot afford to be good in scanning for new knowledge but poor in evaluating that knowledge. Organizations’ KM initiatives are only as strong as their weakest knowledge process or OM infrastructure.

Third, an organization that implements KM must achieve a balance in the management of knowledge at various stages of knowledge evolution so that it can explore and exploit knowledge. The organization, for instance, cannot be scanning more quickly than it can evaluate or integrate that knowledge. Organizations have limited resources and, if they divert more resources toward one stage, other stages will lack resources (Pfeffer and Salancik, 1978). The results from the study indicate that the two LOBs that have effectively deployed KM (i.e., TM and PD), focus their attention equally across all knowledge processes and OM infrastructures.

Fourth, as mentioned earlier, during the course of this research various organizations were contacted. The executives from those organizations that were planning to implement KM often commented that they would like KM initiatives to be in the background and to be informal. However, this research suggests that the
implementation of KM in an organization should be well-defined and understood (i.e., articulable) and supportive (i.e., strategically purposeful). In other words, organizations must translate their “knowledge management narratives or intentions” into specific initiatives which are linked to a knowledge process and to OM infrastructures at each stage of knowledge evolution.

9.4 Future Research

It is hoped that this study will stimulate further developments in the field. The research provides various critical avenues for extension. First, this research was conducted in an industry which is moderately turbulent. Similar case studies could be conducted in organizations within a high-turbulence industry and within a low-turbulence industry. Such a study may be able to indicate how KM differs among industry environments. A firm’s embeddedness in its external environment is an important determinant of capabilities (Singh and Dacin, 2005).

Second, similar research could also be conducted among organizations that belong to different categories of strategic choice typologies (e.g., Porter’s typology) to understand how KM differs from or is affected by the strategic choices made by an organization. More such research will help further clarify the nature and characteristics of knowledge processes and OM infrastructures.

Third, as mentioned earlier, a study of multiple companies within the same product/service market segment (most likely competitors) must be conducted. Such a
study may help highlight prominent differences among the KM elements, which could extend the theory built in this research. The organizations selected in this research are LOBs under the same organization and are, to an extent, similar.

Fourth, researchers could use the conceptual model developed in this research to construct a scale to measure KM. The scale could be used to conduct a survey-based study which would, perhaps, further clarify the impact of KM on organizational performance.

Fifth, one of the interesting findings of this research concerned the seasonal effects on knowledge sharing. All three LOBs rely heavily on geographically proximity to build social ties which is important for a personalization strategy and thus for the transfer of knowledge. However, some of the managers commented that their tendency to utilize these social networks and, hence, knowledge sharing, is drastically reduced in the winter and dramatically increased in the summer due to campus design. This will be an interesting line of research which could inform how organizations should design their workspace (Chan, et al., 2007) or conceive organizational ecology (Becker, 2007) or Ba (Nonaka and Konno, 1998).

Finally, while comparing the employee satisfaction index among the three LOBs, it was found that the employee satisfaction index is relatively low at MM (64%) compared to TM (72%) and PD (68%). However, the employee satisfaction at PD was between TM and MM. The relationship between KM and human resource management
(HRM) is an emerging research theme which is based on the assumption that personnel issues are the key factors that are most likely to affect KM (Afiouni, 2007). It appears from this research that perhaps the effect of HRM practices on KM may not be straightforward. More research is required to clarify the link.

### 9.5 Other Personal Insights

As a researcher, conducting this research was very fulfilling. Personal observations were made during the whole process which could be interesting avenues for future thinking. First, the nature of this research evolved throughout. Investigating the role of IT in support of KM was a second research question of this research but later on it was dropped because IT’s role in support of KM was not significant. This was an interesting observation from the point of view that many organizations relate KM with IT. Perhaps, we need to go back to the basics of KM where things such as people, culture, processes, etc are most critical factors in KM. Second, some of the KM elements (e.g. artifacts) did not play a very significant role in this study compared to other elements (e.g. culture, individuals). But all these elements are important for KM. Many organizations, especially product organizations, are very attentive to the need of creating spaces where people can, for example, experiment or develop their ideas.

### 9.6 Summary

As mentioned, the research was inspired by the shortcomings of KM in the academic and practice fields. The research, through the qualitative multiple case study
design, has attempted to build a theoretical foundation for KM -- a field which has been mostly practice driven. In summary, this research proposes a theoretically grounded model for knowledge management that is built on the tenets of evolutionary theory, OL and OM. The research also proposes three critical theoretical principles of KM, namely articulable, supportive and equifocused. It is hoped that this research will promote a subsequent stream of investigation into the management of “the” critical organizational resource: knowledge.
REFERENCES


Dear Senior Executive,

My name is Satyendra Singh, and I am a PhD candidate at the Queen’s School of Business, Canada. To complete my PhD, I am conducting research entitled “The Development and Investigation of a Conceptual Model to Understand Knowledge Management.” The objective of this research is to gain an in-depth understanding of how organizations manage their knowledge. Despite one of the most influential business practices of recent times, many organizations (approximately 80%) have reported failure in their knowledge management (KM) initiatives. This doctoral research should help prescribe effective ways of implementing KM. The research has already received ethics clearance from Queen’s University, and it will be funded by Queen’s School of Business and the Social Sciences and Humanities Research Council of Canada.

I would like to invite your organization to participate in this study. The research will be carried out within the context of the strategic planning area but a specific function under strategic planning could be suggested for study by your organization. Immediately upon completion of this research in August 2007, I will prepare an executive report which I hope to present to your organization. The research should be valuable as it will help to identify both the weak and strong areas of KM in your organization. During the course of my research, your organization will also have access to my faculty supervisor, Dr. James D. McKeen, who is a renowned researcher with extensive consulting and KM experience.

The research would involve my conducting interviews with managers in your organization. Depending on the structure, the managers to be interviewed could include the Chief Information Officer, Chief Knowledge/Learning Officer, senior product/service managers and senior IS managers. The interviews would be conducted at the participating manager’s workplace in person or by phone at their convenience. Each participant will be interviewed for about 60-90 minutes. I would also hope to review relevant documents from the past as well as current strategic planning activities and KM initiatives. All data gathered, in any way and at any point in time, would be kept strictly confidential.

I obtained your address from your company’s website. This request is being sent to inform you about the research and to invite you to be part of it. For information about Queen’s School of Business see http://business.queensu.ca and for information about my faculty advisor see http://business.queensu.ca/faculty/index.php.

I am attaching a Letter of Information which provides additional details about the research. I sincerely hope that you will agree to participate in this doctoral research. I
look forward to your response via e-mail or telephone. Should you have any questions, I would be pleased to answer them. Many thanks.

Sincerely,
Satyendra Singh, PhD Candidate, MBA, MS
ssingh@business.queensu.ca,
Home Phone: (613) 825-9780
Queen's School of Business, Queen's University
Kingston, Ontario, Canada K7L 3N6

Attachments:
1) Letter of Information
LETTER OF INFORMATION

Importance of My Research

A recent issue of Knowledge Management News stated that the investment in knowledge management (KM) initiatives will exceed more than $13 billion by 2007. This is more than a six-fold growth from $2 billion in 2002. However, at the same time, the majority of organizations are reporting that they are not realizing full benefits from their investments. Some have even suggested that KM is a double-edged sword and organizations have to handle their KM initiatives with caution. Having worked in industry for over 16 years, the issue resonates with me.

Based on my past research, data from The Monieson Centre (formally known as The Centre for Knowledge Based Enterprises) at Queen’s University, and an extensive review of academic and practice journals, I have come up with a normative model for KM that has the potential to help organizations. However, the model has to be empirically validated in an organizational setting. For example, one of the highlights of my model is an emphasis on continuous knowledge creation, an aspect that is largely ignored in most organizational KM initiatives.

Goal of My Research

More specifically, the focus of this research is to understand how organizations use KM while engaged in strategic planning. For example, I am interested in understanding, when an organization is doing strategic planning such as planning for new product/service development,

1) How it generates new ideas, and converts those ideas into actual products/services.
2) How the related processes can be improved and/or better supported by information technology and KM initiatives.

In the case of your organization, I am hoping to choose a few businesses/business units that will differ in their KM and in their effectiveness at strategic planning. This essentially allows me to compare and draw out insights on what is working and what is not. Based on these insights, I will “fine-tune” my KM model.

Benefits to Your Organization

The study compares and contrasts organizational processes related to strategic planning across multiple business units/lines of business. This allows me to trace strong and weak organizational processes and make specific recommendations for improvement. Your organization will benefit from this research in many other ways too:

1) I will prepare an executive report for each participating business unit. I hope to submit and make a presentation of my findings to executives at your organization immediately after my thesis defense, which is scheduled for August 2007.
2) Each business unit that participates in my research will also receive a tailored knowledge management capability assessment report. This will enable you to identify high and low performing businesses/business units along with the factors that are affecting their performance. Based on these findings, specific recommendations will be made for an improvement.

3) During the course of my research, your organization will have access to my literature-based KM models as well as to the events at The Monieson Centre at Queen’s University, if desired. The Monieson Centre is involved in various KM-related projects with Fortune 500 companies and the Canadian Federal Government. See business.queensu.ca/knowledge.

4) Through me, you will also have free access to the expertise of my committee members who have extensive consulting and research experience in KM.

5) Please note that the intended context of this study is strategic planning but specific function under strategic planning (e.g., new product development, new service development, new market entry and other such functions) will be identified based on your company’s input. Thus, my research provides you with an opportunity to pick a critical function that you want to analyze and improve.

6) Once the research is complete, it will be published in business journals such as Sloan’s Management Review and Harvard Business Review. Thus, this research can be treated as a unique marketing opportunity both among the business practitioners and academics.

All this will be done at no charge. If an organization were to hire consultants to do this review, a conservative estimate is that they would be charged $30-50,000 or more.

Data Collection Method

Data collection will occur in two stages. If your organization agrees to participate, in the first phase, with your help I will identify three business units that are suitable for the study. Once the units are identified, I will work with a contact person within each unit to arrange general interviews with a few (i.e., 2 or 3) senior managers so that I can understand the business and its KM. In the second phase, I will identify a small number of senior and middle level managers (i.e., 7 to 10) who would be interviewed to investigate specific research questions. Alternatively, or in addition, a questionnaire can be distributed to obtain more specific data. Once the data collection phase is over, I will prepare my thesis document as well as an executive report for your organization.

Ethics

I have already received research ethics clearance from Queen’s University. There are no known physical, psychological, economic, or social risks associated with this study. Participation is completely voluntary and managers can withdraw from the study at any time with no effect whatsoever. There will be no obligation for managers to answer questions they do not wish to answer. I will be seeking consent to record interviews using a tape-recorder. The data collected will only be shared between Dr. James D McKeen and
me. The confidentiality of all managers as well as their business units will be protected by means of concealing their names and identities. If quotes from managers are used in any reports, the names and positions of the managers and their organizations will always be concealed. There will be no remuneration provided for participating in this research. Any questions or concerns about the research can also be directed to

1. Dr. Bill Cooper, Chair of the School of Business Ethics Committee, 
   wcooper@business.queensu.ca, (613) 533-2333
   School of Business, Queen’s University, Kingston, Ontario, Canada K7L 3N6.

2. Dr. Joan Stevenson
   Chair of Queen’s University General Research Ethics Board, 
   stevensj@post.queensu.ca, (613) 533-6000 ext. 74579
   Queen’s University, Kingston, Ontario, Canada K7L 3N6

I hope this information is helpful. Please do not hesitate to ask other questions.

Sincerely,
Satyendra Singh, PhD Candidate, MBA, MS
ssingh@business.queensu.ca,
Home Phone: (613) 825-9780
Queen's School of Business, Queen's University
Kingston, Ontario, Canada K7L 3N6
Dear Senior Executive,

I am writing to follow up on my recent invitation to you to participate in leading-edge doctoral research entitled “The Development and Investigation of a Conceptual Model to Understand Knowledge Management.” This research is funded by Queen’s School of Business and the Social Sciences and Humanities Research Council of Canada.

Your organization can benefit from this research in many ways. I will prepare an executive report for your organization. In addition, your organization will receive a tailored knowledge capability assessment report indicating your company’s specific areas of strength and weakness. During the course of this research, your organization will have access to my literature-based KM models as well as to the expertise of the renowned researcher Dr. James D. McKeen, who has extensive consulting and KM experience.

If you have any questions or concerns, please do not hesitate to contact me. I will be in touch by phone this week. I look forward to speaking with you then.

Sincerely,
Satyendra Singh, PhD Candidate, MBA, MS
ssingh@business.queensu.ca,
Home Phone: (613) 825-9780
Queen's School of Business, Queen's University
Kingston, Ontario, Canada K7L 3N6
APPENDIX C: ADDITIONAL INFORMATION

Date:

Dear <Name>,

Based on our conversation and the documents that you provided, as well as the publicly available documents, here is my understanding of how the research will shape up and benefit <organization>. Please go through this document carefully and make or suggest necessary changes or corrections.

Focus

The focus of my research is to attain an in-depth understanding of the capabilities of the three lines of businesses (LOBs) i.e., Transaction Messaging, Parcels Delivery and Marketing Messaging, in providing new services to their customers and consumers through the electronic channel. Essentially, the research will investigate and compare how each LOB provides services through the electronic channel. Based on my findings, I will make recommendations to <organization> that may contribute to further improve its capability across all three LOBs. Since I am conducting this research at a few other companies too, I will be able to augment my recommendations from the lessons learned at the other companies.

It is apparent that the strategic mandate to adopt the electronic channel to complement existing physical channels is not a new initiative at <organization>. However, the adoption of the channel is a high priority task. All three LOBs are already using the channel to provide services and have big strategic plans to improve and provide more services on the electronic channel. Thus, since <organization> is still in transition, it will be very beneficial to understand

1. The current capability of the three LOBs in providing services on the electronic channel, and
2. The plans, if any, the three LOBs have to improve their capability.

Assumptions

The following assumptions will shape my investigation, especially the upcoming interviews with the managers from the POL and Strategic Planning groups.

1. POL is a name of a corporate initiative to provide services on the electronic channel. All the three LOBs will use POL to provide services.
2. It is my understanding that strategic planning at <organization> is done at two levels – corporate and LOB. The planning at LOB supports or is a function of corporate strategic planning.
First Step of Investigation

You suggested that I first talk to a few managers in the POL and Strategic Planning groups to attain further understanding of the electronic channel. Thus, during the interviews with the managers, my aim will be to attain a better understanding of

1. The POL initiative.
2. How strategic planning is done (generally, as well as specifically for the electronic channel)

The following are the semi-structured interview questions for the POL participants. I may modify these questions a little before the interviews.

Q1. Briefly tell me about the POL initiative.
Q2. In what way is your group (or the POL initiative) related to the three LOBs?
Q3. What is your assessment of where the LOBs are in terms of providing services on the electronic channel?
Q4. Has your organization implemented specific KM initiatives around the different stages of the service development process? If so, briefly explain them.
Q5. Please explain the role of IT, the IT department and IT-enabled processes in the POL initiative.

The following are the semi-structured interview questions for the Strategic Planning participants. I may modify these questions a little before the interviews.

Q1. Briefly describe the new service development process in your organization. Please lead me through the different stages of the service development process from forming an idea to developing a service for customers and consumers.
Q2. Has your organization implemented specific KM initiatives around the different stages of the new service development planning process? If so, briefly explain them.
Q3. What is the relationship between corporate strategic planning and LOBs strategic planning?
Q4. Please explain the role of IT, the IT department and IT-enabled processes in the service planning process.

In order to attain an in-depth understanding, I will require 2 interviews from both groups.
Next Step of Investigation

After my interviews with the participants from POL and Strategic Planning groups, I will be ready to immerse myself in the LOBs to investigate their capability in providing new services on the electronic channel to their customers and consumers.

Sincerely,
Satyendra Singh, PhD Candidate, MBA, MS
ssingh@business.queensu.ca,
Home Phone: (613) 825-9780
Queen's School of Business, Queen's University
Kingston, Ontario, Canada K7L 3N6

Attachments:
(1) Data collection, analysis and reporting strategies
(2) Interview questionnaire
DATA COLLECTION, ANALYSIS AND REPORTING STRATEGIES

The research will be conducted in three stages. I will briefly describe these stages below and provide the information about what is involved from a participating organization’s perspective.

Collection Stage

Once your organization agrees to participate, I will identify with your help a minimum of two or a maximum of three independent sizable businesses/business units that are suitable for my study. I will also choose a function (e.g., new product development, new service development, new market entry or other similar function) that the organization thinks is critical for them and would like me to study. Following the selection of businesses/business units, I will start visiting your organization to collect data. The data collection activities for each business/business unit may be conducted simultaneously or serially and will continue until May 2007.

In order to avoid interfering with the participants work and organizational activities, I will take several precautionary steps. First, I will conduct, on an average, two or three interviews per week. Second, each interview will last for approximately 75-90 minutes. Third, the interviews will be scheduled as per the participants’ convenience. Finally, the study will be conducted in phases to further ease the load on the participating organization. Each phase is described below:

• **Phase 1.** During the first phase, I will work with a contact person from a selected business/business unit to arrange interviews with a few senior managers. Please refer to Exhibit 1, Question Group 1, for the type of questions that I will investigate. This phase is fairly short and is intended to help me understand the business/business unit.

• **Phase 2.** The second phase follows a few weeks after the first phase and is more involved. During this phase, with the help of participating managers from the first phase, I will identify a number of managers who would be interviewed to investigate specific research questions. Please refer to Exhibit 1, Question Group 2 through Question Group 6, for the type of questions that I will investigate.

• **Phase 3.** The third phase will immediately follow the second phase. During this phase, people responsible for KM and IT related activities within the organization will be identified and interviewed. Please refer to Exhibit 1, Question Group 7 and Question Group 8, for the type of questions that I will investigate.

• **Phase 4.** During the fourth phase I will distribute a 10-minute survey to a few managers.

All the interviews will be tape-recorded and later transcribed. Hand notes will be taken during the interviews too. During the first three phases, in addition to the interviews, I also intend to collect data from two other sources. First, I will gather and analyze
relevant organizational documents. Second, I would like to observe how certain activities, which come up during interviews, are actually performed within the organization.

**Analysis Stage**

Since the nature of this study is to explore and attain an in-depth understanding of knowledge management within an organization, the analysis and the collection stages will be conducted simultaneously. However, I expect that by the end of April 2007 the majority of data-collection activity will be over. If I require more data, it will be very minimal. During the month of May 2007, I may ask a few participants for clarification of their interview responses. But this will only be done when necessary. Further my contact with the participants for clarification will mostly be through short and simple emails. The Analysis stage will be complete by June 2007.

**Reporting Stage**

I will start working on my thesis report as well as an executive report for your organization by the end of June 2007. The reports will be prepared by the end of August 2007. In September 2007, I will submit the executive report to your organization. While reporting my findings, I will use all the information collected during the collection phase. Quotations from both the interviews and documents will be used throughout. However, the identity of the participants will be protected.

**Assumptions**

I have prepared this document with three assumptions:

1) Research will be conducted in three business units of your organization.

2) Data collection will start in Dec’06 and will continue till Apr’07.

3) Research will be conducted within the context of strategic planning and the specific function under the planning will be new product development (NPD).
   (Please note that another function can be suggested by your organization)

**Schedule and Deliverables**

Based on the assumptions, the following describes how I intend to collect data and deliver reports to your organization.

<table>
<thead>
<tr>
<th>Month</th>
<th>Activities</th>
<th>Deliverables to your organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 2006</td>
<td>I will conduct 2 or 3 interviews at each business unit and collect documents related to NPD. The intention of these interviews is to gain an understanding of the NPD process in all the participating business units.</td>
<td>Submit the report on Business Unit 1 to your organization by the end of the month.</td>
</tr>
<tr>
<td>Jan. 2007</td>
<td>During this month, I will conduct multiple interviews at Business Unit 1. Relevant documents will also be collected. Once the data collection is over, I will prepare a preliminary report on my findings at Business Unit 1.</td>
<td>Submit the report on Business Unit 1 to your organization by the end of the month.</td>
</tr>
<tr>
<td>Month</td>
<td>Activity Description</td>
<td>Due Date</td>
</tr>
<tr>
<td>--------------</td>
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</tr>
<tr>
<td>Feb.2007</td>
<td>I will conduct multiple interviews at Business Unit 2. The interviews conducted will be similar to those conducted at Business Unit 1. Relevant documents will also be collected. In addition, I will prepare a preliminary report on my findings at Business Unit 2.</td>
<td>Submit the report on Business Unit 2 to your organization by the end of the month.</td>
</tr>
<tr>
<td>March 2007</td>
<td>I will start conducting interviews at Business Unit 3. The interviews will be similar to those conducted at Business Unit 1 and Business Unit 2. Relevant documents will also be collected. I will prepare a preliminary report on my findings at Business Unit 3.</td>
<td>Submit the report on Business Unit 3 to your organization by the end of the month.</td>
</tr>
<tr>
<td>April 2007</td>
<td>During this month, I will conduct a survey in the business units.</td>
<td></td>
</tr>
<tr>
<td>May - June 2007</td>
<td>During these months, I will start working on my thesis report. I expect that I may have to contact a few managers for clarifications on the data collected.</td>
<td></td>
</tr>
<tr>
<td>July – Aug. 2007</td>
<td>I will submit my thesis report to Queen’s for defense. I will also start working on an executive report for your organization.</td>
<td>Submit and present my final report to your organization by the end of Aug 07.</td>
</tr>
</tbody>
</table>

During my research I will always be available for discussions and meetings. Even after I finish my research in August 2007, I will be available to your organization to discuss my findings should the need arise.

I hope this information is helpful. Please do not hesitate to ask any other questions.

Sincerely,
Satyendra Singh, PhD Candidate, MBA, MS
ssingh@business.queensu.ca,
Home Phone: (613) 825-9780
Queen's School of Business, Queen's University
Kingston, Ontario, Canada K7L 3N6
Please note that the questions provided below are only to provide you with information about the type of questions I will investigate. The exact phrasing of the questions will continue to evolve before actual interviews are conducted. In fact, I expect that the nature of the questions will continue to evolve even during the interview phase (data collection phase).

The intent of this study is to understand KM within the context of strategic planning. However, the specific function under strategic planning to be studied will be identified based on the participating organization’s input. Some examples of the functions are new product development, new service development and new market entry. Upon the identification of a function, the following interview questions will be appropriately rephrased. The version of questions developed below is based on the assumption that the study may be conducted for new product development (NPD) planning functions. The questions are open-ended because of the exploratory nature of the study. These questions will facilitate the emerging direction during the interviews.

The questions can be logically divided into the following groups based on the concepts that the study would like to capture.

**Question Group 1**

The questions under this group are intended to obtain a general overview of the NPD planning process (from conception to implementation to market) of the organization. I anticipate that I will require one or two interviews with those managers who have a complete understanding of this planning process. Based on the understanding I will attain from these questions, I may modify the questions in the other groups described below. The questions that I will investigate in this group are

- Q1. Briefly describe the NPD planning process in your organization. Please lead me through the different stages of the product development process from forming an idea to developing a product to selling the product.

- Q2. Has your organization implemented specific KM processes around the different stages of the NPD planning process? If so, briefly explain them.

**Question Group 2**

The intention of the following questions is to attain an in-depth understanding of how new ideas for new products are generated. For this group of questions, I anticipate that I will require interviews with at least two managers.

- Q1. Please describe the processes that your organization uses to scan for new product ideas.

- Q2. Please describe specific KM processes that your organization has implemented to enhance an organization’s ability to generate new product ideas.
Question Group 3
The intention of the following questions is to attain an in-depth understanding of how the new ideas generated during the previous stage are evaluated. For this group of questions, I anticipate that I will require interviews with at least two other managers.

Q1. Please describe the processes that your organization uses to experiment with new ideas to generate new product alternatives.

Q2. Please describe specific KM processes that your organization has implemented to enhance an organization’s ability to experiment with new ideas.

Question Group 4
The intention of the following questions is to attain an in-depth understanding of how the new ideas after experimentation are transferred to people who require it. For this group of questions, I anticipate that I will require interviews with at least two more managers.

Q1. Please describe the processes that your organization has implemented to transfer ideas about new product alternatives generated from the previous stage to the people who require it.

Q2. Please describe specific KM processes that your organization has implemented to enhance an organization’s ability to transfer the new product alternatives.

Question Group 5
The intention of the following questions is to attain an in-depth understanding of how the new product alternatives are converted into new products and how they are maintained and refined. For this group of questions, I anticipate that I will require interviews with at least two managers.

Q1. Please describe the processes that your organization has implemented to ensure that new product alternatives are successfully implemented.

Q2. Please describe specific KM processes that your organization has implemented to enhance an organization’s ability for new product implementation.

Question Group 6
The intention of the following questions is to attain an in-depth understanding of the context. For this group of questions, I anticipate that I will require interviews with at least two managers.

Q1. Do you (others) have a role to play during the stages of NPD? What part of the role is formally and informally defined?

Q2. Are there any locations where the NPD is carried out? Are there any physical structures (e.g., idea gallery) that motivate these activities? How did these physical spaces or structures come about?
Q3. Please describe the formal/informal organizational procedures for NPD.
Q4. Please describe the steps that your organization has taken to encourage NPD
Q5. In general, are people called for their specific expertise during the NPD? Please explain.

**Question Group 7**

The intention of the following questions is to understand the KM initiative at the organization. For this group of questions, I would like to interview four managers from the KM department.

Q1. Please describe the KM initiative within your organization? Why did your organization implement KM? What is its focus? What are the achievements?
Q2. To whom does the KM department report?
Q3. How do you think the role of KM in your organization has evolved and will evolve in future?

**Questions Group 8**

For the following questions, I would like to interview four managers from the IT department.

Q1. What do you feel is the role of IT in the organization? To whom does the IT department report?
Q2. Please describe the role of IT, the IT department and IT-enabled business processes (identify the processes) in the NPD.
Q3. What role does IT play in KM?
APPENDIX D: INTERVIEW QUESTIONNAIRE

Knowledge Evolution Stage 1: Knowledge Scanning Questions

Q1. Please describe the processes that <LOB> uses to scan for (new) ideas for service development.
   a. Sources of ideas (internal and external): Where does <LOB> gets its ideas from, in addition to the knowledge from sales & marketing and competitors analysis? Everyone does that, so what is unique about your process?
   b. Do you look for ideas that defy conventional methods and thinking? If yes, please explain.
   c. Is scanning an ongoing process or is it done once a year during strategic planning? How do you keep the service funnel full?
   d. How do you know what to look for and what not to look for while scanning for ideas? How do you know when to stop looking for ideas? Is scanning for ideas driven by the current activity?

Q2. Please explain, the role of IT, the IT department and IT-enabled business processes in scanning for new ideas. More specifically,
   a. The role of IT Service Subsidiary.
   b. The role of POL group.
   c. The role of SAP group.

Note to self: Keep the following questions specific, as well as generic to service development

Q3. Role: Do you (others) have a well-defined role or expectation for scanning knowledge? Please explain. What part of the role is formally and informally defined?

Q4. Physical Artifacts: Are there any physical spaces where the idea generation activities are carried out? (Clarification: The concept of “Ba” in Japanese philosophy)
   a. Are there any physical structures (e.g., idea gallery, water cooler corner, common kitchen, play table) that motivate these activities?
   b. How did these physical spaces or structures come about?
   c. Where are focus groups conducted?
Q5. **Business Logic**: Please describe the formal/informal procedures (i.e., operational rules, standards, policies) to carry out idea generation activities

*(Clarification: These procedures could be strategic initiatives; for example, there are stage-gate procedures for idea experimentation and procedures for idea implementation (e.g., project management)).*

Q6. **Culture**: Please describe the cultural controls (i.e., shared way of doing things, values, beliefs and priorities) that <LOB> has implemented to encourage the generation of new ideas.

*(Clarification: Cultural control is an informal control which leads to intrinsic motivation or encouragement. The control is different from formal control)*

a. Are the goals such as “we need to generate new ideas to compete in this competitive world” shared among the majority of people?

b. Are there any (socialization) techniques to develop such a culture?

Q7. **Individuals**: Do you (others) bring new ideas from your (their) personal repository of ideas, in addition to commonly known ideas? If so, how do you (others) do it?

a. In general, are people known for their expertise and are they approached for ideas? Please explain with an example.

b. Is there a commonly shared IS system to store or facilitate idea generation? Please explain.

Q8. **Exploratory questions**

a. How successful are you in scanning? What is working and what is not working?

b. What is your perception on who is doing better on NSD? And why?

c. Please describe specific KM processes that your organization has implemented to enhance an organization’s ability to generate new service ideas.

d. Is there anything else you would like to add to our conversation that you think is important but was not covered? Please explain.

*Note to self: Before leaving*

1. *If all the above questions are not covered during the meeting, setup a new meeting right away.*

2. *Ask to identify and introduce me to the people who could be interviewed for the other themes.*
Knowledge Evolution Stage 2: Knowledge Evaluation Questions

Q1. Please describe the processes that you use to experiment with (new) ideas for service development
   (Clarification: experimenting with the future, probing into the future, learning by doing, learning before doing are some of the concepts related to experimentation. In addition, you have stage-gate process. What do you do at each stage of the gating process or how do projects evolve through these stages? Some LOBs even have a weighting scheme.)
   a. What is unique about this process?
   b. How are some alternatives chosen over others? What do you look for and what do you not look for?
   c. What could you do to improve evaluation?

Q2. Discuss prototyping, trial and error, and experimentation.

Q3. Please explain the role of IT, the IT department and IT-enabled business processes in the experimentation of new ideas. More specifically,
   a. The role of IT Service Subsidiary.
   b. The role of POL group.
   c. The role of SAP group.

Q4. What is the role of corporate level groups such as the PDO office, and other functional groups?
   (Clarification: Show the organizational chart, if necessary)

Note to self: Keep the following questions specific, as well as generic to service development

Q5. Role: Do you (others) have a well-defined role or expectation for evaluating knowledge? Please explain. Which parts of the role are formally and informally defined?
   (Clarification: I can ask this question within the context of Stage Gate role. Basically just ask to explain this process in detail)

Q6. Physical Artifacts: Are there any physical spaces where idea evaluation activities are carried out?
   (Clarification: The concept of “Ba” in Japanese philosophy)
   a. Are there any physical structures (e.g., idea gallery, water cooler corner, common kitchen, play table) that motivate these activities?
   b. Do you go somewhere and talk about ideas?
   c. How did these physical spaces or structures come about?
Q7. **Business Logic:** Please describe the formal/informal procedures (i.e., operational rules, standards, policies) followed to carry out idea evaluation activities.

Q8. **Culture:** Please describe the cultural controls (i.e., shared way of doing things, values, beliefs and priorities) that <LOB> has implemented to encourage the evaluation of new ideas.

*(Clarification: Cultural control is an informal control which leads to intrinsic motivation or encouragement. This control is different from formal control. Enquire about risk-averse and risk-taking behaviors, since the organization is in transition from being operationally efficient to being innovative.)*

a. Do people like the stage-gate process which is overly exhaustive? Explain.
b. Is entrepreneurship being inculcated and rewarded in your organization? Explain.
c. Are goals such as “we need to be risk-taking in this competitive world” or “break the culture and challenge people” shared among the majority of people? Explain.
d. Are there any (socialization) techniques to develop such a culture? Please explain.

Q9. **Individuals:** Do you bring in experts (e.g., business analysts, PM, union, etc.) to do the evaluation? Who are they and what do they do?

Q10. How do you move from scanning to evaluation? Do you think that ideas get lost on the way? How do you keep track of ideas?

Q11. How do you balance between innovation and operational efficiency?

Q12. **Exploratory questions**

a. How successful are you in experimenting with knowledge? What is working and what is not working?
b. What is your perception of who is doing better on NSD? And why?
c. Please describe specific KM processes that your organization has implemented to enhance an organization’s ability to experiment with new service ideas.
d. Is there anything else you would like to add to our conversation that you think is important but was not covered? Please explain.

*Note to self: Before leaving*

1. *If all the above questions are not covered during the meeting, setup a new meeting right away.*
2. *Ask to identify and introduce me to the people who could be interviewed for the other themes.*
Knowledge Evolution Stage 3: Knowledge Transfer

Note to self: The composition and organization of a multifunctional project team is a good way of transferring knowledge within LOGCO. Remember that knowledge can exist inside and/or outside the organization.

Q1. Do you ever hear within the organization that “I am looking for something and I never find it” or “it takes too long to find something”? Do you find people hiding and not sharing knowledge?

Q2. You have a great process for knowledge transfer during service development. What happens to key learnings and knowledge once the service is developed? Does it get stored somewhere?

Q3. Please describe the processes that <LOB> uses to transfer (new) ideas for service development to the relevant parties? Do you have mechanisms such as forming alliances (with other functional groups), move/mobilize individuals around (from inside and outside the organization), or informal/formal networks (social networks, brown bag sessions)? You guys are located in one building, are social networks encouraged?
   a. What is unique about this process?
   b. What could you do improve transfer?

Q4. Please explain, the role of IT, the IT department and IT-enabled business processes in transfer for new ideas. More specifically,
   a. The role of IT Service Subsidiary
   b. The role of POL group
   c. The role of SAP group

Note to self: Keep the following questions specific, as well as generic to service development

Q5. Role: Do you (others) have a well-defined role or expectation for transferring knowledge? -Please explain. What part of the role is formally and informally defined? (Clarification: I can ask this question within the context of Stage Gate role. Basically just ask to explain this process in detail)

Q6. Physical Artifacts: Are there any physical spaces where the idea transfer activities are carried out? (Clarification: The concept of “Ba” in Japanese philosophy)
   a. Are there any physical structures (e.g., idea gallery, water cooler corner, common kitchen, play table) that motivate these activities?
   b. How did these physical spaces or structures come about?
Q7. **Business Logic:** Please describe the formal/informal procedures (i.e., operational rules, standards, policies) followed to carry out idea transfer activities?

*(Clarification: Stage gate is a business logic that seems to have knowledge transfer built in)*

Q8. **Culture:** Please describe the cultural controls (i.e., shared way of doing things, values, beliefs and priorities) that <LOB> has designed to encourage transfer of new ideas.

*(Clarification: Cultural control is an informal control which leads to intrinsic motivation or encouragement. The control is different from a formal control)*

a. Are there any (socialization) techniques used to develop such a culture? Please explain.

Q9. **Individuals:** Do you (others) share new ideas frequently with others? If so, how do you (others) do it?

a. In general, are people known for their expertise and are they approached for ideas? Do they share their expertise? Please explain with an example.

b. Is there a knowledge transfer system.

Q10. **Exploratory questions**

a. How successful are you in transferring new service ideas? What is working and what is not working?

b. What is your perception on who is doing better on NSD? Why?

c. Please describe specific KM processes that your organization has implemented to enhance the organization’s ability to transfer new service ideas?

d. Is there anything else you would like to add to our conversation that you think is important but was not covered? Please explain.

*Note to self: Before leaving*

1. If all the above questions are not covered during the meeting, setup a new meeting right away.

2. Ask to identify and introduce me to the people who could be interviewed for the other themes.
Knowledge Evolution Stage 4: Knowledge Implementation

Note to self: Looking at your stage gate process it appears that apart from simple implementation, you have multiple stages for implementation such as TTM, TTC, MR. Do you also have procurement, testing and validation processes?

Q1. Please describe the processes that <LOB> uses to implement (new) product ideas? Please lead me through all the stages
   a. What is unique about this process?
   b. How do you retire products?
   c. What could you do to improve implementation?

Q2. Please explain, the role of IT, the IT department and IT-enabled business processes in the implementation of new ideas. More specifically,
   a. The role of IT Service Subsidiary.
   b. The role of POL group.
   c. The role of SAP group.

Note to self: Keep the following questions specific, as well as generic to service development

Q3. Role: What is the role of other functional groups at the corporate level?

Q4. Do you (others) have a well-defined role or expectation for implementation? Please explain. What part of the role is formally and informally defined? (Clarification: I can ask this question within the context of the Stage Gate process)

Q5. Physical Artifacts: Are there any physical spaces where the implementation activities are carried out? (Clarification: The concept of “Ba” in Japanese philosophy)
   a. Are there any physical structures that motivate these activities?
   b. How did these physical spaces or structures come about?

Q6. Business Logic: Please describe the formal/informal procedures (i.e., operational rules, standards, policies) followed to carry out implementation activities?

Q7. Culture: Please describe the cultural controls (i.e., shared way of doing things, values, beliefs and priorities) that <LOB> has designed to encourage implementation. (Clarification: Cultural control is an informal control which leads to intrinsic motivation or encouragement. The control is different from a formal control)
   a. Are the goals such as “we need to implement new ideas to compete in this competitive world” shared among the majority of people?
b. Are there any (socialization) techniques to develop such a culture? Please explain.

Q8. **Individuals**: In general, are people known for their expertise and are they approached during implementation? Please explain with an example.

Q9. **Exploratory questions**
   a. How successful are you in implementing (& retiring) services? What is working and what is not working?
   b. What is your perception of who is doing better on NSD? Why?
   c. Please describe specific KM processes that your organization has implemented to enhance the organization’s ability to implement new ideas?
   d. Is there anything else you would like to add to our conversation that you think is important but was not covered? Please explain.

*Note to self: Before leaving*

1. **If all the above questions are not covered during the meeting, setup a new meeting right away.**
2. **Ask to identify and introduce me to the people who could be interviewed for the other themes.**
APPENDIX E: MANAGER RECRUITMENT

LETTER OF INFORMATION

This study is being conducted by Mr. Satyendra Singh, a doctoral candidate under the supervision of Dr. James D. McKeen at the School of Business, Queen’s University, Kingston, Ontario, Canada.

The topic being researched is “The Development and Investigation of a Conceptual Model to Study Knowledge Management.” The main purpose of the study is to gain an in-depth understanding of how organizations scan, evaluate, transfer and integrate new knowledge and how information technology shapes these activities within the context of new service development (NSD). As part of this research, interviews will be conducted in which participants will be asked to answer questions related to the topic under study. Each participant will be interviewed once, and the interview is expected to last about 90 minutes. The participant may be contacted for a second interview, for further clarification and confirmation when the data is being analyzed; this second interview will last about 45 minutes.

Mr. Singh will make frequent visits to your organization to conduct interviews and collect relevant documents on past/current NSD activities and KM initiatives. In addition, Mr. Singh will also request to observe NSD activities (e.g., strategic planning meetings). There are no known physical, psychological, economic, or social risks associated with this study. Participation is completely voluntary and participants can withdraw from the study at any time with no consequences whatsoever. There is no obligation for participants to answer questions that they do not wish to answer.

Mr. Singh will seek consent to record interviews on a personal recorder during interviews. The data collected will only be shared between Mr. Singh and Dr. James D McKeen. The confidentiality of all participants as well as their company will be protected by means of concealing their names and identities. When quotes from participants are used in the published and unpublished reports, the names and positions of the participants as well as the name of the participant’s company will be concealed. The information in the form of raw data will be kept safely.

This research is part of a PhD dissertation that will be submitted to Queen’s University. The academic community and any other interested parties will have access to it through Queen’s University. It may also be published in the form of a book or journal articles at a later stage and thus may be made available to the general public or as a secondary source to other researchers. There is no remuneration provided for participating in this research. Any comments or queries regarding this research can be forwarded to the following persons:
1. Satyendra Singh, ssingh@business.queensu.ca, (613) 825-9780
   School of Business, Queen’s University, Kingston, Ontario, Canada K7L 3N6.

2. Dr. James D McKeen, jmckeen@business.queensu.ca, (613) 533-2360
   School of Business, Queen’s University, Kingston, Ontario, Canada K7L 3N6.

3. Dr. Bill Cooper, Chair of the School of Business Ethics Committee,
   wcooper@business.queensu.ca, (613) 533-2333
   School of Business, Queen’s University, Kingston, Ontario, Canada K7L 3N6.

4. Dr. Joan Stevenson, Chair of Queen’s University General Research Ethics Board,
   stevensj@post.queensu.ca, (613) 533-6000 ext. 74579
   Queen’s University, Kingston, Ontario, Canada K7L 3N6

If you wish to receive a copy of the summarized results upon the completion of this research, a report will be sent to you directly.

Sincerely
Satyendra Singh, PhD Candidate, MBA, MS
ssingh@business.queensu.ca,
Home Phone: (613) 825-9780
Queen's School of Business, Queen's University
Kingston, Ontario, Canada K7L 3N6

**Attachments:**
1) Discussion Themes
2) Letter of Consent
DISCUSSION THEMES

The purpose of this investigation is to attain an in-depth understanding of the capability of your LOB in developing new services for your customers and consumers through electronic and physical channels. Based on the findings of this investigation, we hope that LOGCO may be able to take corporate-wide specific initiatives to further improve its service capability. Since the research is being conducted at a few other organizations (non-competing), it is hoped that we will be able to learn some key lessons from these other organizations too.

In your LOB, we would like to collect data around the following themes:

1. **Knowledge Scanning:** Under this theme, we are interested in knowing “how” and “what kinds of” ideas for services on the electronic and physical channels are generated.

2. **Knowledge Evaluation:** Under this theme, we are interested in knowing “how” and “what kinds of” ideas are evaluated for their service potential.

3. **Knowledge Transfer:** Under this theme, we are interested in knowing “how” and “what kinds of” ideas are transferred to the people who require it for service development.

4. **Knowledge Implementation:** Under this theme, we are interested in knowing “how” and “what kinds of” services are finally developed (or maintained or refined).

On an average, for each theme discussed above, we will need 2 interviews. Ideally, for each interview it would be nice to speak with a different person as it will allow us to attain a broader and multi-perspective understanding.

Note:

As a primary investigator, I have signed an NDA with your organization and an Ethics agreement with Queen’s University. The confidentiality of the organization and those who participate in this research is strictly protected.

Sincerely,
Satyendra Singh, PhD Candidate, MBA, MS
ssingh@business.queensu.ca,
Home Phone: (613) 825-9780
Queen's School of Business, Queen's University
Kingston, Ontario, Canada K7L 3N6
LETTER OF CONSENT

1. Project Title: “The Development of a Theoretical Model to Study Knowledge Management Capability.”

2. I have read the Letter of Information and have had all questions answered to my satisfaction.

3. I am aware that Satyendra Singh has signed a non-disclosure agreement with LOGCO.

4. I am aware of the objective of this study. The study is being conducted to gain an in-depth understanding of how organizations deploy their knowledge management activities to accomplish tasks.

5. I am aware that the study is being conducted within the context of a new service development.

6. I am aware that Satyendra Singh (the primary researcher) will be making visits to LOGCO to conduct interviews and observe strategic functions.

7. I am aware that my participation in this research involves giving interviews and providing relevant documents on new service development and KM initiatives to the researcher when necessary. In addition, I may occasionally invite Satyendra Singh to directly observe how certain activities are actually carried out at LOGCO.

8. I am aware that my participation in this research is completely voluntary and that I am free to withdraw from the research at any time.

9. I am aware that Satyendra Singh will only share the data collected from me with his supervisor (Dr. James D. McKeen) as required for data interpretation.

10. I am aware that except for the data sharing with his supervisor, Satyendra Singh will protect the confidentiality of my identity and LOGCO by not using my name or position or any other identifying information. The reports and publications from this research will disguise my name and position and the name of LOGCO.

11. I am aware that Satyendra Singh will keep the raw data safely.

12. I am aware that I can contact the following regarding any complaints or queries with respect to the research.

   Satyendra Singh, ssingh@business.queensu.ca, (613) 825-9780
   School of Business, Queen’s University, Kingston, Ontario, Canada K7L 3N6.

   Dr. James D McKeen, jmckeen@business.queensu.ca, (613) 533-2360
   School of Business, Queen’s University, Kingston, Ontario, Canada K7L 3N6.
13. By initialing this statement below

________ I am granting permission to use a tape recorder (and/or)

________ I am granting permission to use quotations, but my name and position will not be used with the quotations in reports and publications.

Name:                                                                                     Date:

Signature:
Dear Colleague,

It is my pleasure to introduce you to Satyendra Singh, a doctoral candidate in the Queen’s University School of Business in Kingston, Ontario. As part of his studies, Sati is conducting research to understand how LOGCO identifies, evaluates and transfers service ideas and implements services from those ideas. As sponsors and contributors to his research, we solicit your participation.

Over the last 9 months, Sati has conducted over 65 interviews at LOGCO and collected hundreds of pages of documentation. Sati and I both wish to acknowledge and thank you for your valuable contribution to date.

A final step in this research is the following survey which should take no longer than 10 minutes to complete. Note that your participation is voluntary and that information collected will be kept and treated as strictly confidential. No personal identification will be recorded whatsoever. Sati has signed confidentiality and ethics agreements with LOGCO and Queen’s University.

We encourage you to make this one investment. The insights gained from this study could further enhance our service development process. Once you complete the survey, please send it directly to Sati at ssingh@business.queensu.ca. Interested participants can also request a summarized report of this survey; this can be confirmed with Sati directly via email.

We wish to thank you in advance for your participation and support.

Sincerely,

JDS, SVP & CIO
Satyendra Singh, PhD Candidate, MBA, MS
ssingh@business.queensu.ca,
Home Phone: (613) 825-9780
Queen's School of Business, Queen's University
Kingston, Ontario, Canada K7L 3N6
SECTION I

This survey assesses the following 4 stages with regard to service development in <name of LOB>.

1. **Identifying service ideas** – refers to how <name of LOB> identifies its service ideas.

2. **Evaluating service ideas** – refers to how <name of LOB> evaluates its service ideas.

3. **Transferring service ideas** – refers to how <name of LOB> transfers service ideas to the teams (or individuals) who require it.

4. **Implementing service ideas** – refers to how <name of LOB> eventually builds and implements services from service ideas.

**Instructions:**
Please read each statement carefully and indicate your response by checking a single box. To check a box, double click on the box and then select “Checked” option under Default value.

---

1. To what extent does <name of LOB> engage in or support the following stages?

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   a. Identifying service ideas

   b. Evaluating service ideas

   c. Transferring service ideas

   d. Implementing service ideas

2. To what extent does <name of LOB> perform well on the following stages?

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   a. Identifying service ideas

   b. Evaluating service ideas

   c. Transferring service ideas

   d. Implementing service ideas
3. To what extent are the following stages **important** in *<name of LOB>*?

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<td>d. Implementing service ideas</td>
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4. To what extent are the following stages **aligned** with *<name of LOB>* strategy of *<strategic statement>*?

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<td>d. Implementing service ideas</td>
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5. In general, there are formal or informal **processes** in `<name of LOB>` to facilitate the following stages.

*(Process refers to activities to perform a certain task. For example, Stage Gate is a formally defined project funding process.)*

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<td>c. Transferring service ideas</td>
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6. In general, there are formal or informal **procedures/policies** in `<name of LOB>` to facilitate the following stages.

*(Procedures/policies refer to guidelines or instructions to carry out a process. For example, face-to-face communication is a procedure/policy for transferring knowledge; OQA form provides procedure/policy to complete Stage Gate process.)*

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Neutral</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly Agree</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>a. Identifying service ideas</td>
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</table>
7. In general, there are formal or informal **expectations** in *<name of LOB>* to perform the following stages.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Strongly Agree</th>
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<tbody>
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8. In general, there is an **individual(s)/team(s)** in *<name of LOB>* to facilitate the following stages.

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<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Neutral</th>
<th>Strongly Agree</th>
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</thead>
<tbody>
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9. In general, *<name of LOB>* is adequately resourced to facilitate the following stages.

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<th>Strongly Disagree</th>
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<th>Strongly Agree</th>
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10. In general, there are “**physical artifacts**” in `<name of LOB>` to facilitate the following stages.

*(Physical artifact is a multifaceted concept that includes things such as database, online chat rooms, manuals, portal, reports, etc. that facilitate service development. It also includes other forms such as a discussion corner, brainstorming room, and other physical structures or environments that facilitate service development).* While answering the following questions, think about all these.

<table>
<thead>
<tr>
<th></th>
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<th>Strongly Agree</th>
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11. In general, the existing **culture** in `<name of LOB>` facilitates the following stages.

*(Culture refers to “general organizational climate.” It includes implicit preferences within `<LOB>` about what employees should strive to attain and how they should do it with regard to service development).*

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<tr>
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<th>Strongly Disagree</th>
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SECTION II

1. In general, to what extent do employees in <name of LOB> understand,

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<th>Very Small Extent</th>
<th>Neutral</th>
<th>Very Large Extent</th>
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<tbody>
<tr>
<td>a. &lt;name of LOB&gt; business</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>b. &lt;name of LOB&gt; competition</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>c. &lt;name of LOB&gt; strategy</td>
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<td>d. &lt;name of LOB&gt; service offerings</td>
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SECTION III

1. How many years have you worked at LOGCO? _________________ Years

2. How many years have you worked in <name of LOB>? _________________ Years

3. What role do you play with regard to service development?

____________________________________________________________________

4. Your official title (e.g., GM, Director, Manager) _________________

As part of this research I will be conducting quick follow-up interviews with some professionals. The purpose of the interview will be to collect more information. The results of this survey and interviews will be reported in a way which will protect the anonymity of both the organization and the participant. If you would like to participate in the follow-up interviews, please provide your name and email address below.

Name: __________________________________________________

Email: __________________________________________________

Thank you very much for taking the time to complete this survey.