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DOES KNOWLEDGE EMPOWER? AN EXAMINATION

OF KNOWLEDGE SEEKING BEHAVIOR IN

MULTINATIONAL CORPORATIONS

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DOES KNOWLEDGE EMPOWER? AN EXAMINATION OF KNOWLEDGE SEEKING BEHAVIOR IN MULTINATIONAL CORPORATIONS

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_____   _____(Signed)
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ABSTRACT

Knowledge management (KM) is one of the most critical issues in knowledge-based economies and globalized businesses. Companies, especially multinational corporations (MNC), have implemented different information systems such as electronic knowledge repositories (EKR), to support their KM initiatives. Despite companies' tremendous investments in EKR implementations, returns on EKR usage are usually unclear and deserve more theoretical investigation. In addition, how the benefits of EKR usage differ across individuals and cultures remains unknown for both practitioners and researchers.

This thesis focuses on individual behavior in terms of seeking knowledge from EKR systems in the multinational context. Considering empowerment feelings as a cognitive motivation inspired by the knowledge embedded in an EKR, this study appropriated a contextualized construct—IT-enabled knowledge empowerment—and explored this construct as a psychological response to EKR usage by knowledge seekers. Drawing upon the theory of person-environment fit (PE fit), an interactive moderation model was developed to explain how personal innovativeness toward IT (PIIT) and national cultural characteristics (i.e., power distance, individualism/collectivism) jointly moderate the positive relationship between EKR knowledge-seeking behaviors and IT-enabled knowledge empowerment.

The hypotheses in the research model were empirically tested through a large-scale online survey in a multinational logistics company. Data was collected from 1,004 knowledge workers across 30 nations. Using simple regressions and hierarchical linear modeling techniques, this research reveals interesting results and provides valuable insights into EKR knowledge-seeking consequences. Specifically, IT-enabled knowledge empowerment was found to be a psychological response to EKR usage by knowledge seekers. National cultures of power distance and individualism/collectivism presented significant moderating effects on the relationship between EKR knowledge seeking and IT-enabled knowledge empowerment. Importantly, this positive link was magnified to the largest extent when the congruence between PIIT and national

cultures were achieved.

This thesis makes several important contributions to theory and practice. First, it provides a theoretically grounded perspective to understand individual psychological responses of IS usage and how these responses differ across individual characteristics and national cultures. This study, thus, makes important theoretical extensions in the fields of knowledge management, IS usage, empowerment, and person-environment fit. In addition, the rigorous research design and the advanced analysis techniques (e.g., hierarchical linear modeling (HLM)) also provide valuable contributions for cross-cultural IS research. As for the practical implications, the findings of this study suggest that managers should take individual characteristics and environmental cultures into consideration and should adopt differential approaches to empower employees via their EKR implementation initiatives.

Key words: IT-enabled knowledge empowerment, seeking knowledge from EKR, person-environment fit, national cultures, personal innovativeness toward IT

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Chapter 1 Introduction

1.1 Practical Problems

The development of the world economy reflects two basic trends and explains the popularity of knowledge management (KM). The first trend is the shift from a traditional economy dominated by physical resources, such as labor and capital, to a new economy dominated by intangible assets (Drucker 1969). A central feature of this shift is the increasingly important role of knowledge (Benbya 2008). In the new economic model, knowledge has become a dominant source of sustainable competitive advantages (Drucker 1995). Organizations compete based on what they know and how they utilize what they know (Prusak 1996). In this context, companies are more dependent on employees' intellectual capital than ever before (Stewart 1997).

Another economic trend that facilitates knowledge management is globalization. In the globalized economy, companies must learn how to coordinate complex business activities as their international trades increase (Benbya 2008; Prusak 2001). Moreover, employees in multinational corporations (MNC) are often located in different geographic areas, thus making it difficult for them to interact and communicate with each other (Benbya 2008). To integrate dispersed knowledge across national boundaries, multinational companies need an effective platform to facilitate internal communication. In this context, effective knowledge management on a global scale becomes a key strategy that companies must develop to survive and even excel in these turbulent competitive markets (e.g. DTI 2006; Nonaka and Takeuchi 1995; Zack 1999).

Because of these two trends, knowledge management has been widely practiced as a strategic endeavor in many large organizations, especially in multinational firms (Liebowitz 2003). Recent reports show that 80% of the leading multinational firms have undertaken their own knowledge management initiatives (Lawton 2001). As technology evolves, various types of information systems (IS) have been developed to support KM processes in organizations (Kankanhalli et al. 2005a). Among these different forms of KM systems (KMS),

the electronic knowledge repository (EKR) is one of the most commonly deployed tools to integrate disparate knowledge resources and to enable the reuse of codified knowledge (Markus 2001). More specifically, evidence shows that 80% of KM initiatives have involved EKR implementations (Davenport and Prusak 1998).

Although KM prevails in practice, our understanding of the benefits of KMS remains insufficient (Alavi and Leidner 1999). In the past few decades, organizations' investment in KM systems grew steadily, reaching billions of dollars by 1998 (O'Leary 1998). Yet, knowledge managers find it challenging to describe the benefits of KM systems in monetary terms because most of the benefits are intangible (Alavi and Leidner 1999; Benbya 2008). Moreover, even the benefits that are identifiable, such as enhanced business value, streamlined business processes, and improved service quality, are mostly considered from an organizational perspective (Benbya 2008). Furthermore, since employees are also important stakeholders in organizations (Freeman 1984) and because they are the end users of KM systems, benefits need to be considered from employees' point of view.

In addition to aforementioned practical problems, more complex challenges appear in KM practices in multinational contexts. Although technologies can be similarly deployed across different locations, the meanings conveyed through information systems as well as the outcomes of system usage may not be equally perceived by all employees (Leidner et al. 1999; Leonard-Barton and Deschamps 1988; Limaye and Victor 1991). While some researchers consider KMS usage to be closely associated with personal knowledge growth (Bock et al. 2006), others do not expect this benefit from using systems (Kane and Alavi 2007). In addition, employees in the United States have inferred that computer-mediated communication is an opportunity to share opinions in an open way, while employees in Singapore generally perceive such communication as a threat to group cohesion (Watson et al. 1994). Therefore, knowledge managers are struggling to understand how electronic knowledge repositories benefit employees with different personal characteristics and cultural backgrounds (Desouza and Evaristo 2003).

1.2 Research Motivations

1.2.1 Consequences of Seeking Knowledge from EKR

Considering the importance of KM and KMS, researchers have demonstrated an increasing interest in this topic (Argote et al. 2003; Davenport 1999; Liebowitz and Wright 1999; Malhotra 2000). Evidently, the success of a KMS can only be achieved when it is effectively used by employees (Tiwana and Bush 2005; Venkatesh et al. 2003). Thus, KMS usage becomes a central behavior investigated in this stream of research (Santhanam and Elam 1998). Compared to the fruitful discussions on the antecedents of KMS usage, researchers have only a limited understanding of the consequences of this behavior. In general, two heavily examined outcomes of IS usage are individual performance and user satisfaction; however, other benefits with respect to specific IS-use contexts need to be explored in order to enrich our understanding of the impacts of IS usage (Venkatesh 2006).

To obtain a deeper understanding of IS-use consequences, the context or the nature of information systems should be taken into consideration (DeLone and McLean 2003). For example, one major purpose of EKR is to provide codified knowledge, such as past experiences, best practices, industrial information, and organizational policies (Alavi and Leidner 2001), and employees can retrieve this relevant knowledge from the EKR system to accomplish their tasks (Gray and Durcikova 2005; Gray and Meister 2004). Since knowledge is an important source of power in organizations (Ang 2002; Davenport et al. 1998), this study investigates whether retrieving knowledge from EKR could psychologically empower people.

The construct of psychological empowerment has been well established in the organizational behavior literature. This construct is generally conceptualized as a general cognitive assessment toward task characteristics (Conger and Kanungo 1988; Spreitzer 1995; Thomas and Velthouse 1990). However, this broad conceptualization restrains the richness of intrinsic cognitions and hinders our understanding of the source of empowerment other than task characteristics (Ng

and Kim 2009). At this stage, more context-specific constructs of psychological empowerment need to be developed. To bridge these gaps, the first research question addressed by this study is proposed:

RQ1: Will employees feel empowered after retrieving knowledge from EKR?

1.2.2 Moderating Effects in a Multinational Context

Despite the surge of interest in global knowledge management projects, the literature addressing the outcomes of these projects is inadequate. Both individual characteristics and environmental factors may shape the meanings individuals ascribe to a certain information system, resulting in different responses to it (Erez 2000). On the one hand, individual differences, such as traits and values, considerably influence employees' evaluations and reactions toward a system (Agarwal and Prasad 1998a; Liska 1984). For example, innovative employees generally experience more positive feelings after innovation adoption as compared to less innovative employees (Leonard-Barton and Deschamps 1988). On the other hand, national cultures influence the relationship between system usage and the resulting outcomes (Erez 2000). For instance, group support systems enhanced user satisfaction and perceived equal participation to a larger extent in the Mexican culture than in the American culture (Mejias et al. 1996).

Although several studies show that individual characteristics and national cultures moderate the relationship between IS usage and its consequences (Calhoun et al. 2002; Chau et al. 2002; Choe 2004; Kambayashi and Scarbrough 2001; Leidner et al. 1999; Quaddus and Tung 2002; Tan et al. 1998), none of these studies have been conducted in the context of seeking knowledge from EKR. Moreover, previous studies only examined the effects of one moderator at a time, yet they failed to consider the interactive moderation of individual characteristics and national cultures. Due to these limitations, prior research has failed to provide comprehensive explanations and impedes our understanding of the impact of EKR usage for different knowledge seekers.

Erez (2000) emphasized that the fit among managerial practices, national

cultures, and individual values is one key principle in global management. From this point of view, the person-environment fit (Edwards 1991; Muchinsky and Monahan 1987) lends theoretical support to explain the interactive moderating effects of personal and environmental factors on the benefits of IS usage. Existing studies have predominantly investigated the congruence effects between individual characteristics and organizational cultures (i.e., Adkins et al. 1996; Cable and Judge 1996, 1997; Caldwell and O'Reilly 1990; Dawis 1992; Edwards and Harrison 1993; Judge and Bretz 1992; Kristof-Brown 2000; Rice et al. 1989; Westman and Eden 1992). This form of congruence, however, may not be appropriate when applied to multinational corporations in which national cultures matter. To fulfill this gap, the congruence between individual characteristics and national cultures needs to be investigated as a notable extension of the person-environment fit theory. Accordingly, the second research question is proposed:

RQ2: Will the congruence between individual characteristics and national cultures reinforce employees' feelings of empowerment after seeking knowledge from EKR?

1.3 Research Approach

In light of the above research questions, this thesis sets out to examine one psychological response to EKR usage by knowledge seekers in multinational corporations. As presented in Figure 1.1, this study synergizes four fields of literature: knowledge management, information system usage, psychological empowerment, and person-environment fit to build a comprehensive model.
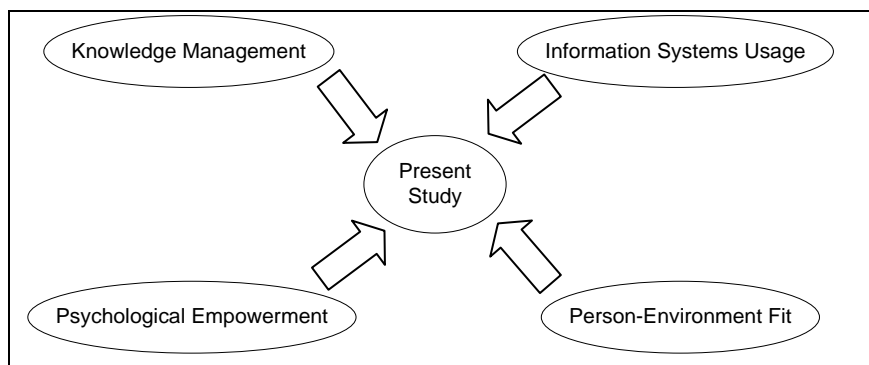
Figure 1.1 Conceptual Background of the Present Study

In the hope of filling the aforementioned gaps, this study first conceptualizes a construct of IT-enabled knowledge empowerment. This construct contextualizes psychological empowerment with an emphasis on the role of the knowledge provided by EKR. Next, the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment is justified (H_1). This relationship is then argued to be moderated by personal innovativeness toward IT (PIIT) and national cultures of power distance and individualism/collectivism (H_2, H_3, and H_5). Most importantly, the congruence between PIIT and the specific characteristics of national cultures are theorized to amplify employees' feelings of empowerment after using EKR to seek knowledge (H_4, H_6).

The field study was conducted in a multinational logistics company that had implemented a global EKR system for two years. Through an online survey, data was collected from 1004 randomly sampled knowledge workers across 30 nations. After a holistic assessment of the measurement, I employed simple regressions and hierarchical linear models to test the proposed research model. The supported hypotheses suggest that IT-enabled knowledge empowerment is a remarkable psychological response to EKR usage by knowledge seekers. Further, the national cultures of power distance and individualism/collectivism present significant moderating effects. The relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment is magnified to the largest extent when congruence between PIIT and national cultures is achieved.

In short, this research aims to attain six main objectives: (1) to appropriate the construct of IT-enabled knowledge empowerment in the EKR knowledge-seeking context, (2) to investigate IT-enabled knowledge empowerment as one psychological response to EKR usage by knowledge seekers, (3) to extend the person-environment fit theory by considering the congruence between personal innovativeness toward IT and specific characteristics of national cultures (i.e., power distance, individualism/ collectivism), (4) to identify the conditions in which employees feel more empowered by using EKR to seek knowledge, and (5) to generate managerial guidelines for similar interventions for empowering employees.

1.4 Thesis Structure

The subsequent chapters of this thesis are organized as follows. Chapter 2 reviews the literature on KMS usage, empowerment in organizations, person-environment fit, personal innovativeness toward IT, and national cultures. After setting up the knowledge background, the research model is presented in Chapter 3. Specifically, the conceptualizations of key constructs will be delineated followed by justifications for the rationale for each proposed hypothesis, including one direct effect, three two-way interaction effects, and two three-way interaction effects. Chapter 4 introduces the research methodology. It describes the research site, instrument development, data collection, and analysis approach. The preliminary results of the pilot study are also presented in this chapter. Chapter 5 shows the findings of the data analysis. With the validated measurement model, six hypotheses were tested with five of them being supported. Chapter 6 discusses the research findings together with their implications for researchers and practitioners. Chapter 6 also states the limitations of this research, which shed light on future research opportunities. Finally, Chapter 7 draws conclusions from the work undertaken.

Chapter 2 Literature Review

This chapter provides the theoretical background for the three research questions and reviews the literature in the fields of KMS usage, organizational empowerment, person-environment fit, personal innovativeness toward IT, and national cultures. Section 2.1 clarifies the different types of KM strategies, KM systems, and KMS usage. Thus, this study is well positioned in the literature by focusing on one specific KMS usage behavior—namely, seeking knowledge from an electronic knowledge repository. The second section in this chapter contains the key empowerment studies in the literature, and delineates the knowledge gaps in this field. After reviewing the conceptualizations and operationalizations of person-environment fit, section 2.3 examines the personal and environmental components of PE fit theory and suggests a direction for theoretical extension. Considering personal innovativeness toward IT and the characteristics of national cultures as the personal and environmental components, sections 2.4 and 2.5 review the literature in these two fields, respectively.

2.1 Knowledge Management Systems Usage

2.1.1 Knowledge and Knowledge Management

The nature of knowledge is multifaceted and has long been debated in Western philosophy since the classical Greek era (Alavi and Leidner 2001). From a pragmatic view in modern society, knowledge can be viewed as a justified personal belief that increases an individual's capacity to take effective actions (Huber 1991). In the work context, knowledge is held by individuals and is systematically integrated within a firm by the organizational structure (Nonaka 1994). According to the knowledge-based theory of firms (Grant 1996), it is the capability of integrating disseminated individual knowledge that endows firms with competitive advantages. Thus, knowledge becomes a critical asset that enables organizations to survive in business environments.

The surge of interest in organizational knowledge has prompted recent research

on knowledge management. In particular, Alavi and Leidner (1999) defined knowledge management as "a systemic and organizationally specified process for acquiring, organizing and communicating both tacit and explicit knowledge of employees so that other employees may make use of it to be more effective and productive in their work" (p.6). In practice, there are two strategies to manage knowledge within organizations: the personalization mode and the codification mode (Hansen et al. 1999). The personalization mode focuses on exchanging tacit and unstructured knowledge through personal communication, while the codification mode emphasizes the coding of explicit and structured knowledge in knowledge bases in order to facilitate the reuse of knowledge.

2.1.2 Knowledge Management Systems

Information systems play an important role in KM (Al-Hawamdeh 2003; Benbya 2008). In most cases, systems facilitating KM activities are collectively known as knowledge management systems (KMS) (Alavi and Leidner 2001). A more rigorous description of a KMS is "an IT-based system developed to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer and application" (Alavi and Leidner 2001, p.114). In line with the two KM strategies of personalization and codification, IS research classify KMS into two categories: the network model and the repository model (Alavi 2000).

The network model corresponds to the personalization strategy of KM (Hansen et al. 1999). Systems in this category emphasize establishing a linkage among people for knowledge exchange (Kankanhalli et al. 2005a). Representative systems include knowledge directories and electronic forums. The former system offers information about who knows what and how they can be contacted (Ruggles 1998), while the latter systems allows people to interact through communities of practice (Brown and Duguid 1991).

The repository model corresponds to the codification strategy of KM (Hansen et al. 1999). This type of systems indexes knowledge in databases and facilitates knowledge reuse through easy retrieval (Kankanhalli et al. 2005a). One typical example of this model is an electronic knowledge repository (EKR) (Grover and Davenport 2001), which stores knowledge, such as documents, customer

information, problem solutions, peer experiences, and industry best practices (Lawton 2001; Liebowitz and Beckman 1998) and accumulates the knowledge for future reuse (Markus 2001).

2.1.3 Usage of Electronic Knowledge Repositories

As noted in the knowledge management research, merely deploying KMS, such as EKR, does not guarantee desirable results (Kankanhalli et al. 2001). The success of an EKR implementation can only be achieved when employees do use the system. Particularly, relevant behavior falls in to one of two EKR usage categories: knowledge contribution and knowledge seeking.

Knowledge contribution refers to "codifying and storing existing knowledge into knowledge repositories or databases such that it can be accessed and reused by other individuals within the firm" (He and Wei 2009, p.827). Contributing knowledge to an EKR is a key beginning point for transferring information in the knowledge-management process (Argote 1999). Without proactive knowledge contributors, a sustainable knowledge-exchange process can hardly be expected. For this reason, most EKR usage studies have taken the knowledge contributor's perspective and have examined the motivations and consequences of knowledge contribution in the EKR context (e.g., Constant et al. 1996; Jarvenpaa and Staples 2000; Wasko and Faraj 2000, 2005).

Knowledge seeking refers to "one individual using knowledge generated by a different individual or group within the same firm, in order to be more effective and productive in their work" (Watson and Hewett 2006, p.143). The terms knowledge reuse (Markus 2001) and knowledge sourcing (Gray and Meister 2004) are also used to refer to knowledge-seeking behavior. By seeking knowledge from an EKR, employees solve context-specific problems by integrating pre-existing experiences (Gray 2001). Besides the benefits knowledge seeking provides for information seekers, frequent knowledge reuse also motivates knowledge contributors to share more knowledge, thus facilitating a virtuous knowledge-transfer process (Dutta et al. 2007).

Despite the practical importance of knowledge-seeking behavior, research from

the knowledge seeker's perspective is surprisingly scarce. The most notable studies in this area have mainly explored the predictors of EKR knowledge-seeking behavior (i.e., Bock et al. 2006; Gray and Durcikova 2005; He and Wei 2009; Kankanhalli et al. 2005b; Quigley et al. 2007; Watson and Hewett 2006), but the consequences of this behavior have not been empirically examined, thus leading to this study's research questions.

Importantly, it should be noted that knowledge contribution and knowledge seeking are two different behaviors and that these two behaviors can be conducted by either the same or different individuals. Accordingly, EKR systems can be implemented through two approaches. The first approach allows employees to both contribute knowledge to and seek knowledge from the EKR systems (e.g., EKR reuse by shared work producers and EKR reuse by shared work practitioners) (Markus 2001). The second approach assigns a certain group of experts to input knowledge and authorizes frontline employees to only seek knowledge from the system (e.g., EKR reuse by expertise-seeking novices) (Markus 2001). In this study, an EKR implemented in the second approach is considered as an appropriate research context because it enables a direct investigation of knowledge-seeking behaviors conducted by pure knowledge seekers who are not knowledge contributors. Since seeking knowledge from an EKR is one type of IS usage behavior, the next section reviews literature on IS usage consequences.

2.1.4 Consequences of System Usage

IS usage is one of the most important dependent variables in IS research (DeLone and McLean 1992). There are common assumptions that heavily used systems are successful and that IS implementation failures are caused by underutilization (Lucas 1975; Markus and Keil 1994). Therefore, how to motivate employees to use systems has become a central research question in the IS field. Remarkable progress has been made in explaining the factors and psychological mechanisms that lead to initial acceptance and continued usage by employees (Venkatesh 2006).

However, compared to the vast amount of research on the antecedents of IS use

(Venkatesh et al. 2003), discussions on the consequences of IS use are far from sufficient. Understanding the downstream results of IS use is of great importance, however, simply because the ultimate goal of system deployment in organizations is not to use the system but to obtain benefits from the usage (Szajna 1993). At this stage, researchers have recognized two aspects of the impact that IS have on individuals: behavioral responses and psychological responses. Particularly, most of the behavioral response studies focused on enhanced performance (Burton-Jones and Straub 2006; Halawi et al. 2007; McGill et al. 2003; Sedera et al. 2004; Torkzadeh and Doll 1999; Vlahos and Ferratt 1995; Vlahos et al. 2004; Yuthas and Young 1998), while the studies concentrating on psychological responses mainly examined user satisfaction (Ang and Soh 1997; Chiu et al. 2007; Guimaraes et al. 1996; Halawi et al. 2007; Iivari 2005).

Behavioral responses: Job performance. Although the positive influence of IS use on individual performance has long been assumed, empirical evidence is not always supportive across different studies. For example, this link has been reported to be positive (Almutairi and Subramanian 2005; Anandarajan et al. 1998; Burton-Jones and Straub 2006; Doll and Torkzadeh 1998; Goodhue and Thompson 1995; Guimaraes and Igbaria 1997; Igbaria and Tan 1997; Kositanurit et al. 2006; Shanks et al. 2009; Yuthas and Young 1998), insignificant (Gelderman 1998; Iivari 2005; Lucas and Spitler 1999; McGill et al. 2003; Wu and Wang 2006), and negative (Pentland 1989; Szajna 1993).

One major reason for these mixed results is the inconsistent measures of IS use and individual performance. To illustrate, IS use has usually been measured using objective usage records or self-reported data without theoretical justifications (DeLone and McLean 2003). Burdon-Jones and Straub (2006) advanced our knowledge by proposing a systematic approach to conceptualizing and measuring IS use in terms of its structure and function. With this approach, they observed with more confidence that IS use was positively associated with short-run task performance in cognitively engaging tasks. A similar problem also occurred for the measure of individual performance. Performance was often measured subjectively or objectively with a diverse set of dimensions varying

across tasks and system functions. Commonly applied dimensions include productivity, efficiency, service quality, and decision-making quality. Table 2.1 summarizes the empirical studies that examine the IS use-individual performance link.

Table 2.1 Empirical Studies on the Relationship between IS Use and Individual Performance					
Study	**Systems**	**Method**	**Usage Measurement**	**Performance**	**Results**
Almutairi and Subramanian (2005)	General IS	Survey	Time of usage; frequency of usage	Task productivity, task innovation, customer satisfaction, management control	+
Anandarajan et al. (1998)	Internet	Survey	Usage time, frequency, activity, type of web pages	Self-reported productivity and inefficiency	+
Burton-Jones and Straub (2006)	Spreadsheet	Survey	Deep structure usage	Objective performance assessment	+
Doll and Torkzadeh (1998)	Applications	Survey	Problem solving, decision rationalization, horizontal integration, vertical integration, customer service	Task productivity, task innovation, customer satisfaction	+
Goodhue and Thompson(1995)	Computer system	Survey	Dependence on the systems	Perceived impacts on effectiveness, productivity and performance.	+
Guimaraes and Igbaria (1997)	Client/Service systems	Survey	Self-reported use frequency; actual amount of time	Perceived impact of CCS on performance, productivity, effectiveness (Bikson et al. 1985; Hackman and Oldham 1980; Kraut et al. 1989)	+
Igbaria and Tan (1997)	Multiple applications	Survey	Number of applications used, number of tasks using the system	Perceived impact on decision making quality, performance, productivity, effectiveness of the job.	+
Iivari (2005)	General IS	Survey	Actual use: use time and frequency of use	Individual impact: perceived usefulness	n.s.
Kositanurit et al. (2006)	ERP	Survey	Self-reported	Self-reported performance	+
Lucas and Spitler (1999)	Workstation	Survey	Self-report usage and use intention	Objective performance record	n.s.
McGill et al. (2003)	User-developed applications	Survey	Use intention	Perceived individual performance impact (Goodhue and Thompson 1995)	n.s.
Pentland (1989)(cited in Burton-Johns and Straub (2006)	Computer systems	Survey	(not available)	(not available)	-
Shanks et al. (2009)	CRM	Interview	Not measured	Customer service quality; efficiency (complain handling time); productivity (handled number of customers)	+
Szajna (1993)	General IS	Longitudinal experiments	Number of reports and time spent on reports	Decision performance, perception of decision performance, user satisfaction	+,-,n.s
Wu and Wang (2006)	KMS	Survey	"I use KMS to help me make decisions"; "I use KMS to help me record my knowledge"; "I use KMS to communicate knowledge and information with colleagues"; "I use KMS to share my general knowledge"; "I use KMS to share my specific knowledge".	Perceived KMS benefits: "KMS helps me acquire new knowledge and innovative ideas"; "KMS helps me effectively manage and store knowledge that I need"; "KMS enable me to accomplish tasks more efficiently"; "my performance on the job is enhanced by KMS"; "KMS improves the quality of my work life".	n.s.
Yuthas and Young (1998)	General IS	Experiment	System usage time, usage report volume	Objective and subjective decision-making performance	+

Note:
   +: significant positive relationship; -: significant negative relationship; n.s.: insignificant relationship.

Psychological responses: User satisfaction. IS research has shown that not only can behavioral responses be invoked by IS usage, but also psychological responses can be invoked as well (Jackson et al. 2001). Among the various psychological outcomes identified in the research, such as technostress (Ragu-Nathan et al. 2008), computer anxiety (Heinssen et al. 1987), and technophobia (Brosnan 1998), user satisfaction (Doll and Torkzadeh 1988; Wixom and Todd 2005) received the most attention in empirical studies. The link between IS use and user satisfaction has been tested in different contexts, but the results of these tests have been positive (Chiu et al. 2007; Gelderman 1998; Guimaraes et al. 1996; Halawi et al. 2007; Igbaria and Nachman 1990; Iivari 2005; Khalil and Elkordy 1999; Nath 1989), negative (Kraut et al. 1989), and insignificant (Ang and Soh 1997; Kim et al. 1998; Vlahos and Ferratt 1995). A more detailed review of these studies is presented in Table 2.2.

These inconsistent findings may arise from the unclear conceptualization of user satisfaction. Psychologists usually treat satisfaction as either an affective or a cognitive construct (Moorman 1993). Affective satisfaction is based on an overall appraisal of positive emotions, feelings, or mood (Moorman 1993). From this perspective, user satisfaction is a subjective evaluation of the various outcomes of IS use on a pleasant/unpleasant continuum (Seddon 1997). The single-item measure for overall satisfaction with an IS matches this affective-based conceptualization. However, this measure has been criticized for being unreliable by incurring a large measuring error (Zviran and Erlich 2003).

Alternatively, cognitive satisfaction focuses on the rational evaluations of IS outcomes rather than on emotional judgments (Moorman 1993). Ives et al. (1983) adopted this cognitive perspective and defined user satisfaction as the degree to which users believe that IS fulfills their needs. To measure cognitive-based user satisfaction, numerous IS attributes have been involved in the measurement instrument, and users are asked to evaluate the identified attributes compared with their expectations (Bailey and Pearson 1983; Melone 1990). Individuals with high ratings on IS attributes are considered to have high levels of user satisfaction. However, these attribute-evaluation instruments also bear some weaknesses. First, the identified IS attributes are commonly regarded as the

antecedents of user satisfaction but not as satisfaction itself (Au et al. 2008; Petter et al. 2008). Second, the ratings for the system attributes fail to reflect the underlying reasons for user satisfaction. Regarding the same highly rated system, some may feel dissatisfied because it imposes a threat to their job security or increases their workload, while others may feel satisfied since it allows them to gain more power and control (Au et al. 2008).

In the IS research, the distinction between affective and cognitive-based user satisfaction has not been noticed until recently with the work by Au et al. (2002). This review recognized the affective and cognitive dimensions underlying user satisfaction and suggested that the measure of this construct should take both emotions and cognition into consideration (Au et al. 2002). Given the lack of a validated instrument to carry out this suggestion in prior research, it is reasonable to observe that the relationship between IS use and user satisfaction is inconclusive.

Looking beyond user satisfaction, Jackson et al. (2001) proposed a conceptual framework for Internet use and indicated three types of psychological responses derived from IS usage, including motivations, affections, and cognitions. Thus, the study at hand concentrates on the cognitive responses of IS use. Specifically, I re-conceptualize the construct of psychological empowerment from the organizational behavior literature and explore it as an outcome of seeking knowledge from EKR. The literature of psychological empowerment is reviewed in the next section.

Table 2.2 Empirical Studies on the Relationship between IS Use and User Satisfaction

Study	Systems	Method	Measure of Usage	Measure of User Satisfaction	Results
Ang and Soh (1997)	Computer	Survey	Frequency of use	Satisfaction with information product, staff and service, user knowledge, perceived usefulness (Baroudi and Orlikowski 1988)	n.s.
Chiu et al. (2007)	Web-based learning system	Survey	Frequency and hours of use(Moon and Kim 2001)	"I think [IS] is a good idea";"My decision to use [IS] is a wise one";"I am pleased with the experience of using [IS]" (Oliver 1980; Oliver and Swan 1989)	+
Gelderman (1998)	General IS	Survey	Hours of IS usage per week; hours of getting results from IS; frequency of IS usage per week; frequency of getting results from IS	Satisfaction with content, accuracy, format, timeliness, ease of use (Doll and Torkzadeh 1998)	+
Guimaraes et al. (1996)	Expert Systems	Survey	Single-item general usage: "the ES is used all the time".	User satisfaction with output value, timeliness, reliability, response time, accuracy, completeness, ease to use, ease to learn, usefulness of documentation (Bailey and Pearson 1983; Lucas 1978; Raymond 1985)	+
Halawi et al. (2007)	KMS	Survey	Intention to use (Thompson et al. 1991)and Davenport et al(Davenport et al. 1998)	Seddon and Yip (1992): "The [IS] meets the knowledge needs of my area of responsibility"; "The [IS]is very effective"; "The [IS]is very efficient"; "Overall, I am satisfied with the [IS] in our organization"	+
Igbaria and Nachman (1990)	End user computing	Survey	Computer usage experience (self-developed)	End User Satisfaction (Baroudi and Orlikowski 1988; Ives et al. 1983)	+
Iivari (2005)	General IS	Survey	Actual use in terms of daily use time and frequency of use	User Satisfaction: terrible-wonderful; difficult-easy; frustrating- satisfying; inadequate-adequate; dull- stimulating; rigid-flexible (Chin et al. 1988)	+
Khalil and Elkordy (1999)	MIS	Interview	Subjective assessment of the usage of system output	User satisfaction with 15 elements (Bailey and Pearson 1983; Ives et al. 1983).	+
Kim et al. (1998)	End user computing	Survey	number of packages used; number of business applications, hours of PC use, hours of mainframe use	" [IS] helps me do my work better"; "[IS] has enabled me to carry out my work more easily and efficiently"; "[IS] has enabled me to carry out my work more effectively"; "[IS] has enabled me to make better decisions"; "[IS] is extremely useful"; "All in all, I am now satisfied with [IS]" (Ginzberg 1981; Lee and Kim 1992; Maish 1979; Sanders 1984)	+, n.s.
Kraut et al. (1989)	Computerized record system	Case study	Before and after automation	Positive attitudes toward computers: "computers make my job easier to do"; "computers have eliminated many routine and boring jobs".	-
Nath (1989)	Computer-based IS	Survey	Frequency of use and time spent	End user information satisfaction (self-developed)	+
Vlahos and Ferratt (1995)	Computer-based IS	Survey	Hours per week of IT use	Single-item overall satisfaction with the system	n.s.
Note: +: significant positive relationship; -: significant negative relationship; n.s.: insignificant relationship.					

2.2 Empowerment

2.2.1 Definitions of Empowerment

The concept of empowerment has evolved over decades since the civil rights movement and the women's liberation movement in 1960s (Spreitzer and Doneson 2005). The theoretical root of empowerment lies in the modern political philosophy that aims to address such questions as the nature of power and the role of citizens in politics (Spreitzer and Doneson 2005). Nowadays, this concept has been applied to a wide range of fields, including sociology, psychology, marketing, and organizational science (Bartunek and Spreitzer 2006). This study only considers empowerment in the workplace and reviews empowerment studies from the organizational behavior literature.

As indicated by its literal meaning, to empower means to give power. Thus, multiple meanings of power result in different perspectives of empowerment (Thomas and Velthouse 1990). Specifically, the organizational behavior literature has studied empowerment from two perspectives: structural empowerment and psychological empowerment.

2.2.1.1 Structural Empowerment

This perspective considers power to be a relational construct that denotes the net dependence/interdependence of one party on another (Pfeffer 1981). Similarly, sociology defines power as one's potential influence in social interactions (Bacharach and Lawler 1980; French and Raven 1959). In particular, power in organizations refers to an individual's ability to influence organizational outcomes (Mintzberg 1983). It is usually interpreted as hierarchical authority, control over key resources (Conger and Kanungo 1988), and network centrality (Astley and Sachdeva 1984).

Following this view, structural empowerment emphasizes granting power and delegating authority (Burke 1986). This conceptualization is closely linked with beliefs about democracy that insist that power should reside in individuals at all

levels of a social system (Prasad 2001). In organizations, structural empowerment requires changes in policies, practices, and structures, moving away from strict control systems toward high involvement practices in order to remove conditions that foster powerlessness (Bowen and Lawler 1995).

Structural empowerment is usually operationalized as empowering practices. These managerial practices are characterized as distributing power, rewards, information, and knowledge down the hierarchy in an organization (Bowen and Lawler 1995). The central purpose of empowering practices is to transfer power from powerful managers to the less powerful employees (Kanter 1979, 1983), thus ensuring that employees have the authority to accomplish their jobs (London 1993). Exemplary empowering practices include delegation and decentralization (Kanter 1983), participative decision making (Labianca et al. 2000), soft HRM (Legge 1995), total quality management (Knights and McCabe 1999), self-managed teams (Sewell 1998), employee involvement (Lashley 2000), and information sharing with employees (Senge 1990).

Despite wide discussions, scholars have not agreed on an operationalization of structural empowerment because empowering practices vary in different contexts. These varied operationalizations have made it difficult to compare and integrate empirical findings across empowerment studies; thus, the development of this line of research has been constrained (Robbins et al. 2002). Moreover, structural empowerment only focuses on the actions of organizations or managers, but it fails to encompass the motivational responses of employees (Conger and Kanungo 1988). This motivational perspective of empowerment, however, is especially important. In fact, empowering practices cannot achieve desirable outcomes unless the employees feel empowered (McEwan and Sackett 1998; Robbins et al. 2002). Therefore, as a complement to structural empowerment, psychological empowerment has been proposed to describe employees' intrinsic work motivation

2.2.1.2 Psychological Empowerment

Different from the structural perspective, psychological empowerment is based on a motivational view of power (Conger and Kanungo 1988). In psychology,

individuals are assumed to have a natural need for power to influence and control over others (McClelland 1975). In this sense, employees will feel powerful when their intrinsic motivations for self-determination (Deci 1975) or self-efficacy (Bandura 1982) are reinforced.

Conger and Kanungo (1988) were the first to conceptualize empowerment from the psychological perspective. They conceived empowerment as an enabling process. In particular, they argued that enabling implies creating conditions for task motivation by strengthening self-efficacy or effort-performance expectancies. A more rigorous definition of psychological empowerment, however, is "a process of enhancing feelings of self-efficacy among organizational members through the identification of conditions that foster powerlessness and through their removal by both formal organizational practices and informal techniques of providing efficacy information" (Conger and Kanungo 1988, p.474). This definition views psychological empowerment as a cognitive response to an external stimulus. In this way, it presumes that individuals' judgments fully reflect objective realities.

Thomas and Velthouse (1990) later extended Conger and Kanungo's (1988) work in several ways. They clarified the meaning of psychological empowerment as an intrinsic task motivation. This motivation comes from cognitive task assessments comprised of four dimensions regarding not only self-efficacy (termed competence) but also impact, meaningfulness, and choice. These four dimensions emphasize that empowerment is a process of energizing that provides a more complete picture of task motivations than enabling. Another contribution made by Thomas and Velthouse (1990) is the proposition of an empowerment process model from an interpretive perspective. This model views psychological empowerment as socially constructed (Burrell and Morgan 1979). In other words, individuals attach subjective meanings to factual tasks through several interpretive processes. Thus, psychological empowerment is not only influenced by external interventions but also by individual differences in interpretive processes.

Building on the conceptual frameworks by Conger and Kanungo (1988) and Thomas and Velthouse (1990), Spreitzer (1995) made a significant step in this

line of research by developing and validating an instrument to measure psychological empowerment in the work domain. This study defined psychological empowerment as a motivational construct manifested in four cognitive dimensions: meaning, competence, self-determination, and impact. Each dimension is described as follows and the measurement items are summarized in Table 2.3.

Table 2.3 Measurement of Psychological Empowerment (Spreitzer 1995)	
Dimension	**Measurement Items**
Meaning	The work I do is very important to me.
	My job activities are personally meaningful to me.
	The work I do is meaningful to me.
Competence	I am confident about my ability to do my job.
	I am self-assured about my capabilities to perform my work activities.
	I have mastered the skills necessary for my job.
Self-determination	I have significant autonomy in determining how I do my job.
	I can decide on my own how to go about doing my work.
	I have considerable opportunity for independence and freedom in how I do my job.
Impact	My impact on what happens in my department is large.
	I have a great deal of control over what happens in my department.
	I have significant influence over what happens in my department.

In this model, *meaning* concerns the value of task goals, judged in relation to the individual's own values or standards. The notion of meaning involves a fit between the requirement of work roles and one's beliefs, values, and behaviors (Brief and Nord 1990; Hackman and Oldham 1980). *Competence* is synonymous with self-efficacy with a specific focus on the work roles. It reflects the beliefs in one's capability to perform task activities with skills (Gist 1987). Competence is also paralleled to personal mastery or effort-performance expectancy in the psychology literature (Bandura 1989). *Self-determination* reflects the autonomous initiation and continuation of work behavior and processes (Bell and Staw 1989; Spector 1986). This dimension implies the choice and the sense of responsibility that stem from autonomy (Deci and Ryan 1989). Self-determination is also similar to what deCharms (1968) termed locus of causality, which involves causal responsibility for a one's actions. Finally, *impact* denotes the degree to which an individual can make a difference in organizational outcomes (Ashforth 1989). The notion of impact has also been labeled as locus of control (Rotter 1966), learned helplessness (Abramson et al. 1978), and knowledge of results (Hackman and Oldham 1980). According to the

expectancy theory, impact represents performance-outcome expectancy (Bandura 1989).

Empirical research has flourished on psychological empowerment since Spreitzer's (1995) measure was proposed. These studies have been conducted in a variety of contexts, including companies in the service (Liden et al. 2000), manufacturing (Spreitzer 1995, 1996), insurance (Spreitzer 1995), hospitality (Corsun and Enz 1999; Koberg et al. 1999; Kraimer et al. 1999; Sparrowe 1994), and banking (Kark et al. 2003) industries as well as in governmental agencies (Geelmuyden and Silvester 1999) and non-profit corporations (Mishra et al. 1998). Consistent empirical evidence indicates that the generalizability of Spreitzer's (1995) measurement instrument has been well established.

2.2.1.3 The Relationship between Structural and Psychological Empowerment

Structural empowerment and psychological empowerment are not mutually exclusive. These two perspectives complement each other with different emphases, and together provide a comprehensive picture of the empowerment phenomenon. Specifically, Lee and Koh (2001) conceived structural and psychological perspectives as the cause and effect of the empowerment process. A large body of studies have empirically supported this view, showing that empowering interventions lead to changes in employees' perceptions about their jobs (Huang et al. 2006; Kirkman and Rosen 1999; Leach et al. 2003; Lee and Koh 2001; Menon 2001; Sparrowe 1994; Spreitzer 1995, 1996).

In sum, empowerment can be studied from either the structural or psychological perspective depending on the research questions and contexts. Since this study focuses on individuals' psychological responses to using EKR to seek knowledge, I have chosen to draw on the psychological perspective, considering EKR practices as an empowering intervention that generates psychological empowerment. In addition, Spreitzer's (1995) instrument is adapted in this research to measure the IT-enabled empowerment feelings. A holistic discussion on the antecedents and consequences of psychological empowerment is presented in the following sections.

2.2.2 Antecedents of Psychological Empowerment

The antecedents of psychological empowerment will be reviewed in three groups: individual differences, job characteristics, and organizational environments. A more detailed summary is provided in Table 2.4.

2.2.2.1 Individual Differences

The individual differences that are relevant to the discussion of psychological empowerment include demographic variables, personal perceptions, and individual characteristics. In respect to demographic variables, Koberg et al. (1999) found that employees who stayed longer in organizations felt more empowered. However, gender, education, and ethnicity failed to predict individuals' level of psychological empowerment (Koberg et al. 1999). In relation to the context of IS, Hughes (1998) found that students were motivated to possess IT skills in order to become self-reliant in a learning-centered environment. Thus, a preliminary conclusion was drawn that improved computer operating skills helped individuals optimize the full potential of new technologies and feel empowered.

As for the personal perceptions related to psychological empowerment, Robbins et al. (2002) posited that feelings of empowerment are influenced by individuals' perceptions of their work environment in terms of opportunity, support, commitment and trust. Similarly, Chen and Klimoski (2003) demonstrated that newcomers' performance expectations evoked a sense of confidence and intrinsic motivation,   which, in turn, lead to psychological empowerment.

Finally, individual characteristics reflect how individuals see themselves and their surroundings in relation to their work environments (Hu and Leung 2003). Individuals with stronger self-esteem, for instance, are more likely to feel empowered (Menon 2001; Spreitzer 1995). As another example, more innovative employees report feeling stronger psychological empowerment than those who are less likely to take risks (Foster-Fishman and Keys 1995; Hu and Leung 2003). Additionally, some studies argued that individuals with an internal locus of control believe that events result primarily from their own actions, thus are more

likely to feel empowered than those with external locus of control who believe that powerful others, fate, or chance primarily determine events (Koberg et al. 1999; Spreitzer 1995). Yet, this relationship has not been found significant in empirical studies (Koberg et al. 1999; Spreitzer 1995).

2.2.2.2 Job Characteristics

The rationale for the relationships between job characteristics and empowerment is embedded in Hackman and Oldham's (1976) job characteristics model. According to this model, the nature of a job can be described by five characteristics: task significance, task identity, skill variety, task feedback, and job autonomy. These characteristics influence one's intrinsic motivations through the mediation of three psychological states: experienced meaningfulness, experienced responsibility, and knowledge of results (Hackman and Oldham 1976). These psychological states closely correspond to the cognitive task assessments captured by psychological empowerment (Thomas and Velthouse 1990). According to this line of reasoning, job characteristics have been identified as a key determinant of individuals' perceptions of empowerment. Research by Gagné et al. (1997), Kraimer et al. (1999), Liden et al. (2000), and Chen and Klimoski (2003) offer empirical support that jobs with higher motivational potential, such as skill variety, job meaningfulness, autonomy, and feedback, are likely to enhance employees' psychological empowerment.

2.2.2.3 Organizational Environments

Organizational environments have a powerful influence on the cognitions of empowerment (Thomas and Velthouse 1990). Consistent with this idea, Spreitzer (1996) explicated that social structural characteristics in organizations facilitate employees' feelings of empowerment. Fruitful empirical results related to empowerment in organizations are discussed in two subcategories: social relationships and empowering practices.

Social relationships include dyadic relationships and work climates. Firstly, smooth relationships with leaders, coworkers, and customers generate social-political support and are important in facilitating empowerment (Spreitzer

1996). To illustrate, leader- member exchange (LMX) determines the extent to which leaders grant members latitude and support, which, in turn, result in psychological empowerment. Empirical support for this relationship was found in different contexts, including hospitality organizations (Sparrowe 1994), service companies (Liden et al. 2000), home improvement firms (Chen et al. 2007a), and Chinese state-owned enterprises (Chen et al. 2007b). As for relationships with coworkers, team-member exchange (TMX) offers work-related expertise, feedback, and social support, which drive perceptions of empowerment. Yet, this impact of TMX on empowerment was not observed in empirical studies (i.e., Liden et al. 2000). Furthermore, close relationships with customers promoted empowerment feelings in Corsun and Enz's (1999) study of a sample of U.S. employees in private clubs.

Besides dyadic relationships, work climates also manifest social relationships within organizations or teams. Specifically, empowering climates refer to the shared perceptions that a group makes use of structures, policies, and practices to support members' access to power (Seibert et al. 2004). In previous studies, employees who worked in such climates generally displayed strong empowerment feelings (Chen et al. 2007b; Seibert et al. 2004). Further, studies probing this relationship also applied similar terms, such as work-unit climates (Spreitzer 1995), participative climates (Sparrowe 1994; Spreitzer 1996), and leadership climates (Chen et al. 2007a), to describe this type of environment. Apart from empowering climates, other social factors that impact psychological empowerment include mutual influence (Koberg et al. 1999), intergroup trust (Foster-Fishman and Keys 1995; Koberg et al. 1999), peer helping atmospheres (Vogt and Murrell 1990), and constructive organizational cultures (Sparrowe 1994).

Empowering practices correspond to the aforementioned structural empowerment. This part of the literature review consists of leadership actions and organizational interventions. To begin with, leadership is a noteworthy enabler of empowerment feelings. For instance, House (1977) posited that charismatic leadership significantly encourages employees' psychological empowerment. Likewise, participative leadership fosters empowerment in

metropolitan hospitality companies (Koberg et al. 1999) as well as in Chinese state-owned manufacturing enterprises (Huang et al. 2006). Transformational leadership also exerted positive impacts on individuals' sense of empowerment in longitudinal field experiments in an Israeli military institution (Dvir et al. 2002). To articulate the mechanisms underlying the above relationships, Kark et al. (2003) explored and found the mediating role of social identification through a survey in a large Israeli bank.

A more compelling and relevant construct is empowering leadership behavior. Arnold et al. (2000) developed a measurement instrument for this construct through interviews and surveys in multiple industries. Five categories of behaviors were included in this instrument: (1) *leading by example* refers to behaviors that show the leader's work commitment (i.e., working harder than team members); (2) *coaching* is educating team members and helping them become self-reliant (i.e., making suggestions to improve performance); (3) *participative decision making* includes accepting team members' input in making decisions (i.e., encouraging team members to solve problems together); (4) *informing* means to disseminate organizational visions, such as the mission and business philosophy, to team members (i.e., explaining organizational decisions to employees); and (5) *showing concern* demonstrates a general care for team members' wellbeings(i.e., treating team members with respect). In addition to the work of Arnold et al. (2000), Ahearne et al. (2005) also constructed a measure for empowering leadership behavior. This measure is consistent with Conger and Kanungo's (1998) framework and is comprised of four dimensions —meaningfulness, competence, self-determination, and impact—with a particular emphasis on the empowering role of leadership.

In regard to organizational interventions, early studies by Kanter (1977, 1983) depicted how organizational communication systems and network-forming channels empower or disempower employees. A case study of total quality management (TQM) showed that empowering practices characterized by self-managing teams substantially improve team members' sense of choice and control as well as their professional skills (Shrednick et al. 1992). Through surveys of middle managers in the United States, Spreitzer (1995, 1996)

suggested that performance-based reward policies and organizational information contribute to respondents' psychological empowerment.

2.2.2.4 The Role of IT in Empowering Practices

The development of information technology and systems (IT/IS) is causing drastic changes in current managerial practices in general and empowering practices in particular. On the one hand, IT/IS has long been expected to shape management styles in pursuit of empowerment (Bowen and Lawler 1992; Evans et al. 1989; Walton 1989; Zuboff 1988). For example, advanced technologies reduce the costs of communication and coordination in organizations (Malone 1997). With the support of new technologies, people can better combine the useful external information with their own local knowledge and make independent decisions at a much lower cost than before (Malone 1997). Thus, decentralized decision making enabled by IT, as an empowering practice, becomes more effective than the centralized ones (Malone 1997). As empirical support, McEwan and Sackett (1998) demonstrated that manufacturing systems provided real-time operating information for production workers, allowing the workers to feel direct control over production processes, which simultaneously nurtured empowerment. Likewise, Hu and Leung (2003) reported that Internet usage improved psychological empowerment for Chinese women. The Internet fulfilled respondents' information-seeking needs and made them feel rewarded from using it (Hu and Leung, 2003). Moreover, Downing et al. (2003) explained a variety of ways in which IT fostered empowerment. For instance, IT facilitated internal and external coordination, assisted individuals in gathering information to make better decisions, and helped employees better control the situations they faced (Downing et al. 2003).

On the other hand, other scholars have opposite opinions about IS, believing information systems actually disempower individuals. Gray (2001) conceptually articulated that the use of knowledge repositories can lead to the substitutability of employees and can reduce the level of skills required to carry out their work. Further, he argued that the changes brought by information systems undermine employees' power in organizations (Gray 2001). Similarly, through a longitudinal study of ERP implementation, Alvarez (2008) indicated that users of

ERP systems experience a loss of control and significant changes in role identity. In line with this view, Morris and Venkatesh (2010) theorized that there are different psychological mechanisms behind employees' reactions to job characteristics before and after an ERP implementation. After the ERP was implemented, employees perceived their jobs to be automated with less discretion, complicated with overwhelming information, and even replaceable by the system. Thus, employees felt dissatisfied or less empowered than they did prior to the system implementation (Morris and Venkatesh 2010).

In summary, technologies can be applied to support either empowering or controlling strategies (Walton 1989; Zuboff 1988). Whether an information system empowers or disempowers employees largely depends on the functions it serves and the work processes it changes (Gray 2001). As a result, the context under investigation should be considered in this line of research. Regarding this suggestion, electronic knowledge repositories, the focus of this study, are distinct from other information systems in a significant way. Particularly, EKR systems are less concerned with monitoring individual behavior or replacing labor with technology but focus more on eliminating redundant human efforts (Hansen et al. 1999). Bearing these features in mind, whether an EKR empowers employees remains an appealing question to be addressed by empirical research.

Table 2.4 Empirical Studies on the Antecedents of Psychological Empowerment

Studies	Antecedents			Sample	Findings
	Independent Variable	Mediator	Moderator		
Chen and Klimoski (2003)	Performance expectations, social exchange, work characteristics	-	-	70 newcomers, 7 team leaders, 102 teammates in high-tech project teams	Newcomer performance expectations, work characteristics, social exchanges→newcomer empowerment
Chen et al. (2007)	Empowerment climate	-	-	238 supervisor-subordinate dyads drawn from 2 Chinese limited corporations.	Sense of empowerment mediates the moderating effect of the empowerment climate on the relationship between LMX and negative feedback-seeking behavior
Chen et al. (2007)	Leader-member exchange (LMX)	-	Leadership climate	445 members, 62 team leaders, 31 managers from 62 teams in 31 stores of a U.S. company	Leadership climate positively moderates the positive relationship between LMX and individual empowerment
Corsun and Enz (1999)	Peer helping behaviors, supportive organizational environment, supportive customers, employee-customer value cognition	-	-	292 service workers in 21 private clubs in the United States	Peer helping→experienced empowerment; Customer supportiveness→experienced empowerment
Downing et al. (2003)	National culture (power distance and uncertainty avoidance)	Media rich IT, Collaborative IT	-	Manufacturing technology fellowship program, which is a joint project with U.S. and Japanese departments. 12 fellows participated in the initial portion and 6 in a full 2-year period research	Japan: media rich IT to achieve empowerment; U.S.: collaborative technology to achieve empowerment
Hu and Leung (2003)	Age, attitudes towards the Internet, expected value from Internet use, innovativeness, use of IT	-	-	357 Asian-born female Chinese Internet users	Age, attitude toward Internet, innovativeness, e-mail, expectancy-values of the Internet, type of technology→psychological empowerment (overall and by dimension)
Huang et al. (2006)	Participative leadership	-	Tenure	173 employees from 2 Chinese state-owned enterprises (59 motorcycle manufacturing firms, 114 textile manufacturing firm)	Full mediation: participative leadership*tenure→competence→organizational commitment (positive for short tenure; insignificant for long tenure)
Kark et al. (2003)	Transformational leadership	Social identification	-	888 bank employees working under 76 branch managers in a large Israeli banking organization	Personal identification mediates the relationship between transformational leadership and dependence; whereas, social identification mediates the relationship between transformational leadership and empowerment
Koberg et al. (1999)	Individual factors (locus of control, tenure, gender, education, ethnicity), environmental factors (worth of group, leader approachability, group effectiveness, mutual influence, organizational rank, intra-group trust)	-	-	612 employees from a large, private general hospital in a major Western metropolitan area	Tenure, leader approachability, group effectiveness, worth of group, individual's rank in organization→empowerment→job satisfaction, perceived work productivity/effectiveness, propensity to leave the organization
Kraimer et al. (1999)	Job meaningfulness, job autonomy, task feedback	-	-	At a community hospital. T1: 175 nurses for CFA, 160 for SEM. T2: 113 nurses	Job meaningfulness→meaning; Job autonomy→self-determination; Task feedback→competence, impact
Liden et al. (2000)	Job characteristics, LMX, TMX	-	-	337 employees and immediate supervisors of 60 groups in a service organization	(1) Job characteristics→empowerment (4 dimensions); (2) LMX→impact, self-determination (3) Complete mediation: job characteristic→meaning

				→organizational commitment
				(4) Partial mediation:
				  job characteristic→meaning→work satisfaction;
				  job characteristic→competence→work satisfaction

Menon (2001)	Centralization, delegation, consulting behavior, self-esteem	-	-	Study 1: main sample: 311 part-time business students from Quebec, Canada. Test-pretest: 85 respondents from same source. Study 2: 66 employees from a financial services company in Ontario, Canada	(1) three-dimensional psychological empowerment: perceived control, perceived competence, goal internalization. (2) centralization, delegation, consulting behavior, self-esteem→empowerment
Robbins et al. (2002)	Local work environment (job structure, HR practice), organization context	Perceived opportunity, support, trust, commitment	Individual differences	(conceptual study)	Local work environment→environmentally influenced perceptions→psychological empowerment
Seibert et al. (2004)	Empowerment climate	-	-	48 teams, 285 employees with complete individual and work-unit-level data from a manufacturer of high-technology office and printing equipment in United States	(1) Empowerment climate is different from psychological empowerment; (2) Empowerment climate→psychological empowerment; (3) Full mediation: empowerment climate→empowerment→job satisfaction; (4) Partial mediation: empowerment climate→empowerment→job performance
Sparrowe (1994)	Constructive organizational culture, LMX	-	-	182 employees in 33 hospitality organizations (5-10 within a workgroup)	Organizational culture; LMX→empowerment
Spreitzer (1995)	Individual traits (locus of control, self-esteem); work context (access to information, rewards)	-	-	(1) 393 mid-level employees from an industrial organization. (2) 128 lower-level employees from an insurance company.	Self-esteem, access to information, reward system→empowerment
Spreitzer (1996)	Social structural characteristics (perceptions of role ambiguity, span of control, sociopolitical support, access to information and resources, work unit climate)	-	-	393 middle managers representing a diverse unit of an organization.	Role ambiguity, span of control. sociopolitical support, access to information, work climate→empowerment

2.2.3 Consequences of Psychological Empowerment

The influence of psychological empowerment on individuals can be divided into empowered attitudes, behavioral intentions, and behaviors. A summary of the empirical studies examining the consequences of psychological empowerment is provided in Table 2.5.

First, empowered employees appear to adopt more positive work attitudes. For example, empowering feelings resulted in organizational commitment in a series of empirical research (Huang et al. 2006; Kraimer et al. 1999; Liden et al. 2000). With a self-developed measure of psychological empowerment, Menon (2001) also confirmed this positive relationship. Other outcomes of psychological empowerment include reduced job strain (Spreitzer et al. 1997; Thomas and Tymon 1994), increased job satisfaction (Koberg et al. 1999; Liden et al. 2000; Seibert et al. 2004; Spreitzer et al. 1997; Thomas and Tymon 1994) as well as satisfactions about payment and promotion (Sparrowe 1994).

Second, psychological empowerment also affects behavioral intentions. Sparrowe (1994) found that employees with higher levels of empowerment feelings revealed lower propensities to turnover in hospitality organizations. This effect was also observed by Koberg et al. (1999) in the healthcare industry (Koberg et al. 1999; Sparrowe 1994). For example, Kraimer et al. (1999) demonstrated that perceptions of being empowered prolonged nurses' intentions to stay in their current careers.

A third outcome of psychological empowerment is empowered behaviors. The positive relationship between psychological empowerment and job performance was demonstrated in studies for both lower-level employees (Chen et al. 2007a; Chen and Klimoski 2003; Chen et al. 2007b; Seibert et al. 2004) and middle managers (Spreitzer 1995; Spreitzer et al. 1997). Since job performance can be divided into two types: in-role performance and extra-role performance (Podsakoff et al. 2000), this link between empowerment feelings and performance was also investigated in more details in empirical studies. In terms of in-role performance, empowerment feelings increased productivity and

effectiveness (Koberg et al. 1999). In terms of the extra-role performance, empowered middle managers were found to be more innovative, upward influential, and inspirational (Spreitzer 1995). In addition, organizational citizenship behavior, as another indicator of extra-role performance, was also explored as an outcome of psychological empowerment (Menon 2001; Robbins et al. 2002).

Table 2.5 Empirical Studies on the Consequences of Psychological Empowerment				
Studies	**Consequences**		**Sample**	**Findings**
	Moderator	**Dependent Variable**		
Chen and Klimoski (2003)	-	Newcomer in-role performance	70 newcomers, 70 team leaders, 102 teammates in high-technology project teams	Newcomer empowerment→newcomer in-role performance (positive)
Chen et al. (2007)	-	LMX→negative feedback-seeking	238 supervisor-subordinate dyads from two Chinese corporations.	Sense of empowerment mediates the moderating effect of empowerment climate on the relationship between LMX and negative feedback-seeking behavior
Chen et al. (2007)	Team empowerment; team interdependence	Individual performance	445 members, 62 team leaders, 31 managers, from 62 teams in 31 stores of a U.S company	Team empowerment positively moderates the positive relationship between individual empowerment and individual performance
Erdogan and Bauer (2009)	-	Perceived over-qualification→ Job satisfaction, intention to remain, voluntary turnover, objective sales performance	244 sales associates working in 25 stores of a retail chain in Turkey	Empowerment moderates the relationship between perceived over-qualification and Job satisfaction, and intentions to remain, and voluntary turnover (negative for low empowerment; insignificant for high empowerment)
Huang et al. (2006)	-	Organizational commitment	173 employees of two Chinese state-owned enterprises:114 textile manufacturing firms, 59 motorcycle manufacturing firms	Full mediation: Participative leadership*tenure→competence→ organizational commitment (positive for short tenure; insignificant for long tenure)
Koberg et al. (1999)	-	Work effectiveness, job satisfaction, propensity to leave	612 employees from a private hospital in a Western metropolitan region	Empowerment→job satisfaction, perceived work productivity/ effectiveness, propensity to leave the organization
Kraimer et al. (1999)	-	Career intentions, organizational commitment	335 nurses from a community hospital	Meaning→career intentions (positive); Competence→career intentions (negative); Impact→organizational commitment (positive); Self-determination→organizational commitment (insignificant)
Liden et al. (2000)	-	Work satisfaction, organizational commitment, job performance	337 employees and immediate supervisors of 60 groups in a service organization	(1) Meaning→work satisfaction, organizational commitment; competence→work satisfaction , job performance (2) Full mediation: job characteristic→meaning→organizational commitment (3) Partial mediation: job characteristic→meaning→work satisfaction; job characteristic→competence→work satisfaction
Menon (2001)	-	Job involvement, organizational commitment, citizenship behavior	311 students in Canada; 66 employees from a financial services company in Canada	Goal internalization→organizational commitment, job involvement, citizenship behavior; Perceived control→citizenship behavior
Robbins et al. (2002)	Organization context, local work environment	Empowered behavior (OCB)	Conceptual study	Local work environment→environmentally influenced perceptions→psychological empowerment
Seibert et al. (2004)	-	Individual performance, job satisfaction	48 teams with 285 employees from a U.S. manufacturing company.	(1) Empowerment→performance, job satisfaction; (2)Full mediation: empowerment climate→empowerment→job satisfaction
Sparrowe (1994)	-	Pay satisfaction, promotion satisfaction, and intent to turnover	182 employees in 33 hospitality organizations	Empowerment→promotion satisfaction; intention to turnover.
Spreitzer (1995)	-	Managerial effectiveness, innovation	393 middle managers from an industrial firm; 128 employees from an insurance company	Empowerment→managerial effectiveness, innovative behaviors
Spreitzer et al. (1997)	-	Effectiveness, work satisfaction, job-related strain	393 middle managers from a manufacturing organization; 128 employees in a service organization	Meaning→satisfaction, job strain; competence→effectiveness, job strain; self-determination→work satisfaction; impact→work effectiveness

2.2.4 Contextualized Psychological Empowerment

So far, psychological empowerment has been conceptualized as a generic description of task-oriented motivation (Conger and Kanungo 1988). Without context specification, this construct depicts an overall cognitive assessment toward multiple domains of one's job role (Muhammed 2006). In other words, psychological empowerment can be aroused by different aspects of one's tasks, including the changes brought by information systems (Ng and Kim 2009). Accordingly, individuals' empowerment feelings toward a more specific aspect of their work, such as their feelings toward using computers for their work, should be conceptualized (Doll et al. 2003). Therefore, user empowerment has emerged as a specialization of the overarching psychological empowerment concept (Sehgal et al. 2004).

Doll et al. (2003) were the first to develop a specified psychological empowerment construct in the IS context. Based on Spreitzer's (1995) study, Doll et al. (2003) defined user empowerment as an intrinsic motivation comprised of four cognitive task assessments for one's computer-mediated work: intrinsic motivation, computer self-efficacy, user autonomy, and perceived usefulness. Specifically, intrinsic motivation is the pleasure or inherent satisfaction derived from using a computer to perform a task; computer self-efficacy relates to one's ability to use a computer to accomplish related tasks; user autonomy refers to individuals' perceived discretion on how they use a system for job activities; and perceived usefulness reflects the belief that IS usage has a positive impact on the users' work (Compeau and Higgins 1995; Doll et al. 2003).

Similarly, Ng and Kim (2009) also attempted to contextualize psychological empowerment in a similar way. In accordance with Spreitzer's (1995) work, Ng and Kim (2009) constructed four dimensions of user empowerment, including usage meaning, user competence, usage impact, and user self-determination. Particularly, they defined usage meaning as the value of system usage judged in relation to one's own ideals or standards; user competence is the degree to which one has relevant knowledge, skills, and confidence to use the system; usage

impact refers to the degree to which system usage can influence one's task outcomes; and user self-determination is one's perceived discretion over system usage (Ng and Kim 2009).

In sum, user empowerment differs from psychological empowerment in terms of level of specificity. User empowerment measures the extent to which users are empowered by information systems rather than by general task features (Doll et al. 2003; Ng and Kim 2009). Along this line, recent studies have further indicated that user empowerment may vary depending on the specific system being used (Sehgal et al. 2004). Therefore, system-specific contextualization of user empowerment has been suggested as a promising research direction (Sehgal et al. 2004). Hence, this study aims to respond to this suggestion and to bring psychological empowerment to the specific context of EKR knowledge seeking.

2.3 Person-Environment Fit

Although psychological empowerment is an individual-level construct, we cannot ignore the intra-psychic and environmental influences if we want to understand this construct in its entirety (Zimmerman 1990). Ultimately, the literature on psychological empowerment has suggested considering the notion of person-environment fit (Prestby et al. 1990; Zimmerman 1990, 1995). In response, the present study aims to incorporate person-environment fit (PE fit) as a theoretical lens for understanding the empowerment phenomenon. Literature in the domain of PE fit is thus reviewed in this section.

2.3.1 Definition of Person-Environment Fit

The notion of person-environment fit was first introduced by the Greek philosopher Plato. By asserting that "one man cannot practice many arts with success," Plato posited that jobs should be assigned in accordance with individuals' temperaments and abilities. In the modern era, this notion of PE fit was first applied in vocational psychology (Parsons 1909). Nowadays, this theory has been widely extended and applied in numerous fields, including organizational psychology, organizational theories, organizational behavior, strategic management, and human resource management (Edwards et al. 1998;

Kristof-Brown 1996; Walsh et al. 2000). The core premise of PE fit is that individual behavior, cognition, and wellbeing arise not from the person or the environment separately but from the fit between these two factors (Edwards et al. 1998).

The literal meaning of PE fit is simply the match between a person and his/her environment (Chatman 1991; French et al. 1982; Kristof-Brown 1996; Muchinsky and Monahan 1987). This straightforward, yet powerful, notion is typically considered as a predictor of desirable outcomes, including job-choice decisions, job satisfaction, employee wellbeing (Assouline and Meir 1987; Edwards 1991; Michalos 1986; Spokane 1985), and the effectiveness of management practices. Terms that are similar to fit include match, alignment, nexus (Thompson 1967), consistency (Galbraith and Nathanson 1978; Nadler and Tushman 1980), and congruence.

2.3.2 Conceptualization of Person-Environment Fit

Different research interprets the concept of fit differently (Venkatraman 1989; Venkatraman and Camillus 1984). To clarify the ambiguous conceptualizations of PE fit, Muchinsky and Monahan (1987) made a significant contribution by distinguishing between complementary and supplementary fit.

Complementary fit captures the degree to which a person or an environment component provides what the other requires (Edwards 1991; French et al. 1982). In other words, it refers to occasions when "the weakness or needs of the environment are offset by the strength of the individual, and vice-versa" (Muchinsky and Monahan 1987, p.271). Research on needs fulfillment exemplifies this conceptualization of PE fit. Specifically, Edwards (1991) proposed two mechanisms to achieve need fulfillment: demand-ability fit and needs-supply fit. Demand-ability fit exists when an employee has the set of knowledge, skills, or energy that an organization requires, while needs-supply fit exists when an organization offers the rewards that an individual values and desires.

Supplementary fit means that a person possesses characteristics that are similar

to those of other individuals in a certain environment (Muchinsky and Monahan 1987). Research in this area is also termed congruence research. Congruence between two components refers to the degree to which the needs, demands, goals, objectives, or structure of one component are consistent with the needs, demands, goals, objectives, or structure of another component (Nadler and Tushman 1980). The literature includes micro congruence and macro congruence. The former refers to the congruence between the organizational structure and individual's characteristics, while the latter focuses on the similarity between the external environment and the internal organizational structure (Mealiea and Lee 1979).

To date, congruence studies have examined similarities with regard to various dimensions, such as values, individual characteristics, and demographic factors. Fit in terms of value dimensions constitutes the value congruence research (Harris and Mossholder 1996; Kristof-Brown 1996; Liedtka 1989) and is also the focus of this study. The logic of value congruence fundamentally lies in interactional psychology studies and suggests that individual values and society norms intertwine to influence individuals' attitudes and responses to certain situations (e.g., Chatman 1989; O'Reilly et al. 1991; Schneider 1987; Terborg 1981). Value congruence is usually expected to generate positive results (Goodman and Svyantek 1999). For example, O'Reilly et al. (1991) concluded that the suitability of the individual to the environment leads to overall satisfaction. Likewise, Scott and Bruce (1994) demonstrated that cultural and personal characteristics jointly lead to innovative performance. Later, Schneider (2001) found that individuals displayed their highest potential when the organizational culture was congruent with their work values, personal interests, and capabilities.

Overall, supplementary fit and complementary fit offer different conceptualizations of fit and provide different theoretical explanations as to why fit should affect employees' attitudes and behaviors. Although the two conceptualizations share the same fit paradigm and predict the same outcomes, they emerged and progressed separately in the early studies (Kristof-Brown 1996). It was Cable and Edwards (2004) who made the first attempt to address the relationships between these two conceptualizations. Their study tested three

competing models: (1) the employment relationship model, which shows that need fulfillment mediates the relationship between value congruence and employees' attitudes; (2) the social identity model, which proposes that value congruence directly influences both need fulfillment and job attitudes; and (3) the simultaneous effects model, which predicts that value congruence and need fulfillment independently predict employees' attitudes. Through a survey of 997 employees in four water treatment agencies, Cable and Edwards (2004) concluded that the third model fit the best, suggesting that need fulfillment and value congruence independently, and relatively equally, affected employees' work attitudes through different mechanisms. In other words, psychological needs fulfillment and value congruence are important to employees but for different reasons.

2.3.3 Operationalization of Supplementary Fit

There is no unified operationalization of PE fit—neither for supplementary fit nor for complementary fit. According to the review of Edwards et al. (2006), there are basically three approaches to operationalizing PE fit: the atomistic, molecular, and molar approaches.

The atomistic approach examines and measures perceptions of the person and the environment independently and combines these two components to represent the concept of PE fit (Cable and Judge 1996; Edwards 1996; French et al. 1982). There are three ways to combine the person (P) and environment (E) components: through discrepancy, interaction, and proportion. Discrepancy between P and E describes the extent to which the environment deviates from the characteristics of the person (Alutto and Vredenburgh 1977; French et al. 1982; McGrath 1976; Pervin 1967; Tannenbaum and Kuleck 1978). Interaction of P and E refers to the product of these two components, indicating the interactive effect of environmental characteristics combined with personal characteristics (Cherrington and England 1980; Lyons 1971; O'Brien and Dowling 1980). The proportion of P and E refers to the ratio of the P and E components and indicates the effect of this proportion on expected outcomes (French et al. 1982; Stokols 1979).

The molecular approach directly assesses the perceived discrepancy between the person and the environment. For example, misfit denotes whether work rewards exceed or fall short of the person's needs (Lance et al. 1995; Rice et al. 1989) or whether job demands are greater than or less than the person's abilities (Beehr et al. 1976; Rizzo et al. 1970).

The molar approach directly measures the perceived fit, match, or similarity between the person and the environment. Studies adopting this approach usually ask respondents to rate the fit between themselves and their organization (Cable and DeRue 2002; Judge and Cable 1997; Saks and Ashforth 1997).

These different operationalization approaches can be applied to either complementary fit or supplementary fit. With regard to the latter, which is the focus of this study, all three approaches can be employed to operationalize the construct of value congruence. For instance, the atomistic approach can be taken by asking respondents to describe their own values and those of their organization and combining these measures (in discrepancy, interaction, or proportion form) to estimate the fit between personal and organizational values (Bretz and Judge 1994; Cable and Judge 1996; Judge and Bretz 1992). Alternatively, the molar approach can be applied by directly measuring the perceived fit (Cable and DeRue 2002; Cable and Edwards 2004), similarity (Posner et al. 1985; Saks and Ashforth 1997), or compatibility (Mitchell et al. 2001; Posner and Schmidt 1993) between the values of the person and the organization.

After closer examination, Edwards and Cooper (1990) and Edwards et al. (2006) suggested that different operationalization approaches are not interchangeable and should be differentiated not only methodologically but also theoretically. In fact, these approaches markedly differ in the theoretical logic that links P and E and reflect different meanings of PE fit. For this reason, there is no universally accepted operationalization. An appropriate approach should be adopted in accordance with each study's particular research questions. In this study, to address the interactive congruence between individual characteristics and national cultural values, I have chosen to take the interaction form using the atomistic approach of PE fit operationalization.

2.3.4 Components of Person-Environment Fit

It should be noted that PE fit theory only articulates the mechanisms by which personal and environmental components combine to influence outcomes (Campbell et al. 1970). However, this theory does not provide a clear description of what exactly constitutes the P and E (Muchinsky and Monahan 1987). In other words, it does not specify the particular dimensions on which person and environment should be examined (Harrison 1985).

According to different specifications of the P and E components, there exist several forms of fit, such as the fit between employee needs and work-related rewards (Dawis 1992; Edwards and Harrison 1993; Rice et al. 1989), between employee abilities and job demands (Caldwell and O'Reilly 1990; Kristof-Brown 2000; Westman and Eden 1992), between personal values and organizational goals (Adkins et al. 1996; Cable and Judge 1996, 1997; Judge and Bretz 1992), and between one's personality and other organizational members' personalities (Schneider 1987). Specifically, in value congruence studies, recent research interest has centered on the congruence between individual characteristics and organizational cultures (Kristof-Brown 1996).

However, such congruence between individual characteristics and organizational cultures cannot be fully applied to multinational contexts. In multinational corporations (MNC), branches are located in diverse geographic areas with different national cultures. Even sharing the same organizational culture, individuals from different national cultures might differ in their perceptions of person-environment congruence. For this reason, an examination of the congruence between individual characteristics and national cultures is needed. However, few studies have attempted to explore this issue. As Harrison (1993) noted, how the relative mix of national culture and individual characteristics constitutes an individual's mental programming and in turn influences feelings and behaviors is still an unsolved issue in the literature (Jahoda 1984; Rohner 1984; Segall 1984). Thus, in this study, focusing on the context of multinational companies, I attempt to bridge this gap and extend this line of research by examining the congruence between individual characteristics and national

cultures. Specifically, one IT-related individual characteristic and national culture will be considered as the P and E components, respectively. The literature on these two elements is separately reviewed in the following sections.

2.4 Personal Innovativeness toward IT (PIIT)

2.4.1 Definition of PIIT

Personal innovativeness has long been considered in the innovation diffusion theory (Rogers 1962). It is defined as "the degree to which an individual is relatively earlier in adopting an innovation than other members" (Rogers and Shoemaker 1971, p.27). Based on this definition, researchers measure innovativeness by the time at which an individual adopts an innovation during the diffusion process (Rogers 1995). Thus, individuals are characterized as innovative if they are early adopters of an innovation.

However, this time-of-adoption conceptualization of innovativeness is criticized as being more closely related to behaviors than to innate personality (Hurt et al. 1977; Midgleyand and Dowling 1978). Kirton (1976) argued that personal innovativeness should be interpreted as a general individual characteristic that is possessed more or less by everyone in a society and that in turn, this personality accounts for the observed innovative behaviors. Similarly, Hurt et al. (1977) described innovativeness as a personality related to the "willingness to change," (p. 63) which reflects individuals' tolerance of risk (Bommer and Jalajas 1999). Midgley and Dowling (1978) defined inherent innovativeness as the degree to which an individual is receptive to new ideas and makes innovation decisions independently. In brief, these conceptualizations of personal innovativeness describe a global personality characteristic that is stable and generalizable across innovation contexts (Webster and Martochhio 1992).

The empirical studies following global conceptualizations of innovativeness, however, exhibited low predictive power when applied to specific innovation adoption contexts (Leonard-Barton and Deschamps 1988). Researchers noted that as opposed to global innovativeness, domain-specific innovativeness might be a better predictor of innovative activities within a particular domain

(Leonard-Barton and Deschamps 1988; Midgleyand and Dowling 1978). In marketing research, Gatignon and Robertson (1985) stated that consumers are not generally innovative across all domains; thus, innovators must be identified on a product-category basis. To support this recommendation, Goldsmith and Hofacker (1991) developed a domain-specific measure and validated consumer innovativeness in the contexts of rock music records and designer fashions.

Consistent with the emphasis on domain-specific innovativeness in marketing research, Agarwal and Prasad (1998b) argued that personal innovativeness is also important in understanding the adoption of technology innovation. Based on prior work (Flynn and Goldsmith 1993; Midgleyand and Dowling 1978), Agarwal and Prasad (1998b) reconceptualized personal innovativeness in the domain of information technology (IT). They defined personal innovativeness toward IT (PIIT) as the degree to which an individual is willing to try out any new information technology (Agarwal and Prasad 1998b).

2.4.2 Direct Effect of PIIT

An increasing amount of empirical evidence has suggested that PIIT impacts individuals' beliefs of IS as well as their system usage behaviors. Drawing upon the innovations diffusion theory (Rogers 1962, 1983, 1995, 2003), Lewis et al. (2003) theorized that individuals with higher PIIT were expected to develop more positive beliefs about IT, such as perceived usefulness and perceived ease of use. In addition, PIIT was positively related to computer self-efficacy and was negatively related to computer anxiety (Thatcher and Perrewe 2002). Other studies also demonstrated the positive influence of PIIT on subjective norms, perceived behavioral controls, and results demonstrability (Brancheau and Wetherbe 1990; Yi et al. 2006).

2.4.3 Moderating Effect of PIIT

Besides its direct effects, personal innovativeness toward IT (PIIT) also exerts moderating effects in research models. Viewing the development of perceptions from the information-processing perspective, Agarwal and Prasad (1998b) predicted that PIIT moderates relations in two stages of the IT adoption process.

First, PIIT serves to moderate the relationship between the information about a new IT and individuals' perceptions about the new IT. Innovators are active information seekers (Rogers 1995) and are less reliant on others' evaluations when they judge a system (Agarwal and Prasad 1998b). PIIT also moderates the relationship between perceptions about a new IT and individuals' usage intentions (Agarwal and Prasad 1998b). More specifically, innovators are more likely to take risks and develop stronger usage intentions compared to less innovative people given the same level of perception (Rogers 1995). These predictions are consistent with previous studies in the IT adoption literature. For example, Leonard-Barton and Deschamps (1988) empirically demonstrated that personal innovativeness toward technology moderates the relationship between management supports and IS usage. Similarly, Liska (1984) implied that individual characteristics intertwined with environmental factors may moderate the hypothesized relationships in the theory of reasoned action.

2.5 National Culture

2.5.1 Definitions of National Culture

Over decades of discussion, culture has been studied in different disciplines, including anthropology, sociology, social psychology, and business management. One major challenge for culture researchers is the difficulty in defining culture (Straub et al. 2002; Triandis et al. 1986). To illustrate, Kroeber and Kluckhohn (1952) identified 164 definitions of culture with different emphases ranging from unobservable aspects to observable aspects (Schein 1985a, b).

At the basic level, the core of the term culture is the basic assumptions that individuals hold to interpret human behavior, relationships, reality, and truth (Schein 1985a, b). These basic assumptions represent the shared ideologies that people use to make sense of social events and activities (Reichers and Schneider 1990; Sackmann 1992; Sapienza 1985; Van Maanen and Barley 1985). At the next level, culture is the shared values identifying what is explicitly or implicitly desirable in a society (Kluckhohn and Strodtbeck 1961; Schein 1985a, b). These values reflect underlying cultural assumptions and are more available to explain

individual behavior (Schein 1985a, b). At the third level, culture is manifested through artifacts, such as art, technology, and behavioral patterns as well as myths, heroes, language, rituals, and ceremony (Pettigrew 1979). These artifacts symbolize a set of different values driven by underlying ideological assumptions (Coombs et al. 1992; Feldman and March 1981; Robey and Markus 1984; Scholz 1990).

Comparing these three levels, ideological assumptions are invisible and preconscious, while cultural artifacts are difficult to decipher in terms of underlying cultural meanings. Thus, the value-based conceptualization of culture has become the most easily and widely studied approach (Schein 1985b; Smith and Bond 1998). In particular, value-centric definitions have dominated in major culture studies, including the work by Hofstede (1980), Triandis (1995), Trompenaars and Hampden-Turnder (1998), Inglehart et al. (1998), and the GLOBE project (House et al. 1999). Among these studies, the most commonly accepted definition of national culture, which is also applied in the present research, is provided by Hofstede (1980). Hofstede (1980) defines national culture as "the collective programming of the mind which distinguishes the members of one human group from another" (p.25). Without an attempt to capture the complete meaning of culture, this definition only focuses on the value aspect of culture because "values are among the building blocks of culture," (p.21) and the value-based culture is empirically manageable (Hofstede 1984).

2.5.2 Dimensions of National Culture

To date, the most influential national culture framework is that proposed by Hofstede (Kirkman et al. 2006). Through survey data from over 88,000 IBM employees in 72 countries during 1960s to 1970s, Hofstede (1980) developed four cultural dimensions to differentiate between various cultures: power distance, individualism/collectivism, uncertainty avoidance, and masculinity/ femininity. A fifth dimension—long-term orientation—was later developed in Asian contexts (Hofstede and Bond 1988). These five dimensions are explained in more detail below.

Power Distance (PD) is the degree to which the less powerful members in a society expect and accept that power is distributed unequally (Hofstede 1984). Inequalities in a society usually take the form of prestige, wealth, and power (Hofstede 2001). In organizations, inequalities are manifested by power distribution and organizational hierarchies. In particular, in high power distance societies, managers and employees expect their status to be unequal, and employees prefer to be told what to do; while in low power distance societies, managers and employees consider each other as less unequal (Morris and Pavett 1992).

Individualism/Collectivism (IND) reflects the degree to which individuals of a society emphasize personal needs as opposed to group needs and prefer to act as individuals rather than as members of a group (Hofstede 1984). Individualistic cultures identify individuals as independent selves (Markus and Kitayama 1998) and express the need for self-sufficiency (Kagitçibasi 1994). People in individualistic cultures are concerned with personal goals and value individual achievement (Triandis 1995). On the other hand, collectivistic cultures view individuals as interdependent members of groups (Markus and Kitayama 1991), and emphasize the need for relatedness (Kagitçibasi 1994). People in collectivistic cultures are more motivated to conforming to group norms than topursuing individual goals (Lee and Green 1991; Yau 1986).

Uncertainty Avoidance (UA) refers to the extent to which a culture programs its members to feel comfortable or uncomfortable in unstructured situations (Hofstede 1984). High uncertainty avoidance cultures prefer rules and structured circumstances (Hofstede 2001). People in such cultures tend to feel threatened by ambiguity and favor predictable outcomes (Ford et al. 2003). Further, these people are hesitant to accept new products and technologies, such as electronic communication tools (Yeniyurt and Townsend 2003). By contrast, low uncertainty avoidance cultures are more tolerant of uncertainty. People in such cultures are open to change and innovation and are willing to try new products and technologies (Steensma et al. 2000).

Masculinity/Femininity (MAS) describes the distribution of social gender roles. Masculinity stands for a culture in which social gender roles are clearly distinct:

men are supposed to be assertive, tough, and focused on material success, while women are supposed to be more modest, tender, and concerned with the quality of life (Hofstede 1991). Femininity pertains to a culture in which social gender roles overlap with both men and women being concerned about the quality of life (Hofstede et al. 1998). In the workplace, the masculine culture values competitiveness, assertiveness, and ambition, while the feminine culture stresses harmonious relationships and the quality of physical conditions (Hofstede 2001).

Long-term orientation reflects a Confucian dynamism that is particularly relevant to Asian cultures (Hofstede and Bond 1988). Long-term orientation refers to future-oriented values, such as perseverance and thrift (Hofstede 1991). Organizations in such a culture strive to build strong positions in their markets with no expectation of immediate results (Hofstede 2001). Short-term orientation refers to past-oriented and present-oriented values, such as respect for tradition, fulfilling social obligations, and preserving face (Hofstede 1991). In short-term orientation cultures, organizations focus on the bottom-line of businesses and make judgments based on results (Hofstede 2001).

2.5.3 Cross-Culture Studies Following Hofstede's Framework

Since its publication, Hofstede's (1980) framework has sparked intense debate among researchers. Major concerns are related to the validity and generalizability of Hofstede's results (Fernandez et al. 1997; Spector et al. 2001). First, Hofstede's (1980) framework assumes that cultural dimensions fall along national boundaries (Myers and Tan 2002). This assumption, however, does not necessarily hold true. On the one hand, a subculture might exist within one nation (i.e., Canada, India) (Straub et al. 2002). On the other hand, some cultures (i.e., Arabic and Latin American cultures) could span across national geographical boundaries (Myers and Tan 2002; Straub et al. 2002). Second, Hofstede's (1980) framework was developed only based on a sample of IBM employees. Triandis (1982) speculates on whether this approach led to skewed results because the participants might not have fully represented the national population. Third, Hofstede's (1980) framework was derived primarily based on empirical evidence. Without a strong theoretical background, this framework

cannot easily justify why certain dimensions are identified, nor can it conclude that the most important national cultural dimensions are captured (Schwartz 1994).

Despite these concerns, Hofstede's work (1980) still stands as one of the major landmarks of cross-cultural research (Sivakumar and Nakata 2001; Triandis 1982). In essence, Hofstede's work (1980) has an advantage over other cultural frameworks in terms of its rigorous research design and systematic data collection (Søndergaard 1994). More importantly, other culture projects, such as the work House et al. (2004) and Triandis (1986), also used Hofstede's instrument to measure the same or slight variations of Hofstede's cultural dimensions. Up until 1999, Hofstede's original work (1980) had been cited 1,800 times in the Social Science Citation Index (SSCI) (Kirkman et al. 2006), and numerous empirical studies have replicated or utilized Hofstede's cultural dimensions for theory development and testing (Al-Gahtani et al. 2007; Carpenter and Fredrickson 2001; Carter 2000; Chow et al. 1991; Merritt 2000; Moenaert and Souder 1996; Newman and Nollen 1996; Png et al. 2001; Søndergaard 1994; Shackleton and Abbas 1990).

Cross-cultural studies have applied Hofstede's framework at different levels. At the national level, published national culture scores are either employed to select countries for comparison or are included in analyses as a measure of national cultures (Lenartowicz and Roth 1999). Studies at the national level focus on the selected cultural dimensions to explain the observed behavioral differences between nations (i.e., Straub et al. 1997; Straub 1994). For example, by collecting individual data from Japan and the United States, Straub (1994) found that users in nations with high power distance, uncertainty avoidance, and collectivism were more willing to use a lean IS-based medium like email in contrast to those in the opposite cultures. Using data from Japan, Switzerland, and the United States, Straub et al. (1997) found that perceived usefulness and perceived ease of use predicted IS use better for users in high individualistic and high femininity countries.

Nevertheless, this national-level approach has been questioned for its assumption that a nation's cultural characteristics can be generalized across an entire

population (McCoy et al. 2005; McCoy et al. 2007). To address this issue, some researchers suggest conducting cross-cultural research at the individual level and focusing on cultural values espoused by individuals to explain behavioral differences (Straub et al. 2002). For instance, Srite and Karahanna (2006) collected data from university students with different national backgrounds. By measuring and analyzing espoused cultural values at the individual level, they found that espoused masculinity/femininity values moderate the link between perceived ease of use and system usage intention.

In brief, cross-cultural studies at the national level and the individual level provide distinct, yet complementary, insights into the impact of cultures on individuals' behaviors (Srite and Karahanna 2006). Regarding the research objectives of the present study, cultures at the national level are appropriate representations of the collective values that prevail in a societal environment. Hence, the national-level approach is adopted in this study. Specifically, I incorporate national cultures as moderators in the research model and measure cultures with Hofstede's cultural value scores.

2.5.4 Cross-Culture Studies on Empowerment

Cross-cultural researchers have demonstrated a growing interest in understanding the effectiveness of empowerment practices in different cultural contexts. Alpander (1991) and Knotts and Tomlin (1994) concluded that similar empowerment strategies employed in different cultures generate different results, thereby suggesting the influential role of national cultures.

Manipulating empowerment conditions and power distance cultures in a field experiment, Eylon and Au (1999) explored the impact of power distance cultures on the consequences of empowering practices. They found that a positive relationship between empowerment and job satisfaction existed in both high and low power distance groups. As for performance, employees in the high power distance group performed significantly better in the disempowered conditions than in the controlled or empowered conditions, while employees in the low power distance group performed similarly across different empowerment conditions.

Likewise, Robert et al. (2000) asserted that empowering leadership was more congruent in certain cultures than in others and that this value congruence resulted in job satisfaction. Through a survey of employees in the United States, Mexico, Poland, and India, they reported that empowering leadership was negatively related to employees' satisfaction toward work and supervisors in India but was positively or insignificantly related toward this satisfaction in the other three countries. In addition, empowering leadership was shown to increase employees' satisfaction with supervisors in all of the investigated countries except India.

More recent research by Hui et al. (2004) also tested the moderating effects of power distance cultures on the link between empowering practices and job satisfaction. In particular, they conducted three studies using data from three sources: (1) published World Value Survey data across 33 countries, (2) individual survey data from Chinese and Canadian employees, and (3) scenario experiment data from a study with Chinese and Canadian students as subjects. All three of these studies yielded consistent results, proving that the link between empowerment (i.e., perceived autonomy) and job satisfaction was stronger for employees in lower power distance countries than for those in high power distance countries.

Considering the influence of information technology on empowerment, theoretical justifications for this influence have not yet been established in previous studies, not to mention the empirical examinations in cross-cultural contexts. One notable exception is the work of Downing et al. (2003). Through an interpretative field study of a manufacturing technology fellowship program, Downing et al. (2003) suggested that national cultures affected the individuals' choice of technologies in pursuit of empowerment. Japanese employees, holding high uncertainty avoidance values, preferred media-rich technologies in their efforts to achieve empowerment. In contrast, American employees who valued high individualism preferred collaborative technologies to achieve empowerment.

2.6 Review Summary

As noted from the above review, KMS usage is a fairly complex phenomenon. This study particularly focuses on seeking knowledge from an EKR, one specific KMS usage behavior, in a multinational context. Given the current stage of literature, the psychological responses to EKR knowledge seeking behavior is identified as a promising research direction for further investigation. Hence, the present study looks into this aspect with a particular emphasis on the empowering nature of EKR systems.

According to the empowerment literature, EKR usage is viewed as an IT-enabled empowering practice from the perspective of structural empowerment; while the knowledge seekers' empowerment feelings describe a cognitive-based intrinsic motivation from the perspective of psychological empowerment. The solid theoretical foundation of empowerment construct provides an excellent base to justify the relationship between structural empowerment and psychological empowerment, yet few studies have theorized this relationship in the IS context. Therefore, this study aims to bridge this gap, and thereby address the first research question proposed in Chapter 1.

In multinational corporations, EKR knowledge seekers may be psychologically empowered to different extents across individuals and cultures. To fully understand this phenomenon, it is necessary to go beyond the independent moderating effect of individual characteristics and national cultures, and investigate the interactive effect of these two factors. In this regard, the person-environment fit theory offers a theoretical framework to explain when the congruence can be achieved between individual and societal values, and why such congruence leads to a desirable empowering process.

Although the PE fit theory in general and value congruence research in particular has reached a high level of sophistication, further theoretical extension is still expected especially in multinational contexts. As suggested in this review, the value congruence between individual characteristics and national cultures is such an important extension that adds valuable knowledge to the PE fit literature, and thereby addresses the second research question in Chapter 1. Specifically,

personal innovativeness toward IT and national cultural characteristics (i.e., power distance and individualism/collectivism) are considered as the personal and environmental components, and incorporated as interactive moderators in the research model, which will be described in Chapter 3.

Chapter 3 Research Model and Hypotheses

The above review calls for the contextualization of psychological empowerment in the EKR context and also suggests possible links among knowledge-seeking behavior, contextualized empowerment, personal innovativeness toward IT, and national culture. Thus, in this chapter, I begin by postulating a new construct of IT-enabled knowledge empowerment by re-conceptualizing psychological empowerment as a cognitive response derived from retrieving knowledge from EKR systems. After that, I propose a moderation model as depicted in Figure 3.1. Specifically, EKR usage for knowledge seeking may trigger a user's IT-enabled knowledge empowerment. In addition, personal innovativeness, national culture, and the interaction between these two factors is likely to influence the strength of this relationship. A more detailed rationale for each hypothesis is presented in this chapter.
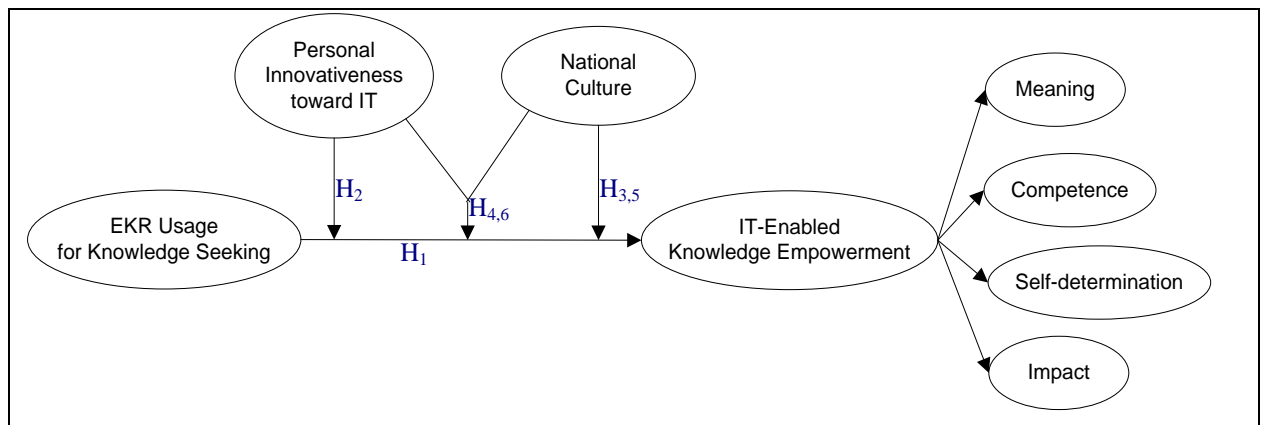
Figure 3.1 Research Model

3.1 Construct Conceptualizations

From the resource dependence perspective, power stems from the possession of critical resources (Pfeffer and Salancik 1978). Nowadays, knowledge is such a kind of resource used to cope with dynamic competitions (Weitz et al. 1986). For example, knowledge resources allow employees to master professional skills, handle problems with less reliance on specialists, and become irreplaceable within organizations (Bowen and Lawler 1992; Davenport and Prusak 1998; Dertouzos et al. 1990). Thus, knowledge fosters power for knowledge holders

since organizations become more dependent on them (Davenport et al. 1998; French and Bell 1995).

In accordance with Bacon's "knowledge is power" argument and the consensus that empowerment means to give power (Thomas and Velthouse 1990), I suggest that empowerment could mean "to give knowledge" in organizations. More concretely, employees will feel empowered when they are equipped with knowledge and when continuous improvement can be expected. Though never clarified, the notion that knowledge fosters empowerment has long been assumed in management research (Block 1987; Kanter 1986; Nonaka 1988). If knowledge is blocked or learning opportunities are constrained, employees have difficulty in expressing their potential for work (Ahanotu 1998).

With the help of rapid IT development, retrieving knowledge—even on a global scale—has become possible today. Among the many information technologies, the electronic knowledge repository (EKR) is a common tool that formats and indexes dispersed knowledge and makes that knowledge retrievable for organizational members (Gold et al. 2001; Markus 2001). This type of system represents organizations' attempts to provide knowledge—which, in turn, gives power—to employees. Therefore, I propose a new construct "IT-enabled knowledge empowerment" by recognizing knowledge as a source of empowerment feelings. This construct is defined as employees' cognitive assessments of available knowledge provided by information technologies in organizations. Similar to psychological empowerment (Spreitzer 1995), IT-enabled knowledge empowerment consists of four dimensions: meaning, competence, self-determination, and impact. Specifically, meaning is one's intrinsic care for the value of accessible knowledge in an EKR in relation to his/her personal values and standards. Competence refers to the perception that one could perform the work task competently with the support of the knowledge provided by the EKR system. Self-determination describes the perception that available knowledge in an EKR system enables autonomy and independence in solving problems at work. Finally, impact refers to the belief that retrieving knowledge will make a difference in organizational outcomes.

Besides IT-enabled knowledge empowerment, the other constructs in the

research model have been conceptualized well by the previous literature. Table 3.1 summarizes the definitions of and useful references for each construct in this study.

Table 3.1 Constructs and Definitions		
Construct	**Definition**	**References**
IT-Enabled Knowledge Empowerment	Employees' cognitive assessments toward available knowledge provided by information systems in organizations; manifested in four dimensions: meaning, impact, self determination and competence.	Adapted from Thomas and Velthouse (1990), and Spreitzer (1995)
EKR Usage for Knowledge Seeking	The extent to which an employee uses EKR to seek knowledge.	Davis et al. (1989)
Personal Innovativeness toward IT	The degree to which an individual is willing to try out any new information technology.	Agarwal and Prasad (1998b)
National Cultural Value: Power Distance	The degree to which a society accepts that power in institutions and organizations is distributed unequally.	Hofstede (1984)
National Cultural Value: Individualism /Collectivism	The degree to which individuals are integrated into groups.	Hofstede (1984)

3.2 EKR Usage and Empowerment

Based on the above conceptualizations, the implementation of electronic knowledge repositories can be interpreted as an IT-enabled empowering practice. This intervention offers knowledge for employees to solve work-related problems and provides an open environment to support continuous learning. Following the logic that empowering practices enhance employees' psychological feelings of empowerment (Robbins et al. 2002; Srivastava et al. 2006), I expect a positive relationship between EKR usage for knowledge seeking and employees' IT-enabled knowledge empowerment.

First, EKR usage for knowledge seeking would naturally increase employees' knowledge and expertise. The enriched knowledge base helps employees make better decisions with a comprehensive understanding of the situations they face (Ahanotu 1998). Thus, employees are more likely to perceive their self-enhancement needs as being fulfilled and their personal career success as more reachable. Based on these perceptions, employees with more EKR usage for knowledge seeking would better appreciate the meaningfulness of obtained knowledge.

Secondly, equipped with more knowledge, employees become more confident about their work. They treat tough tasks as opportunities to test their work

capabilities, and initial successful experiences will make them feel more competent. This reinforcing effect is termed "enactive attainment" by the self-efficacy theory (Bandura 1982). Alternatively, the "vicarious experiences effect" also explains individuals' enhanced perceptions of competence after using an EKR (Bandura 1982). To illustrate, knowledge in an EKR includes successful experiences of co-workers in the past. Exposed to such knowledge, employees can better observe the exemplary behaviors of others, which leads them to believe that they can also behave in a similar manner and achieve similar results in their performance.

Thirdly, an EKR creates an encouraging and supportive atmosphere in organizations. Seeking knowledge from this system lessens the need for face-to-face consultation and increases employees' involvement in the problem-solving process (Gray and Durcikova 2005). Employees who retrieve knowledge from an EKR can accomplish their tasks with less dependence on others. Thus, they feel more independent in determining how their work should be done, thereby increasing their sense of control over and ownership of their jobs, which is the essence of self-determination (Spreitzer 1996; Wellins et al. 1991).

Finally, applying knowledge in an EKR enables employees to solve business problems, ensures their decision-making quality, and helps them fulfill assigned responsibilities, thereby proving their value to their organizations (Gray and Durcikova 2005; Gray and Meister 2004). Accordingly, the more employees use an EKR to seek knowledge, the better position they are in to understand the value and influence of their work on organizational activities. As a result, EKR knowledge seekers appear to strengthen the belief that their work has an impact on their organizations.

In summary, EKR usage for knowledge seeking positively impacts employees' cognition of empowerment in the sense that employees appreciate the meaningfulness of new knowledge, feel competent to achieve their goals, sense their autonomy to determine work outcomes, and believe that they have an impact on the work environment. Thus, I propose the following hypothesis:

H₁: EKR usage for knowledge seeking positively leads to IT-enabled knowledge empowerment.

3.3 Moderating effects

It has been suggested that the effectiveness of empowering practices in terms of triggering psychological empowerment is influenced by individuals' characteristics or national culture. Firstly, as a form of intrinsic motivation, IT-enabled knowledge empowerment can be invoked to different extents for different persons. A system that empowers one person's job may disempower another's (Attewell and Rule 1984; Zuboff and Bronsema 1984). For example, new employees, compared to long-term employees, were found to respond more actively to participative programs in Chinese state-owned enterprises (Huang et al. 2006). Secondly, since empowerment feelings are socially constructed (Berry et al. 1992; Deci and Ryan 2000), the extent to which such feelings are stimulated might vary across different national cultures (Huang et al. 2006). As empirical support, Eylon and Au (1999) reported that employees in high power distance cultures were less likely to feel empowered through participative programs than those in low power distance cultures.

Although previous studies have examined individual characteristics and national culture independently as moderators, few of them have considered the interactive moderating effect of these two factors. In fact, individual characteristics and national culture might interactively shape individual cognitions and behaviors (McCrae 2000; McCrae and Costa 2003). Specifically, some have suggested that national culture determines how individual characteristics are evaluated and that it influences these characteristics' effects on behavioral patterns (Steenkamp 2001; Steenkamp et al. 1999). On the one hand, national culture may create reinforcing contingencies that encourage the pursuit of personal interests when these interests are in line with national cultural values. Alternatively, national culture may also form restraining contingencies that discourage dispositions that run counter to the prevailing norms (Schwartz 1994; Triandis 1989).

To provide a holistic understanding of the interactive moderating effect, I adopt the value congruence approach of person-environment fit theory as a theoretical

background to support the research model. Considering the context of EKR systems, one IT-related individual characteristic—personal innovativeness toward IT (PIIT)—has been chosen as the person component. Accordingly, since innovative attitudes reflect one's openness to change (Schwartz 1992), three national culture dimensions that most closely relate to this value are considered as the environment component: individualism/collectivism, power distance, and uncertainty avoidance (Berson et al. 2004). From the value congruence perspective, I propose that the congruence between PIIT and national cultural values will strengthen the positive relationship between EKR usage by knowledge seekers and IT-enabled knowledge empowerment. More detailed justifications are provided in the following section, which is organized according to the three cultural dimensions.

3.3.1 PIIT and Power Distance

The moderating role of personal innovativeness toward IT (PIIT). Innovativeness represents an individual's receptivity toward change (Zmud 1984). This individual characteristic is consistent with certain values, such as the need for variety and stimulation (Schwartz 1992; Schwartz and Sagiv 1995). The EKR, as an IT innovation, satisfies these inherent needs by changing traditional ways of approaching work-related problems (Steenkamp et al. 1999). Therefore, employees with high innovativeness toward IT tend to be more intrinsically motivated by their use of EKR (Dabholkar and Bagozzi 2002; Hirschman 1980; Mehrabian and Russell 1974; Midgley and Dowling 1978). Specifically, aroused intrinsic motivation includes being able to pursue personal goals, exert influence on organizations, demonstrate autonomy, and display competence with the help of knowledge obtained from the system. To sum up, with the same level of EKR usage for knowledge seeking, employees with high PIIT are expected to generate more positive psychological empowerment feelings. Thus, I suggest the following:

H_2: PIIT moderates the relationship between EKR prior usage and IT-enabled knowledge empowerment such that this relationship is stronger for employees with high PIIT than for those with low PIIT.

The moderating role of power distance. Besides PIIT as a micro-level moderator, national culture at the macro level also plays an important role in shaping the strength of the relationship between EKR usage and IT-enabled knowledge empowerment. Power distance, as discussed, refers to the extent to which people accept that power is distributed unequally (Hofstede 1980). A low power distance culture values work autonomy, decentralized authority, and freedom (Hofstede 1984). In such a culture, organizations tend to trust and believe in their employees' capabilities (Huang et al. 2005; Huang 2008). With the assistance of the knowledge in an EKR, employees will feel encouraged to make decisions and perform tasks with less reliance on higher managers' guidance. As a result, employees in a low power distance culture are more likely to interpret their EKR use as empowering; they tend to feel that they are doing meaningful work that is consistent with their inherent values, to be confident in their ability to accomplish tasks, to perceive freedom to control the outcomes of their decisions, and to sense their direct impact on organizations.

In contrast, a high power distance culture takes hierarchical inequalities for granted and shows a high tolerance for centralized authority and autocratic decision-making processes (Hofstede 1984). In this type of culture, employees are accustomed to complying with hierarchical rules and guidance (Eylon and Au 1999). Therefore, although provided with useful knowledge, employees still believe that higher level managers should make final decisions and determine the direction of consequent outcomes. With this belief, employees in high power distance cultures are less likely to feel empowered in terms of being able to pursue personal goals, having enhanced self-evaluated competence, controlling their own performance, and influencing their firms' performance. In sum, a low power distance culture triggers stronger empowerment feelings after EKR usage than a high power distance culture does. Accordingly, I suggest the following hypothesis:

H_3: Power distance culture moderates the relationship between employees' prior EKR usage and their IT-enabled knowledge empowerment such that this relationship is stronger in low power distance cultures than in high power distance cultures.

The interactive moderating effect. When taking both personal innovativeness toward IT and power distance culture into consideration, the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment is complicated. To predict the interactive moderating effect of these two components on this relationship, four scenarios are summarized in Table 3.2: (1) high PIIT and low power distance, (2) high PIIT and high power distance, (3) low PIIT and low power distance, and (4) low PIIT and high power distance.

Table 3.2 The Congruence between PIIT and Power Distance		
	Low Power Distance	**High Power Distance**
High PIIT	Enthusiasm (desirable congruence)	Constrained
Low PIIT	Disincentive	Relief

Scenario 1: When PIIT is high and power distance is low, desirable value congruence exists. A low power distance culture respects innovativeness. It acknowledges the value of contributions regardless of the contributor's position in the organizational hierarchy (Huang 2008; Van der Vegt, Van de Vliert, & Huang 2005). Employees with high PIIT have a strong tendency to appreciate the benefits of using an EKR to obtain knowledge (Wang et al. 2008), this tendency is further amplified by low power distance values that favor innovativeness. In this context, given the same level of system usage, employees are more enthusiastic about the EKR and are more likely to feel meaningful, skilled, self-controlled, and influential as compared to those in other three scenarios explained below.

Scenario 2: When both PIIT and power distance are high, this value congruence does not exist. Although employees with high PIIT are more inclined to appreciate the retrievable knowledge in an EKR, a high power distance culture does not value such inclinations (Huang 2008). The norms of following centralized rules and procedures inhibit employees' incentives to develop new ideas with the knowledge obtained from EKR (Eylon and Au 1999). Thus, employees with high PIIT tend to feel constrained from being truly empowered in a high power distance culture.

Scenario 3: When both PIIT and power distance are low, desirable congruence

does not exist either. Although the national culture encourages innovativeness (Schwartz 1992) and provides an open platform for empowerment, employees have few incentives to appreciate the benefits enabled by IT innovations (Wang et al. 2008). As a result, these employees have less chances of feeling empowered because of their inherent resistance toward technology. Without active self motivation, this system use experience is far from sufficient to generate feelings of empowerment.

Scenario 4: When PIIT is low and power distance is high, conservatism and maintaining the status quo prevail with lower expectations of individual innovativeness (Steenkamp 2001). Employees with a low level of PIIT will feel relieved in this cultural environment. They are pleased to simply follow established rules and procedures and enjoy little pressure for generating new ideas with knowledge available from the EKR. Thus, even with the same level of EKR use for knowledge seeking, employees in this scenario will not feel as empowered as those in the first scenario.

According to the above justifications, when personal innovativeness toward IT is high and power distance is low, value congruence exists and magnifies the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment. Thus, I hypothesize the following:

H_4: PIIT and power distance interactively moderate the relationship between EKR usage and IT-enabled knowledge empowerment such that the relationship is strongest for high PIIT employees in a low power distance culture where value congruence is achieved.

3.3.2 PIIT and Individualism/Collectivism

The moderating role of individualism/collectivism. An individualistic culture values independence, achievement through personal efforts, and direct control over one's own destiny (Gudykunst 1998). In this culture, employees place their own interests ahead of group interests and emphasize personal development (Kagitçibasi 1997). They are eager to grasp more knowledge, skills and abilities, in order to improve their status in organizations and to ensure their career

success in the long run (Huang & Van de Vliert 2003). Since an EKR provides knowledge that satisfies self-achievement needs (e.g., Gray 2001), employees in individualistic societies appear to form stronger positive feelings after obtaining knowledge from an EKR compared to those in collectivistic societies. For example, obtained knowledge is considered meaningful to these employees since it fulfills their personal needs for continuous improvement. Knowledge also helps employees perform better, thereby enhancing their self-efficacy in the workplace. Furthermore, utilizing an EKR makes an independent decision-making process possible and allows employees to directly control the results they are responsible for. Consequently, in an individualistic culture, the relationship between EKR usage and knowledge empowerment is amplified because of individuals' strong need for personal achievement and direct control over their actions.

A collectivistic culture, however, values harmony and solidarity (Markus and Kitayama 1991). Members in this culture are taught to conform to group norms (Spector et al. 2002) and to accept that the overall interest of the group supersedes that of an individual. Hence, the need for personal achievement is less emphasized in collectivistic societies than in individualistic societies (Triandis 1995). Even with the same amount of EKR usage, employees in a collectivistic society do not form empowerment feelings as strongly as in an individualistic society. As a result, I develop the following hypothesis:

H_5: *An individualistic/collectivistic culture moderates the relationship between employees' EKR prior usage and IT-enabled knowledge empowerment such that this relationship is stronger in a highly individualistic culture than in a highly collectivistic culture.*

The interactive moderating effect. The relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment will be moderated by the interaction of personal innovativeness toward IT and individualistic/collectivistic culture. Four scenarios are summarized in Table 3.3, including (1) high PIIT and individualism; (2) high PIIT and collectivism; (3) low PIIT and individualism; (4) low PIIT and collectivism.

Table 3.3 The Congruence between PIIT and Individualism/Collectivism		
	Individualism	**Collectivism**
High PIIT	Enthusiasm (desirable congruence)	Constrained
Low PIIT	Disincentive	Relief

Scenario 1: When PIIT is high and one is in an individualistic culture, the desirable value congruence exists. Individualistic cultures encourage personal growth and new ideas (Kagitçibasi 1997). Nowadays, achieving these goals relies greatly on the full use of technology. For example, an EKR provides technological support for initiating new ideas based on integrated knowledge and helps employees realize continuous improvement (Gray and Meister 2004). As a result, those who are more open to using technology are in a better position to generate new ideas (Wang et al. 2008). Thus, IT-specific innovativeness is highly congruent with the values held by individualistic societies. Employees with high PIIT in individualistic societies will be more enthusiastic about the advantages of an EKR. Given the same level of EKR usage, they are more likely to feel meaningful, competent, self-controlled, and influential.

Scenario 2: In a high PIIT and high collectivism situation, the aforementioned value congruence does not exist. Collectivistic societies encourage conforming to subjective norms and de-emphasize the importance of realizing personal goals (Huang and Van de Vliert 2003; Triandis 1995). Although the knowledge available in EKR permits personal growth, this benefit of EKR use might not be highly valued in collectivistic societies. Innovativeness emanating from using an EKR is not necessarily valued strongly. In such a culture, employees' incentives to use an EKR for the purpose of personal achievement are diminished. As a result, employees with high PIIT tend to feel constrained from being truly empowered under highly collectivistic cultures even with EKR usage experience.

Scenario 3: When PIIT is low and one is in an individualistic culture, the desirable congruence is not present. Although the national culture favors differentiation and uniqueness (Roth 1995; Huang 2008), employees with low PIIT have few incentives to appreciate the value from EKR use (Wang et al. 2008). Although these employees might be active in initiating new ideas, they do not necessarily rely on using EKR to search for related knowledge, simply

because of their inherent resistance toward technology. To conclude, EKR use for knowledge seeking is not expected to generate strong feelings of knowledge empowerment in this situation.

Scenario 4: Undesirable value congruence emerges when individuals with low PIIT work in collectivist cultures. Collectivistic cultures do not aspire for innovativeness or personal accomplishment (Huang 2008; Triandis 1995). This cultural environment provides low PIIT employees with relief. They are pleased to simply follow group norms and face little pressure to initiate new solutions with the assistance of information technologies. In this vein, the same level of EKR use for knowledge seeking will influence IT-enabled knowledge empowerment less strongly for employees in this scenario than in the first scenario.

To conclude, when personal innovativeness is high and one is in an individualistic culture, the desirable value congruence is achieved. Such congruence strengthens the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment. Thus, I propose the following hypothesis:

H_6: PIIT and individualism/collectivism interactively moderate the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment such that the relationship is strongest for high PIIT employees in highly individualistic cultures where value congruence is achieved.

3.3.3 PIIT and Uncertainty Avoidance

Uncertainty avoidance refers to the degree to which societies tend to feel threatened by uncertain and ambiguous situations (Steenkamp 2001). In the context of our study, the national cultural value of uncertainty avoidance could moderate the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment in a mixed way.

On the one hand, in a high uncertainty avoidance culture, the feeling of "what is different is dangerous" prevails (Hofstede 1991, p.128). Societies with this

cultural value encourage stability and risk reduction (Hofstede 1991). Because an EKR provides comprehensive knowledge for employees to understand specific situations more fully and to make decisions accordingly, this type of system helps to avoid risks and reduce uncertainty. As a result, by seeking knowledge from an EKR, employees in a high uncertainty avoidance culture tend to perceive retrieved knowledge as being meaningful with respect to their personal values, and realize that knowledge enhances risk-coping skills, helps to control unpredictable outcomes, and facilitates flexible adjustments. In other words, the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment is reinforced in a high uncertainty avoidance culture.

On the other hand, a low uncertainty avoidance culture holds a well accepted notion that "what is different is curious" (Hofstede 1991, p.119). This culture embraces innovativeness and encourages people to take advantage of technology. Since an EKR is a new technology that changes traditional ways of solving problems, employees under a low uncertainty avoidance culture strongly support the use of such a system. Therefore, these employees are in a better position to enjoy EKR usage and are more intrinsically motivated to form empowerment feelings. To conclude, the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment is strengthened in a low uncertainty avoidance culture.

It is possible that the above-mentioned two moderating effects of uncertainty avoidance values may offset each other. For this reason, I suspect that uncertainty avoidance may not significantly moderate the focal relationship. Therefore, no hypothesis is postulated for uncertainty avoidance as a moderator. The interactive moderating effect of uncertainty avoidance and PIIT is not hypothesized either.

Chapter 4 Methodology

4.1 Research Site

I chose a leading multinational logistic company as the target research site for this study. This company has branches in 58 countries and annual revenue of $5.65 billion USD (2007). Given the highly intense competition in the logistic industry, the firm's competitiveness and quality of service are contingent upon its employees' abilities to access and apply the latest and the most pertinent knowledge. The knowledge-centric characteristic of this industry together with the firm's global presence and EKR implementation makes this site an ideal test bed for this study's proposed model and hypotheses.

To support its knowledge management strategy, the target firm has implemented a global electronic knowledge repository (EKR) for more than two years. The available knowledge in the system covers useful intelligence across various geographical and functional areas. As a daily operations practice, the firm assigns a few dedicated personnel to maintain and update the content in the system. The firm also authorizes most of its employees to access this repository. Importantly, employees are encouraged to utilize this repository to search knowledge but are not mandated to do so. Thus, EKR knowledge seeking in this firm is voluntary in nature, which is suitable to test our research model.

4.2 Measurement

A self-report questionnaire was used for data collection. The questionnaire included the four constructs that comprise the research model in this study: EKR usage for knowledge seeking, IT-enabled knowledge empowerment, personal innovativeness toward IT, and national culture (power distance, individualism/ collectivism). The measurement for each construct is described as below.

IT-Enabled Knowledge Empowerment includes four dimensions: meaning, competence, self-determination, and impact. Each dimension was measured using three items, which were contextualized and appropriated from those of

psychological empowerment (Spreitzer 1995) to the investigative context. A seven-point Likert scale was used, ranging from "1=strongly disagree" to "7=strongly agree." Employees were asked to indicate the extent to which they agreed with each statement on the basis of their perceptions.

In particular, the three items for *meaning* are (1) "The knowledge available in [the EKR system] is meaningful to me"; (2) "The knowledge available in [the EKR system] is very important to me"; and (3) "The knowledge available in [the EKR system] is personally meaningful to me".

The three items for *impact* are (1) "The knowledge available in [the EKR system] makes me have a large impact in my department"; (2) "The knowledge available in [the EKR system] makes me have a great deal of control over what happens in my department"; and (3) "The knowledge available in [the EKR system] makes me have significant influence over what happens in my department".

The three items for *self-determination* are (1) "The knowledge available in [the EKR system] makes me have significant autonomy in determining how I do my job"; (2) "The knowledge available in [the EKR system] enables me to decide on my own how to go about doing my work"; and (3) "The knowledge available in [the EKR system] provides considerable opportunities for independence and freedom in how I do my job".

The three items for *competence* are (1) "The knowledge available in [the EKR system] makes me feel confident about my ability to do my job"; (2) "The knowledge available in [the EKR system] helps me be self-assured about my capabilities to perform my work activities"; and (3) "The knowledge available in [the EKR system] helps me master the skills necessary for my job".

EKR Usage for Knowledge Seeking was measured in this study by participants' self-reported frequency of EKR usage. The item was adapted from Davis's (1993) measure and stated as "On average, to what extent does your work require you to use [the EKR system]."

Personal Innovativeness toward IT was measured using the four items

developed by Agarwal and Prasad (1998a, b): (1) "If I heard about a new information technology, I would look for ways to experiment with it"; (2) "Among my peers, I am usually the first to try out new information technologies"; (3) "In general, I am hesitant to try out new information technologies"; and (4) "I like to experiment with new information technologies".

National Culture was measured by Hofstede's (2001) national cultural scores. Only two of Hofstede's five cultural dimensions were incorporated in this study: power distance and individualism/collectivism.

Other Variables were also measured for different purposes. To control for alternative explanations for the dependent variable, individual characteristics such as age, gender, level of education, years in current position, and system usage history were measured. Additionally, continuing EKR usage intentions and turnover behavior were included in the questionnaire in order to establish a complete nomological network for IT-enabled knowledge empowerment.

4.3 Data Collection Procedure

4.3.1 Pilot Study

Because this study conceptualizes and measures the construct of IT-enabled knowledge empowerment for the first time, I needed to test the psychometric properties of the measurement instrument before examining its relationships with the other constructs. To serve this purpose, I conducted a pilot study with 348 employees from the research site prior to the major data collection. In general, feedback from the respondents indicated that the measurement scale was clear and easy to understand.

Data from the pilot study revealed preliminary results for the properties of the measurement instrument. Demographic profiles for the respondents are provided in Table 4.1, and Table 4.2 offers a summary of the statistics and correlations among the items for IT-enabled knowledge empowerment.

Table 4.1 Sample Demographics for the Pilot Study		
	Category	**Percentage**
Gender	Male	50.9%
	Female	49.1%
Education	Secondary/High School	14.7%
	Post-Secondary	14.4%
	University Graduate	58.9%
	Post-Graduate	9.5%
	Other	2.6%
Use History	Less than 6 months	17.2%
	More than 6 months but less than 12 months	17%
	More than 12 months	65.8%
	Mean	**S.D.**
Age (Years)	36.40	9.77
Years in Current Position	7.14	7.00

Table 4.2 Univariate Statistics and Correlations for the Empowerment Items in the Pilot Study

Items	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
Meaning1	5.35	1.14	1											
Meaning2	5.17	1.20	0.74**	1										
Meaning3	4.85	1.24	0.63**	0.71**	1									
Impact1	4.83	1.18	0.58**	0.60**	0.52**	1								
Impact2	4.66	1.23	0.55**	0.53**	0.55**	0.80**	1							
Impact3	4.68	1.22	0.60**	0.51**	0.52**	0.75**	0.86**	1						
Self-Determination1	4.84	1.19	0.55**	0.57**	0.53**	0.65**	0.69**	0.66**	1					
Self-Determination2	4.93	1.15	0.54**	0.54**	0.53**	0.62**	0.64**	0.61**	0.86**	1				
Self-Determination3	4.87	1.22	0.54**	0.51**	0.55**	0.64**	0.68**	0.64**	0.82**	0.85**	1			
Competence1	5.00	1.16	0.60**	0.60**	0.55**	0.67**	0.67**	0.65**	0.75**	0.70**	0.73**	1		
Competence2	4.93	1.14	0.56**	0.56**	0.52**	0.65**	0.66**	0.64**	0.74**	0.71**	0.71**	0.90**	1	
Competence3	4.95	1.17	0.56**	0.56**	0.49**	0.61**	0.64**	0.63**	0.73**	0.70**	0.72**	0.85**	0.83**	1

A series of analyses were performed to examine the reliability and validity of the new instrument. Firstly, the Cronbach alpha reliability coefficient for the overall construct was 0.96, which is above the threshold value of 0.707(Nunnally 1978), indicating an excellent internal consistency for this measure.

Next, a second-order confirmative factor analysis (CFA) was performed by AMOS 7.0 to evaluate the convergent and discriminant validity of the construct measurement (Anderson and Gerbing 1988). An excellent fit was obtained according to the criteria set forth by Hair et al. (1998) (χ^2/d.f.=2.5, CFI=0.983, GFI=0.948, AGFI=0.915, RMSEA=0.066, SRMR=0.025). More detailed CFA results are provided in Figure 4.1.
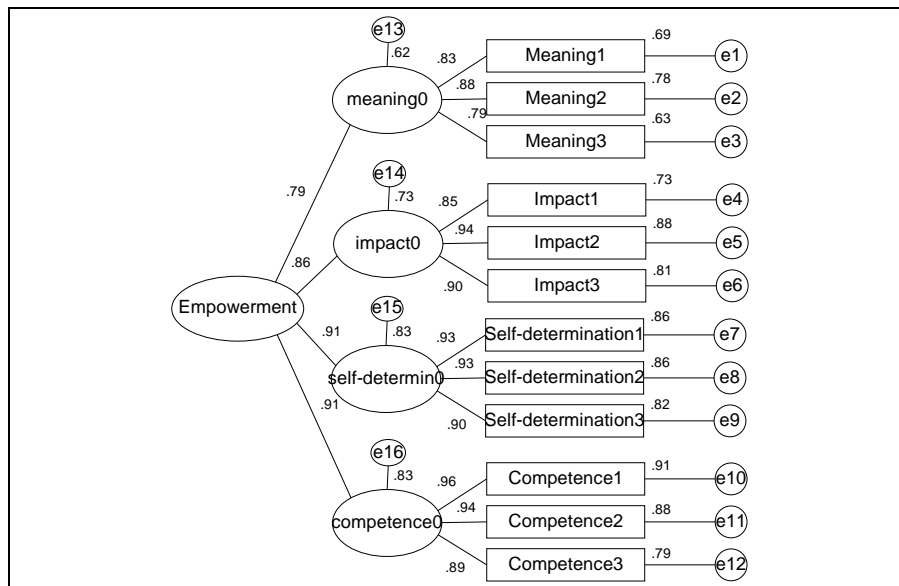
Figure 4.1 Results of the Second-Order CFA for the Pilot Study

Specifically, each item loaded significantly on the appropriate factor, supporting satisfactory convergent validity. Discriminant validity was first evaluated by looking at the factor loadings; each item loaded higher on its appropriate dimension than on any other, which supported the discriminant validity of the measure (Cook and Campbell 1979). Furthermore, following the procedure of Anderson and Gerbing (1988) and Bagozzi et al. (1991), I constrained the correlation between each possible pair of dimensions one at a time to be equal to unity and then performed a chi-square test to compare this model to the unconstrained model. In all cases, the chi-square difference was significant, thereby indicating sufficient distinction between the dimensions (see Table 4.3).

Table 4.3 Pairwise Discriminant Analysis for the Pilot Study				
Model	χ^2	**d.f.**	$\Delta\chi^2$	**p-value of χ^2 test**
Original	120.13	48	-	-
Combine Meaning and Impact	357.54	49	237.41	0.00
Combine Meaning and Self-Determination	385.56	49	265.43	0.00
Combine Meaning and Competence	376.14	49	256.01	0.00
Combine Impact and Self-Determination	455.70	49	335.57	0.00
Combine Impact and Competence	489.48	49	369.35	0.00
Combine Self-Determination and Competence	427.58	49	307.45	0.00

To conclude, the results of the pilot study suggest that the measurement instrument for IT-enabled knowledge empowerment exhibited adequate psychometric properties and was feasible for the final study.

4.3.2 Final Study

An online survey was conducted in the target company. In all, 3027 employees across thirty countries were invited for participation. The survey was administrated by the headquarters department of the company. Reminder letters were sent to the country heads of the thirty countries to encourage and remind employees to complete the survey within the fieldwork period. The questionnaire was developed in English and was used in all thirty countries. This design is appropriate since English is the official language for communication in this company.

4.4 Data Analysis Method

The research model involves constructs at the national level (i.e., national cultures) and at the individual level (i.e., EKR usage for knowledge seeking, IT-enabled knowledge empowerment). Except for H_1 and H_2, which can be analyzed at the individual level, the other four hypotheses require multilevel analysis. To examine such multilevel moderating effects more accurately, hierarchical linear modeling (HLM) was applied in this study.

HLM is a statistical technique designed to analyze data with a nested structure, such as individuals nested within nations. In such a data structure, individual units are not randomly distributed across nations. As a result, bias may occur when sample size differs from nation to nation (Goldstein et al. 1998). Moreover, individuals who share the same national cultures are more likely to demonstrate similar behavioral patterns than those who do not. Single-level regressions would lump all individuals together and ignore the statistical dependence among different observations. Such ignorance will underestimate standard errors, leading to an overestimation of the level of significance. To accommodate this issue, HLM can better assure that the significant findings are not simply the result of the distribution of individuals across nations, statistical dependence in the data, and/or varying sample sizes across countries, as these factors are less likely to affect HLM coefficients (Goldstein et al. 1998).

In this study, the MLwiN software package was adopted to perform the HLM

analyses (Goldstein et al. 1998). MLwiN produces an estimate for each predictor variable along with the associated standard error. These estimates are comparable to the unstandardized regression coefficients in a simple regression analysis, and their level of significance can be tested using T-tests. Moreover, MLwiN produces a statistic called deviance, which indicates how well a given model fits the data. The difference in deviances of two nested models follows a chi-square distribution with degrees of freedom equal to the difference in the number of parameters in the two models. A chi-square test can then be performed to examine whether the more general model fits better than the simpler model.

Chapter 5 Results

This chapter presents the results of the data analyses. Section 5.1 reports the profiles of the respondents in the survey. After the measure of IT-enabled knowledge empowerment is confirmed with the large-scale sample, section 5.2 verifies the reliability, validity, and cross-cultural invariance of the measurement model in this study. Section 5.3 presents the results of the hypothesis testing, including the direct effects as well as the moderating effects. Finally, the results of post-hoc analysis are shown in section 5.4.

5.1 Sample Description

A total of 1004 usable questionnaires were received, representing an overall response rate of 33.2%. The sample size together with the national culture scores for each country is shown in Table 5.1.

Table 5.1 Sample Size and National Culture Scores by Country					
Country	Sample Size	Uncertainty Avoidance (a)	Power Distance (a)	Individualism/ Collectivism (a)	Masculinity/ Femininity (a)
Australia	28	51	36	90	61
Bangladesh	31	60	80	20	55
Belgium	29	94	65	75	54
Canada	38	48	39	80	52
China	86	30	80	20	66
Denmark	14	23	18	74	16
France	36	86	68	71	43
Germany	68	65	35	67	66
Hong Kong	31	29	68	25	57
India	42	40	77	48	56
Indonesia	30	48	78	14	46
Italy	15	75	50	76	70
Japan	28	92	54	46	95
Korea	36	85	60	18	39
Malaysia	41	36	104	26	50
Netherlands	34	53	38	80	14
New Zealand	12	49	22	79	58
Pakistan	26	70	55	14	50
Philippines	40	44	94	32	64
Russia	30	95	93	39	36
Singapore	40	8	74	20	48
Spain	21	86	57	51	42
Sri Lanka	19	40	77	48	56
Sweden	7	29	31	71	5
Taiwan	53	69	58	17	45
Thailand	37	64	64	20	34
UAE	26	68	80	38	52
UK	36	35	35	89	66
USA	34	46	40	91	62
Vietnam	36	30	70	20	40
(a) Adopted from Hofstede's (2001) Cultural Value Score. Accessible from http://www.geert-hofstede.com/hofstede_ dimensions.php					

The demographic profile of respondents is presented in Table 5.2, and Table 5.3 gives a summary of means, standard deviations and correlations for all variables. Generally speaking, the sample was nearly balanced in terms of gender (49.7% male and 50.3% female). Over half of the respondents received undergraduate education. In addition, the respondents were around 35 years old on average with more than five years of experience in their working position. Moreover, nearly two thirds of the respondents indicated that they had used the EKR system in this company for more than one year. Thus, the respondents are regarded as experienced knowledge workers with sufficient understanding of their work and the EKR system.

Table 5.2 Demographic Profiles of the Respondents		
	Category	**Percentage**
Gender	Male	49.7%
	Female	50.3%
Education	Secondary/High School	19.6%
	Post-Secondary	13.0%
	University Graduate	52.2%
	Post-Graduate	12.2%
	Other	3.0%
Use History	Less than 6 months	22.4%
	More than 6 months but less than 12 months	16.4%
	More than 12 months	61.2%
	Mean	**S.D.**
Age	36.47	9.71
Years in Current Position	6.10	6.68

Table 5. 3 Means, Standard Deviations, and Correlations											
	Mean	S.D.	1.	2.	3	4.	5.	6.	7.	8.	9.
1. Age	36.65	9.79	1								
2. EDU	2.66	1.02	-0.26**	1							
3. Gender	0.50	0.50	0.12**	0.05	1						
4. Use History	2.39	0.83	0.21**	-0.08*	0.05	1					
5. Tenure	6.10	6.68	0.60**	-0.22**	0.06*	0.33**	1				
6. USE	4.19	1.52	0.20**	0.02	0.06	0.26**	0.21**	1			
7. PIIT	5.14	1.10	-0.04	0.10**	0.15**	0.05	-0.01	0.21**	1		
8. ITU	5.30	1.30	0.05	0.02	0.04	0.17**	0.06*	0.37**	0.34**	1	
9. EMP	4.92	1.03	-0.02	0.09**	0.05	0.04	-0.01	0.38**	0.44**	0.45**	1
10. UA	53.90	22.62	-	-	-	-	-	-	-	-	-
11. PD	62.97	20.72	-	-	-	-	-	-	-	-	-
12. IND	44.81	26.75	-	-	-	-	-	-	-	-	-
13. MS	52.28	15.18	-	-	-	-	-	-	-	-	-

Note:
i. PIIT: personal innovativeness toward IT   USE: EKR usage for knowledge seeking
    ITU: EKR usage intention   EMP: IT-enabled knowledge empowerment
    UA: uncertainty avoidance   PD: power distance
    IND: individualism/ collectivism   MS: masculinity/ femininity
ii. *p<0.05, **p<0.01

5.2 Measurement Model Testing

5.2.1 CFA for IT-Enabled Knowledge Empowerment

To confirm the psychometric properties of the IT-enabled knowledge empowerment construct, a second-order confirmative factor analysis (CFA) was performed using AMOS 7.0. The results are presented in Figure 5.1.
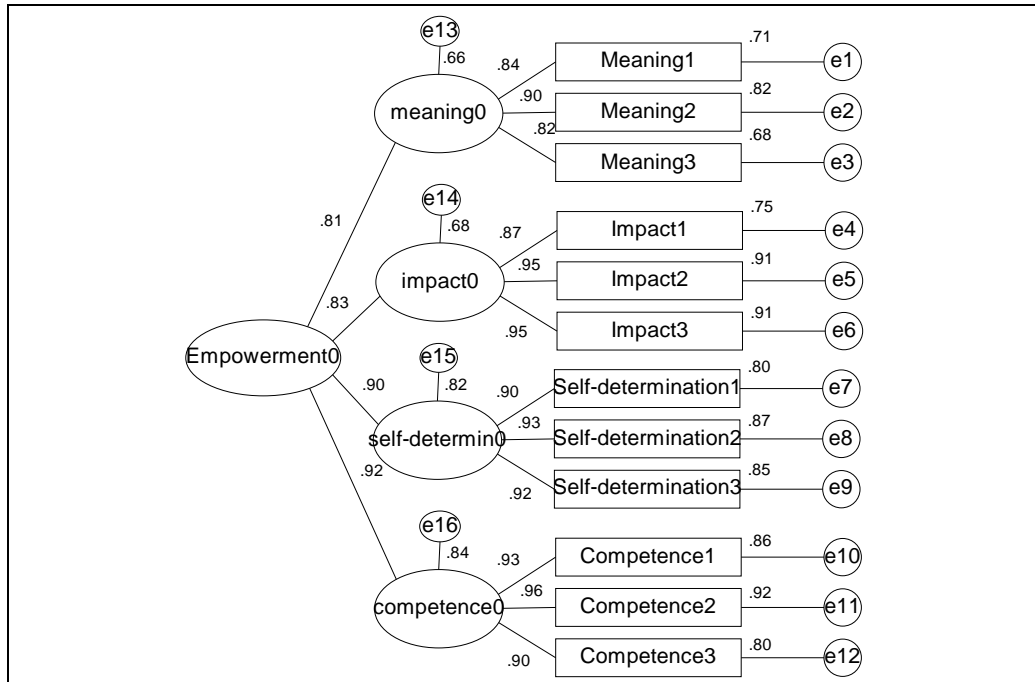
Figure 5.1 Results of the Second-Order CFA for IT-Enabled Knowledge Empowerment

The CFA results indicated an excellent fit for the four-dimensional measurement model $(\chi^2(50)=233.218$, p<0.001; CFI=0.986, GFI=0.964, AGFI=0.943, SRMR=0.0294, RMSEA=0.06) based on the criteria set forth by Hair et al. (1998). The factor loadings for each indicator were significant at the 5% level or above. This result confirmed that items fell neatly into the four empowerment factors, demonstrating the convergent validity of the measures (Anderson and Gerbing 1988). Discriminant validity was established because all of the items loaded higher on the appropriate constructs than on others(Cook and Campbell 1979), and the square root of the average variance extracted (AVE) for each construct was higher than all of the inter-construct correlations (Fornell and Larcker 1981) as shown in Table 5.4.

Table 5.4 The Univariate Statistics and Correlations among the Empowerment Dimensions						
	Mean	S.D.	1.	2.	3.	4.
1. Meaning	5.19	1.08	0.85			
2. Impact	4.74	1.22	0.66[**]	0.92		
3. Self-Determination	4.78	1.20	0.65[**]	0.73[**]	0.92	
4. Competence	4.97	1.18	0.70[**]	0.72[**]	0.80[**]	0.93
Note: i. Diagonals represent the square root of the average variance extracted. The off-diagonal elements are inter-construct correlations. ii. [**] Correlation is significant at the 1% level.						

In sum, the measurement model for IT-enabled knowledge empowerment yields sufficient validity and reliability. Similar to psychological empowerment, IT-enabled knowledge empowerment is not a uni-dimensional construct but consists of four reflective dimensions (meaning, impact, self-determination, and competence). To simplify the structural model for further analyses, each dimension of IT-enabled knowledge empowerment was substituted with the mean of three items, which is a common practice in the empowerment literature (e.g., Spreitzer 1995, 1996; Spreitzer et al. 1997; Sparrowe 1994; Erdogan and Bauer 2009; Chen et al. 2007b; Seibert et al. 2004).

5.2.2 Reliability and Validity of Measurement

The measurement of personal innovativeness toward IT together with that of IT-enabled knowledge empowerment was tested in this part of the analysis. The measurement model achieved acceptable internal consistency since both Crobach's alpha and composite reliability exceeded the threshold of 0.707 (Nunnally 1978) and the AVEs were larger than 0.50 (see Table 5.5).

Table 5.5 Reliability of Constructs			
Constructs	Cronbach Alpha	Composite Reliability	AVE
IT-Enabled Knowledge Empowerment	0.91	0.91	0.71
Personal Innovativeness toward IT	0.90	0.90	0.76

The CFA results showed that the two-factor measurement model exhibited acceptable fit (χ^2/d.f.=5.345, p<0.001; CFI=0.988, GFI=0.981, AGFI=0.959, SRMR=0.0267, RMSEA=0.066). Convergent validity and discriminant validity were confirmed by a procedure similar to that in section 5.2. Details of the CFA results are reported in Figure 5.2.

Figure 5.2 Results of the Two-Factor CFA
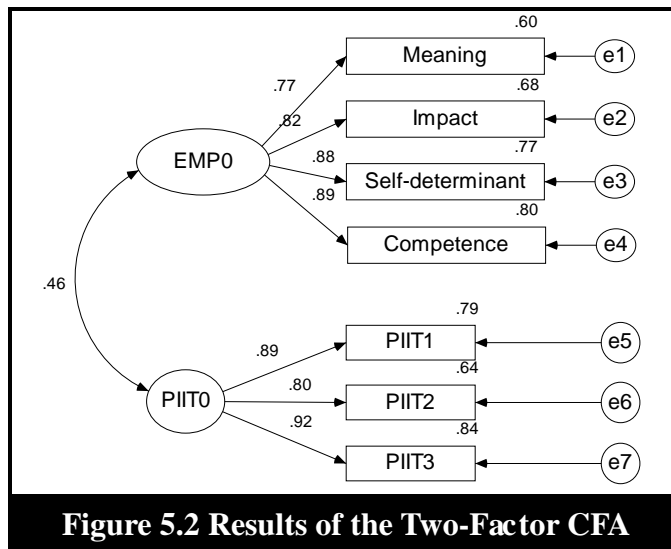
5.2.3 Measurement Invariance Analysis

To ensure that the comparisons across the different cultural groups are meaningful, it is necessary to conduct measurement invariance analyses before combining the multi-cultural sample to test the hypotheses (Hui and Triandis 1985; Steenkamp and Baumgartner 1998). Without evidence of measurement invariance, we cannot determine whether the differences identified in the analyses were caused by real cultural differences or by the scaling of artifacts. Specifically, configural invariance and metric invariance are the two major concerns related to measurement invariance (Cheung and Rensvold 1999; Steenkamp and Baumgartner 1998).

Configural invariance means that the patterns of item loadings are congeneric across groups but that the loadings are not necessarily the same (Doll et al. 1998; Mackenzie and Spreng 1992). Established configural invariance suggests that the constructs can be conceptualized in the same way across groups and are suitable to assess metric invariance. Metric invariance concerns whether the measures have equivalent loadings on the latent constructs across groups. When metric invariance presents, the comparisons between item scores across cultural groups are meaningful, and the observed item differences are indicators of cross-group differences in the investigated construct.

Among the many techniques for assessing measurement invariance, multigroup confirmatory factor analysis (Jöreskog 1971) represents the most powerful

approach and is widely applied in this type of context (Steenkamp and Baumgartner 1998). As an SEM-based analysis typically requires at least 200 to 250 units in one group (Hair et al. 1998), I split the entire sample into two groups along two cultural dimensions: (1) countries with high power distance cultures and low power distance cultures and (2) countries with individualistic cultures and collectivistic cultures. Following the procedures set forth by Steenkamp and Baumgartner (1998) and the evaluation criteria developed by Cheung and Rensvold (2002), I performed configural invariance and metric invariance analyses for each pair of groups with AMOS 7.0.

Configural invariance was tested first. No restrictions were imposed on the metrics across groups in the configural invariance model (Doll et al. 1998). For both the power distance and individualism/collectivism dimensions, the CFA results showed that the configural invariance model fit the data well in both groups, all factor loadings were highly significant, the correlations between factors were reasonable, and discriminant validity was present. According to Steenkamp and Baumgartner (1998), these results reveal strong support for the configural invariance between the groups along both cultural dimensions. Detailed information about these analyses is summarized in Figure 5.3.

Metric invariance can be tested by constraining the construct loadings to be equal across groups. Thus, the configural invariance and metric invariance models are nested. If the changes in the goodness-of-fit indices (e.g., CFI) between these two nested models are insignificant, the existence of metric invariance is validated (Doll et al. 1998). As shown in Table 5.6, the changes in CFI were not statistically significant between the configural and metric models for either the power distance or individualism/collectivism dimensions. As such, the requirements for metric invariance were fulfilled.

The above results collectively justified the measurement invariance between the two groups along both the power distance and individualism/collectivism dimensions. With such evidence, the comparisons of the path coefficients across the different cultures are meaningful.
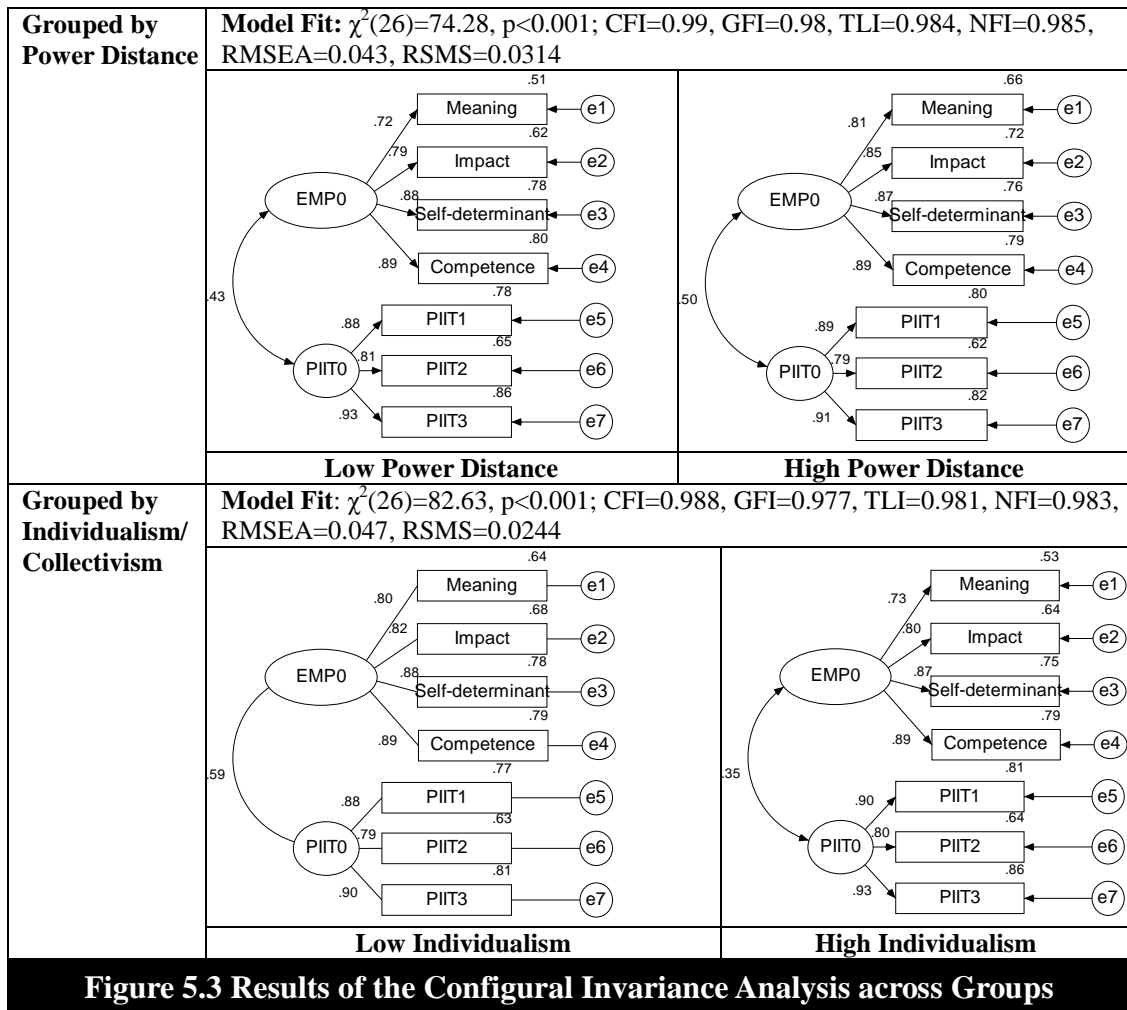
Figure 5.3 Results of the Configural Invariance Analysis across Groups

Table 5.6 Change in CFI for the Multi-Group Invariance Analysis		
Group	**Power Distance**	**Individualism/Collectivism**
Configural Model	0.990	0.988
Metric Model	0.990	0.988
ΔCFI	0	0

5.3 Hypotheses Testing

After the tests for reliability, validity, and measurement invariance, the measurement model in this study was confirmed to be appropriate for further analyses. Before testing the hypothesized relationships, the individual-level constructs—namely, EKR usage for knowledge seeking, IT-enabled knowledge empowerment, and personal innovativeness toward IT—were first centralized on the group mean so as to disentangle individual differences and country differences (Kreft and De Leeuw 1998). These centralized variables were then standardized to create interaction terms for analysis (Aiken and West 1991). For the same purpose, the national-level constructs, including national cultures (i.e.,

power distance, individualism/collectivism), were standardized at the country level (Aiken and West 1991).

5.3.1 Results of H_1

A hierarchical regression analysis was conducted to test the first hypothesis. After entering all of the control variables in step 1 (see Table 5.7), I regressed IT-enabled knowledge empowerment on the independent variable (i.e., EKR usage for knowledge seeking) in step 2. The results indicated that after controlling for the effects of gender, age, education level, job tenure, and use history, EKR usage for knowledge seeking was significantly related to IT-enabled knowledge empowerment, thus leading to the support of H_1.

Table 5.7 Results of the Regression Analysis (H_1)		
DV: IT-Enabled Knowledge Empowerment		
	Beta	**Beta**
Constant	4.459[**]	3.872[**]
Step 1: Control Variables		
Age	0.001	-0.004
Gender	0.097	0.075
Education	0.091[**]	0.057[+]
Years in Current Position	-0.003	-0.009
Use History	0.059	-0.044
Step 2: Predictor		
EKR Usage for Knowledge Seeking	--	0.274[**]
Note: [+]: p<0.1; [*]: p<0.05; [**]: p<0.01		

5.3.2 Results of H_2-H_4

The remaining hypotheses examined the moderating effects of personal innovativeness toward IT and national cultures on the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment. Since these analyses involved both individual-level and country-level constructs, hierarchical linear modeling (HLM) was applied.

Table 5.8 reports the results for H_2-H_4. The detailed procedures for the HLM analyses are described as follows. In step 1, IT-enabled knowledge empowerment was input as the dependent variable, and all of the control variables (gender, age, use history, education, and years in the current position) were entered into the model. Among these control variables, use history

(β=0.167, p<0.01) and years in current position (β=0.01, p<0.1) significantly affected IT-enabled knowledge empowerment.

In step 2, the main predictor (i.e., EKR usage for knowledge seeking) and the two moderators (i.e., personal innovativeness toward IT and national cultural characteristic of power distance) were entered into the model. A significant positive coefficient (β=0.247, p<0.05) along with a significant improvement for the model fit ($\Delta\chi^2(3)$=252.635, p<0.01) indicated that EKR usage for knowledge seeking was positively related to IT-enabled knowledge empowerment at the individual level.

In step 3, a random slope test was conducted to test whether the examined relationship had significant variance at the national level. A marginally significant improvement in the model fit ($\Delta\chi^2(2)$=5.077, p<0.1) suggested that the slope was marginally different from one country to another.

In step 4, all possible two-way interaction terms were added. The two-way interaction between power distance and EKR usage for knowledge seeking (PD*Use) was significant (β=-0.087, p<0.01), while the interaction between PIIT and EKR usage for knowledge seeking (PIIT*Use) was not (β=0.029, p>0.1). These results indicate that power distance (PD), as a significant moderator, affected the strength of the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment. However, the moderating effect of PIIT was not supported in this study. Therefore, H_2 was not supported, but H_3 was supported.

In step 5, I tested whether the three-way cross-level interaction (PIIT*PD*Use) exerted any influence on IT-enabled knowledge empowerment. A significant three-way interaction effect (β=-0.042, p<0.05) together with a marginally significant improvement in the model fit ($\Delta\chi^2(1)$=3.065, p<0.1) revealed support for the three-way interaction effect in H_4.

Table 5.8 Results of the Hierarchical Linear Modeling (H$_2$-H$_4$)		
Moderators: Personal Innovativeness toward IT; Power Distance		
	Beta	Increase in Model Fit
Constant	4.899**	
Step 1: Control Variables		
Age	0.001	
Gender	0.017	
Use history	0.167**	
Education	-0.004	
Years in Current Position	0.01^{+}	$\Delta X^2(5)=31.877^{**}$
Step 2: Main Effect		
Power Distance (PD)	0.247*	
Personal Innovativeness toward IT (PIIT)	0.308**	
EKR Usage for Knowledge Seeking (Use)	0.246**	$\Delta X^2(3)=252.635^{**}$
Step 3: Testing the Slope		
Use	0.241**	$\Delta X^2(2)=5.077^{+}$
Step 4: Two-Way Interactions		
PIIT*PD	0.015	
PD*Use	-0.087**	
PIIT*Use	0.029	$\Delta X^2(3)=10.776^{*}$
Step 5: Three-Way Interaction		
PIIT*PD*Use	-0.042^{+}	$\Delta X^2(1)=3.065^{+}$
Note: $^{+}$: p<0.1; *:p<0.05; **: p<0.01		

To gain a more nuanced understanding of the three-way interaction effect, I performed simple slope tests and plotted the interaction effects in Figure 5.4. Following Dawson and Richter's (2006) approach, I statistically compared each pair of the four situations and tested whether the four slopes were significantly different from each other. The results showed that the slope for low PD-high PIIT situation was significantly higher than the other three conditions, among which no significant differences were seen. Hence, H$_4$ was supported.

Slope Difference Test		
Line A	Line B	t value
High PD, High PIIT	High PD, Low PIIT	0.07
High PD, High PIIT	Low PD, High PIIT	-2.74**
High PD, Low PIIT	Low PD, Low PIIT	-0.88
Low PD, High PIIT	Low PD, Low PIIT	2.06*
High PD, High PIIT	Low PD, Low PIIT	-0.76
High PD, Low PIIT	Low PD, High PIIT	-3.00**
Note: *: p<0.05; **: p<0.01		

Figure 5.4 Interactive Moderating Effect (PIIT&PD)

5.3.3 Results of H_5-H_6

I tested H_5 and H_6 with a similar five-step procedure. The results are shown in Table 5.9. The results of the random slope test (step 3) revealed significant improvement in the model fit ($\Delta\chi^2(2)$=6.148, p<0.05), suggesting that the link between EKR usage for knowledge seeking and IT-enabled knowledge empowerment had significant variance at the national level. After all of the two-way interaction terms were entered, the coefficient of the two-way interaction between individualism/collectivism and EKR usage for knowledge seeking (IND*Use) was significant (β=0.066, p<0.05), indicating that individualism/collectivism (IND) is a moderator in this model. Therefore, H_5 was supported. In the final step, I detected a significant three-way interaction effect (β=0.048, p<0.05) together with a significant improvement in the model fit ($\Delta\chi^2(1)$=4.228, p<0.05).

Table 5.9 Results of the Hierarchical Linear Modeling (H_5-H_6)		
Moderators: Personal Innovativeness toward IT; Individualism/Collectivism		
	Beta	Increase in Model Fit
Constant	4.899	
Step 1: Control Variables		
Age	0.001	
Gender	0.017	
Use history	0.167**	
Education	-0.004	
Years in Current Position	0.01+	$\Delta\chi^2(5)$=31.877**
Step 2: Main Effect		
Individualism/Collectivism (IND)	-0.35**	
Personal Innovativeness toward IT (PIIT)	0.308**	
EKR Usage for Knowledge Seeking (Use)	0.245**	$\Delta\chi^2(3)$=259.185**
Step 3: Testing the Slope		
Use	0.238**	$\Delta\chi^2(2)$=6.148*
Step 4: Two-Way Interactions		
PIIT*IND	-0.093**	
IND*Use	0.066*	
PIIT*Use	0.029	$\Delta\chi^2(3)$=17.905**
Step 5: Three-Way Interaction		
PIIT*IND*Use	0.048*	$\Delta\chi^2(1)$=4.228*
Note: +: p<0.1; *:p<0.05; **: p<0.01		

More concretely, I drew the interaction plots in Figure 5.5 and considered the four situations by statistically comparing all possible slope differences. The results showed that the slope for high IND-high PIIT situation was significantly higher than the other three conditions among which no significant differences were exhibited. This result is consistent with the expectations of the model and provides support for H_6.
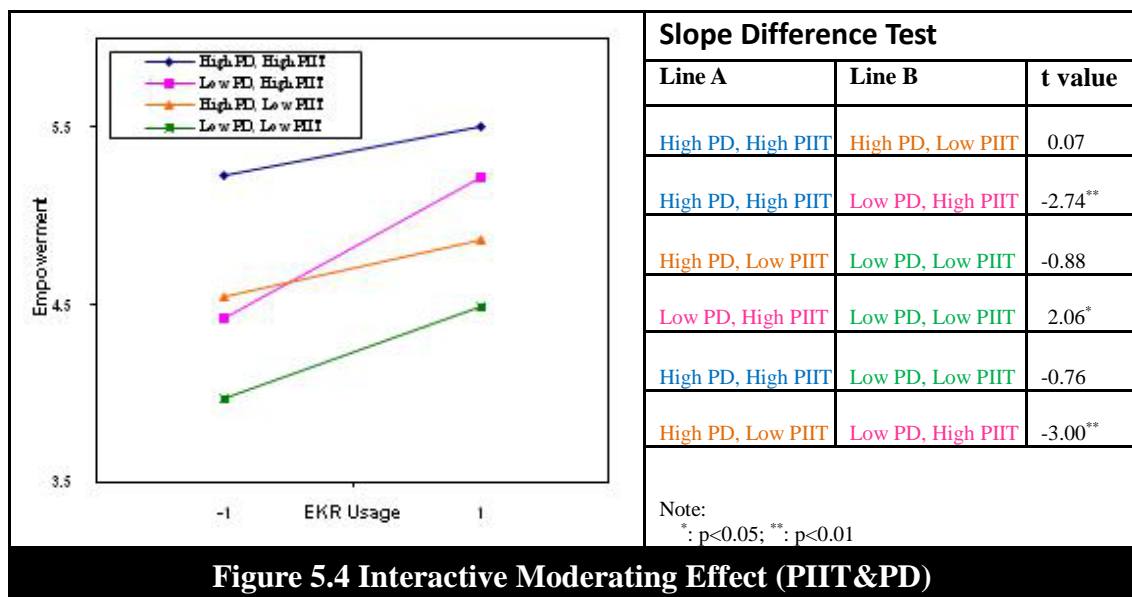
Slope Difference Test		
Line A	**Line B**	**t value**
High IND, High PIIT	High IND, Low PIIT	3.00**
High IND, High PIIT	Low IND, High PIIT	3.24**
High IND, Low PIIT	Low IND, Low PIIT	-0.27
Low IND, High PIIT	Low IND, Low PIIT	-0.58
High IND, High PIIT	Low IND, Low PIIT	2.76**
High IND, Low PIIT	Low IND, High PIIT	0.31

Note:
**: $p < 0.01$
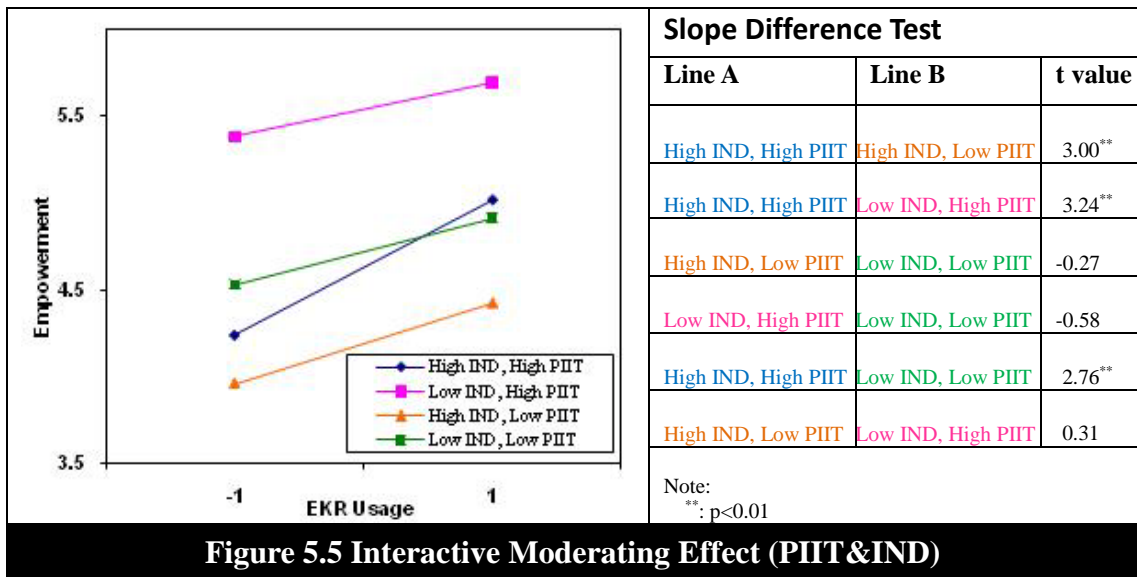
Figure 5.5 Interactive Moderating Effect (PIIT&IND)

5.4 Post-Hoc Analysis

In order to establish a complete nomological network for the construct of IT-enabled knowledge empowerment, a post-hoc analysis was conducted to examine continuance usage intentions as an outcome variable of this construct. A hierarchical linear regression was performed, the results of which are was shown in Table 5.10. After controlling for variables that possibly predicted system usage intentions, the beta coefficient of IT-enabled knowledge empowerment on continuance usage intentions was significant ($\beta=0.229$, $p<0.01$). This result suggests that enhanced IT-enabled knowledge empowerment leads to a higher level of continued EKR usage intentions.

Table 5.10 Results of the Regression Analysis (Post-Hoc Analysis)		
DV: Continuance EKR usage intention		
	Beta	**Beta**
Constant	1.613**	1.537**
Step 1: Control Variables		
Age	-0.001	-0.001
Gender	-0.003	-0.002
Education	-0.031	-0.027
Years in Current Position	-0.001	-0.001
Use History	0.144**	0.157**
Perceived Usefulness	0.271**	0.165**
Perceived Ease of Use	0.08*	0.019
Social Norms	0.194**	0.155**
EKR Usage for Knowledge Seeking	0.157**	0.146**
Step 2: Predictor		
IT-Enabled Knowledge Empowerment	--	0.229**

Note:
*$p<0.05$; **$p<0.01$

Furthermore, hierarchical linear modeling was performed to test whether the strength of the above-tested relationship differs across national cultures. The results of the random slope test (step 3 in table 5.11) revealed no improvement in the model fit ($\Delta\chi^2(2)=3.98$, p>0.1), suggesting that the link between IT-enabled knowledge empowerment and EKR continuance intentions did not vary across cultures. In other words, once empowered by the knowledge from an EKR, employees with different cultural backgrounds appear to display a similar level of empowered behavioral intentions.

Table 5.11 Results of the Hierarchical Linear Modeling (Post-Hoc Analysis)

Moderators: Power Distance, Individualism/collectivism, uncertainty avoidance, masculinity/femininity	Beta	Increase in Model Fit
Constant	5.284**	
Step 1: Control Variables		
Age	-0.006	
Gender	0.042	
Use history	0.104*	
Education	-0.001	
Years in current position	-0.002	
Perceived usefulness	0.279**	
Perceived ease of use	0.095*	
Social norms	0.238**	
EKR usage for knowledge seeking (Use)	0.168**	ΔX^2 (9)=316.339**
Step 2: Main Effect		
Uncertainty avoidance (UA)	-0.025	
Power Distance (PD)	-0.012	
Individualism/collectivism (IND)	0.07	
masculinity/femininity (MAS)	-0.01	
IT-enabled knowledge empowerment (EMP)	0.314**	ΔX^2 (5)=33.879**
Step 3: Testing the Slope		
EMP	0.311**	ΔX^2 (2)=3.98

Note:
+: p<0.1; *: p<0.05; **: p<0.01

Chapter 6 Discussion

6.1 Results Interpretation

Overall, this study reveals interesting findings, suggesting that knowledge seekers are psychologically empowered by their EKR-usage behaviors. In addition, the strength of this empowering process varies across individuals and national cultures and is affected by the interaction of these two components as well. In total, five of the six hypotheses were supported (Table 6.1). Although personal innovativeness toward IT (PIIT) did not directly moderate the link between EKR usage for knowledge seeking and IT-enabled knowledge empowerment, PIIT and national culture (i.e., power distance and uncertainty avoidance) did jointly moderate this link. The following discussions in this section interpret the supportive findings and explain the unsupported hypothesis.

Table 6.1 Summary of Hypotheses Testing Results	
Hypothesis	**Results**
H_1: Main Effect Usage→Empowerment	Supported
H_2: Moderating Effect of Personal Innovativeness toward IT (PIIT) $Beta_{(high\ PIIT)} > Beta_{(low\ PIIT)}$	Not Supported
H_3: Moderating Effect of Power Distance (PD) $Beta_{(low\ PD)} > Beta_{(high\ PD)}$	Supported
H_4: Interactive Moderating Effect of PIIT and PD $Beta_{(high\ PIIT-low\ PD)} > Beta_{(high\ PIIT-high\ PD)}$, $Beta_{(low\ PIIT-\ low\ PD)}$, $Beta_{(low\ PIIT-high\ PD)}$	Supported
H_5: Moderating Effect of Individualism/Collectivism (IND) $Beta_{(high\ IND)} > Beta_{(low\ IND)}$	Supported
H_6: Interactive Moderating Effect of PIIT and IND $Beta_{(high\ PIIT-high\ IND)} > Beta_{(high\ PIIT-low\ IND)}$, $Beta_{(low\ PIIT-high\ IND)}$, $Beta_{(low\ PIIT-low\ IND)}$	Supported

First, IT-enabled knowledge empowerment is newly conceptualized in this study. This construct differs from psychological empowerment and user empowerment in terms of its level of specificity. In more detail, psychological empowerment refers to the intrinsic task motivations aroused by general task features (Conger and Kanungo 1988); user empowerment refers to specific empowerment feelings toward using computers or information systems (IS) for work (Doll et al. 2003; Ng and Kim 2009); and IT-enabled knowledge empowerment further specifies task-related knowledge as one major source of empowerment feelings in the workplace. Based on Spreitzer's (1995) work, the measurement instrument for

IT-enabled knowledge has been developed and validated in this study. After a rigorous examination, this instrument showed excellent psychometric properties, including reliability, validity, and measurement invariance across nations, confirming its usability for future research.

Next, H_1 supported the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment. This result confirmed the expectation that knowledge psychologically empowers individuals. Thus, electronic knowledge repositories (EKR), as a technological platform to retrieve knowledge, play an important role in nurturing employees' feelings of empowerment. However, Ng and Kim (2009) proposed the opposite causal direction for the relationship between IS usage and empowerment feelings. They found that employees with stronger user empowerment feelings were more willing to use IS extensively and innovatively. In this sense, the results of the post-hoc analysis also supported the argument that IT-enabled knowledge empowerment increased continuous EKR usage intentions. In brief, these results together not only establish a complete nomological framework for IT-enabled knowledge empowerment but also imply a virtuous circle for the empowering process. Specifically, knowledge retrieved from an EKR empowers employees, and these empowered employees are, in turn, motivated to exploit the EKR further.

H_2 tested the moderating effect of personal innovativeness toward IT (PIIT) on the relationship between EKR usage and empowerment feelings but was not supported in this study. Nevertheless, the results suggest that we cannot fully rule out the moderating role of PIIT, especially when national cultural values, such as power distance and uncertainty avoidance, are included for a more detailed consideration. I will elaborate on PIIT's moderating role in the ensuing paragraphs for H_4 and H_6.

H_3 was supported, indicating that the positive relationship suggested in H_1 was moderated by the national cultural characteristic of power distance. Employees in low power distance cultures obtained stronger empowerment feelings by retrieving knowledge from the EKR than those in high power distance cultures. I predicted that people in lower power distance cultures would be more ready and open to accepting policies that equalize the power distribution in organizations.

Thus, they would feel more empowered when engaging in empowering practices. However, employees in high power distance cultures would be more tolerant of the unequally distributed power. Thus, they would be less accustomed to empowering practices and would display weaker empowerment feelings.

More importantly, the interactive moderating effect of innovativeness toward IT and the national cultural characteristic of power distance (PD*PIIT) was significant. Follow-up analyses, including simple slope tests, moderating effect plotting, and slope difference tests, were performed in a rigorous manner. Altogether, the results supported the prediction in H_4 that the value congruence between individual characteristics and national cultures creates favorable conditions for the acceptance of managerial practices. Specifically, if one employee is highly innovative toward technology and works in a lower power distance culture, the desirable value congruence between the individual and the environment is achieved. In this case, the employee tends to be intrinsically motivated to the greatest extent by the empowering practice.

Apart from power distance cultures, the national cultural characteristic of individualism/collectivism was also found to influence the strength of the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment. Consistent with H_5, the focal relationship was stronger in nations with high individualistic cultures than in those with high collectivistic cultures. People in cultures that encourage individualism, as opposed to collectivism, emphasize personal development more intensively and continuous growth. As a result, compared to those in collectivistic cultures, employees in individualistic cultures more fully appreciate the advantages of knowledge embedded in the EKR and feel more empowered given the same level of EKR usage experience.

Finally, the interaction between individualistic/collectivistic cultures and personal innovativeness toward IT (IND*PIIT) was found to be a significant moderator for the focal relationship. After calculating the simple slopes, plotting the moderating effects, and statistically comparing the slopes between each pair of the four situations (high IND-high PIIT, high IND-low PIIT, low IND-high PIIT, and low IND-low PIIT), H_6 was supported. Specifically, when an employee

in an individualistic culture is highly innovative toward IT, the desirable value congruence is achieved. In this situation, enthusiastic individuals and supportive societies together magnify the association between EKR usage and IT-enabled knowledge empowerment to the greatest extent.

6.2 Limitations and Future Research

Although this study presents interesting results, it also has several limitations that suggest directions for future research. First, in this study, EKR usage for knowledge seeking was operationalized as the general frequency of system use. Considering the literature, the adoption of a simplified measure for IS use was appropriate for this study. Specifically, the main purpose of this work was to conceptualize and measure IT-enabled knowledge empowerment; EKR usage helped to establish the nomological network for this construct. In this context, a simplified conceptualization and measure of IS use helped us focus on the key construct of specified empowerment. However, given the supportive findings in this study, it would be worthwhile in future studies to elaborate on the concept of IS use and to evaluate the proposed research model further. For example, researchers have developed more complex measures for IS use based on a systematic conceptualization (Burton-Jones and Straub 2006). Others have also clarified different types and purposes of IS use across different stages of a system implementation, such as routine use (Schwarz 2003), extended use (Saga and Zmud 1994), and emergent use (Saga and Zmud 1994). It is suggested that future research adopt these conceptualizations to capture the richness of IS use and investigate the relationships between IS use and IT-enabled knowledge empowerment.

Second, besides continuance use intentions, other possible outcomes of IT-enabled knowledge empowerment deserve more attention. Relevant outcomes may include organizational commitment (Liden et al. 2000), job satisfaction (Eylon and Au 1999), individual performance (Chen et al. 2007a; Chen et al. 2007b; Liden et al. 2000), innovation (Spreitzer 1995), organizational citizenship behavior (Robbins et al. 2002), turnover behaviors (Robert et al. 2000; Erdogan and Bauer 2009; Sparrowe 1994), and team performance (Chen et al. 2007a).

Moreover, the literature has suggested that psychological empowerment mediates the effect of empowering practices on empowered behaviors (Huang et al. 2006; Seibert et al. 2004; Sparrowe 1994). Accordingly, a promising direction for future research would be to examine the mediating effect of IT-enabled knowledge empowerment on the relationship between IS usage and empowered behaviors in organizations.

A third issue regards this study's cross-sectional research design. It usually takes a period of time for employees to psychologically respond to a particular empowering practice. Meanwhile, an appropriate time span is also needed to observe the consequential affects or behaviors of intrinsically empowered employees. Therefore, longitudinal data would allow us to ascertain the directions of causality and justify the hypothesized relationships more fully. In addition, a longitudinal study could also trace the empowerment processes and yield a richer understanding of how these processes are shaped over time. For these reasons, more empirical work adopting a longitudinal design is recommended.

Finally, it is possible that the research findings were biased by common method variance (CMV) since all of the variables except for the national culture variables were subjectively assessed by the employees. This single source of data may have inflated the support for the hypotheses being tested (Campbell and Fiske 1959). To address this problem, the present study attempted to measure the independent and dependent variables in different response formats (i.e., Likert scales, behavioral anchored scales); thus, common method variance has been reduced to some extent, if not completely (Sharma et al. 2009). However, a better approach to eliminating this issue is to measure EKR usage with objective or archival data, which is less subject to the influence of common method bias (Sharma et al. 2009). I recommend that future research apply this type of data to verify the research model in this study.

6.3 Theoretical Contributions

Despite the aforementioned limitations, this study contributes to theory development as well as to research methodology in several ways.

From the standpoint of empowerment research, this study constitutes an important contribution to construct development. Although psychological empowerment has been studied for decades, this concept generally refers to a form of task-oriented motivation without specifying what aspects of work features empower people (Conger and Kanungo 1988; Spreitzer 1995; Thomas and Velthouse 1990). Recent research on user empowerment represents an important step toward contextualizing psychological empowerment (Doll et al. 2003; Ng and Kim 2009). In particular, user empowerment emphasizes the functions of information systems in empowering system users. At this level of abstraction, however, different features of information systems are overlooked. Extending this line of research, this study has focused on the empowering role of electronic knowledge repositories (EKR) in providing work-related knowledge. Since knowledge is posited to be a main source of power in organizations, a new construct of IT-enabled knowledge empowerment has been conceptualized. After rigorous empirical validation, the measurement instrument for IT-enabled knowledge empowerment was initially established. This instrument warrants further examination, however, as it offers insight into contextualized psychological empowerment and its nomological network.

Furthermore, this study responds to researchers' call for investigating IS usage consequences. In marked contrast to the rich understanding of the antecedents of IS usage, empirical evidence for the consequences of IS use is quite limited (Venkatesh 2006). With particular interest in the psychological responses to IS usage, the results of this study bear important implications in this direction. Specifically, EKR usage for knowledge seeking may affect individuals' IT-enabled knowledge empowerment in terms of identifying the value of knowledge, perceiving their impact on their organizations, believing in their autonomy in solving work-related problems, and feeling competent to accomplish their tasks. To the best of our knowledge, this is the first study that explicates the essential role of information systems in delegating psychological power through the knowledge-management process. As implied in prior literature and in the post-hoc analyses in this study, enhanced feelings of empowerment intrinsically motivate employees to work better and smarter (Scully et al. 1995; Seibert et al. 2004). These findings suggest possible

mechanisms through which the benefits of EKR can be optimized. Thus, this study provides more in-depth understanding of the influences of information systems as well as of the effectiveness of knowledge management.

Besides probing the effect of EKR usage on IT-enabled knowledge empowerment, another implication of this study relates to the explanation of how this relationship differs across situations. The moderators identified in previous literature exemplify the complexity of this issue. Researchers have recognized that it is difficult for managerial practices to be effective in all cultures (Morris and Pavett 1992). Empowering practices, for instance, are widely regarded as a potent approach to generate beneficial outcomes in the Western culture; however, their effectiveness in other cultures remains debatable in the literature (Eylon and Au 1999; Hui et al. 2004; Robert et al. 2000). This study represents one of the few efforts to scrutinize this phenomenon in as many as 30 countries. With sufficient variance among national cultures, this research model reveals more substantial results to suggest that empowering practices trigger empowerment feelings to different extents across cultures.

A relevant contribution from this study is that it provides a more comprehensive understanding of cross-cultural differences in the empowering process. Among the three approaches in cross-cultural motivation research (see a review by Huang, 2008), cultural universalism asserts that national cultures moderate how intrinsic needs are satisfied but not how satisfied needs determine human behaviors (Berry et al. 1992; Deci and Ryan 2000). Consistent with this opinion, IT-enabled knowledge empowerment, as one type of intrinsic motivation, reflects a general need for self-enhancement and self-determination. Toward this end, the extent to which empowering practices stimulate psychological empowerment vary across cultures; whereas, feelings of empowerment trigger empowered behaviors (i.e., continuous EKR usage intentions) to a similar degree in many cultures.

In addition to national cultures, personal innovativeness toward IT (PIIT) is also theorized as moderating the relationship between EKR usage for knowledge seeking and IT-enabled knowledge empowerment. Although the expected two-way interaction was not observed in the results, the verified three-way

interaction implies that the moderating role of PIIT may exist but that it may be contingent on national cultures. To illustrate, this moderation is significant in certain cultures (i.e., low power distance cultures, individualistic cultures) but not in others. This insight provides a promising direction to understand the insignificant two-way interaction. Also, it suggests the necessity for IS research to explore the moderating effect of PIIT not only in the upstream, but also in the downstream, of IS usage.

Moreover, this paper is one of a few studies that approaches IS use phenomena from the perspective of person-environment fit (PE fit). The solid foundation of the PE fit theory not only complements the development of the research model, but also offers a unique examination of the behavioral differences under study. This research takes one step further to extend the PE fit theory. Considerable attention has been paid to the congruence between individual characteristics and organizational cultures or between national cultures and managerial practices; however, more research efforts are necessary to elaborate on the effects of value congruence between individual characteristics and national cultures. This research fills this gap and predicts that IT-specific characteristics and national cultures jointly reinforce employees' feelings of knowledge empowerment, which are derived from their EKR knowledge-seeking experiences.

Finally, this study also sheds light on the methodology for cross-national research. To our best knowledge, this work is one of few IS studies that includes as many as 30 countries in a single study. This multinational research design enables us to address common challenges encountered by prior studies. To understand the impact of environmental factors at the macro level on technology-acceptance behaviors at the individual level, hierarchical learning modeling (HLM) was an ideal technique to conduct multilevel analyses statistically. However, HLM requires the dataset to cover at least 25 units at the higher level (e.g., the national level) (Kreft and De Leeuw 1998). Since it is difficult in practice to collect data from so many countries, most cross-national IS studies, if not all, have been restricted to data from only three to four countries (e.g., Keil et al. 1995; Keil et al. 2000; Straub et al. 1997). As a result, these studies typically rely on a cross-group comparison technique for analysis. As

indicated by Aiken and West (1991), relative to the interaction approach, the cross-group comparison technique is weaker in its power to detect possible/potential group differences. In addition, having data from only three to four countries may underestimate cross-national effects, as this research design does not representatively include most countries that are major players in the global economy. Toward this end, the multinational design of this research addressed the above concerns by collecting data from a wider array of countries, which also allowed for analyzing the data with advanced multi-level techniques (e,g., HLM), thereby achieving more a fruitful understanding of the phenomenon.

6.4 Managerial Implications

Besides its theoretical contributions, this research also offers practical implications for organizations that are deploying, or plan to initiate, knowledge management systems.

To achieve EKR success, executives should not only emphasize frequent system usage but should also pay more attention to its impact on individuals and organizations (DeLone and McLean 2003). This research indicates that IT-enabled knowledge empowerment is one type of individual impact of EKR. This impact is especially important in organizations, since empowered psychological states have been found to influence a wide range of behaviors. For instance, empowered employees tend to engage in various knowledge management practices more proactively and extensively (Muhammed 2006). Therefore, organizations should have an accurate understanding of employees' psychological states during the knowledge-management process. Toward this end, this research provides a valid instrument to measure IT-enabled knowledge empowerment. On the one hand, this instrument can be applied in organizations to obtain employees' feedback on an EKR system and to help managers take corresponding actions in time. On the other hand, the measure of IT-enabled knowledge empowerment should be incorporated in the evaluation of EKR projects. This approach enables organizations to assess the success of an EKR in a more comprehensive way.

As work becomes more knowledge-based nowadays, employees need to reflect and analyze a greater amount of information in order to make effective decisions. Such cognitively demanding work prompts individuals to manage their knowledge more efficiently. In these circumstances, how to promote employees' intrinsic work motivations, such as empowerment, should be of interest to most executives. Since IT has advanced dramatically in recent years, this research explores the role of IT in facilitating a sense of empowerment in the context of knowledge management. In organizations, various aspects of IT-enabled knowledge empowerment can be stimulated by different features of an EKR system. Practitioners should, therefore, be aware of the system designs that match employees' psychological requirements. System designers should also be careful to provide full support in energizing all of the four dimensions of empowerment since certain work situations may require less technical support in some aspects than in others.

To maximize the benefits of EKR, it is recommended that organizations identify the conditions that promote empowerment. In this study, reactions to IT-enabled empowering practices were found to be influenced by personal innovativeness toward IT. This suggests that there are several ways to enhance the effectiveness of empowerment strategies. First, organizations may target the most innovative people at the initial stage of EKR implementation. In turn, these individuals' responses help create an empowering atmosphere that influences other employees (Burns and Stalker 1961). Second, training programs are necessary to enhance employees' confidence in operating technology as well as to foster their interest in exploring the full potential of a system. Besides providing technical support, an effective training program should also be tailored to the needs of job roles. Continuous training sessions are also needed to ensure an ongoing learning path for users.

For multinational corporations, national cultures play a critical role in shaping the success of IT-enabled empowering practices. Thus, it is necessary and important to undertake various interventions to alleviate the barriers to empowerment in different cultures. For instance, in high power distance cultures, one crucial principle to alleviate empowerment barriers is to cultivate mutual

trust relationships between managers and employees (Fock 2004). This requires managers to notice employees' preferences and to provide relevant guidance in their work (Baird et al. 1990; Sagie and Aycan 2003). One specific action is to engage employees in the process of EKR system design. User participation will help system analysts understand work patterns more fully so that the system can be better designed to cater to users' needs. Another exemplary action is to institute policies and procedures to grant employees more autonomy in decision making.

As another example, in high collectivistic cultures, it is suggested that organizations activate motivational mechanisms and construct supportive norms. Motivational mechanisms may include, but are not limited to, organizational rewards systems, peer evaluation, and intergroup competitions on knowledge reuse. In regards to supportive norms, more training, demonstrations, or sharing activities can be arranged so that employees are better positioned to appreciate the EKR system. For example, organizations need to consider the KM system as a community system that brings mutual benefits for the in-group and for the entire company. Managers can explain the significance of an individual's job in training sessions, and employees should also be encouraged to continuously improve their professional knowledge and specialized skills.

Finally, in low power distance or high individualistic cultures, shared values advocate empowerment. In these contexts, individual characteristics influence the extent to which employees react to IT-enabled empowering practices. According to the results of the current study, when value congruence between individuals' characteristics and their national culture is achieved, employees are more likely to feel intrinsic empowerment than those in incongruent situations. Managers should be aware that self-motivated individuals may require fewer managerial interventions than less motivated individuals in order to be psychologically empowered (Delbecq and Mills 1985). Thus, this study suggests formulating a segmentation strategy when initiating EKR-based empowering practices in congruent and incongruent situations. To illustrate, for employees with more innovativeness toward IT working in low power distance or high individualistic cultures, the desirable value congruence exists, and employees

inherently appreciate empowerment. In this situation, extra managerial interventions are less necessary to promote empowering-oriented knowledge management practices. In other situations, by contrast, this congruence does not hold, and employees are less self-motivated in appreciating empowerment. Additional interventions must then be undertaken to reinforce empowerment. In brief, organizations should invest differential amounts of effort in launching empowerment strategies. This segmentation approach helps to allocate limited organizational resources efficiently during EKR implementation.

Chapter 7 Conclusion

This study was motivated by an interest in understanding the consequences of IS usage. Considering empowerment feelings as a cognitive motivation inspired by the knowledge embedded in an enterprise knowledge repository (EKR), this study conceptualized IT-enabled knowledge empowerment as a contextualization of psychological empowerment. In addition, this study provided a theoretical explanation for the link between EKR usage for knowledge seeking and IT-enabled knowledge empowerment. Drawing on the theory of person-environment fit, an interactive moderation model was proposed in an attempt to explain how personal innovativeness toward IT and national cultures (i.e., power distance, individualism/collectivism) jointly led to different strengths of the relationship between EKR knowledge-seeking behaviors and IT-enabled knowledge empowerment.

A large-scale online survey was administrated in a multinational logistics corporation. The proposed measurement instrument for IT-enabled knowledge empowerment demonstrated satisfactory reliability, validity, and cross-cultural invariance. Through simple linear regressions and hierarchical linear modeling analyses, most of the hypothesized relationships were supported. First, EKR usage for knowledge seeking positively predicted IT-enabled knowledge empowerment. Second, national cultural characteristics, including power distance (PD) and individualism/collectivism (IND), significantly moderated this positive relationship. In particular, this relationship was found to be more pronounced in high power distance cultures or high individualistic cultures. Third, although personal innovativeness toward IT (PIIT) exerted an insignificant moderating effect, this individual characteristic intertwined with national culture and jointly moderated the focal relationship. In other words, when favorable value congruence between individual characteristics and national cultures was achieved (i.e., high PIIT-low PD, high PIIT-high IND), employees were inclined to feel the strongest IT-enabled knowledge empowerment when they used EKR to seek knowledge. A post-hoc analysis was further conducted to examine the consequences of IT-enabled knowledge empowerment. The results supported the notion that the specified empowerment feelings reinforced

continuous EKR usage intentions, but this positive link was not observed to vary across national cultures.

Overall, this research suggests that contextualized psychological empowerment deserves more attention from both researchers and practitioners. Theoretical extensions have been made to the literature on knowledge management, IS usage, empowerment, and person-environment fit theory. The rigorous empirical methodology and the advanced analysis techniques also provide valuable hints for IS-cultural research. As for the practical implications, organizations should learn to avail themselves of information technologies for strategic advantage. Rather than employing universal interventions to promote global EKR implementations, differential approaches should be incorporated for employees with different characteristics and cultural backgrounds.

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Appendices
SURVEY ON USE OF INFONET-2
PART 1
Please read each item carefully and indicate the degree of your agreement or disagreement with each item and rate the items below using the following scale:

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree

How do you perceive the usefulness of using InfoNet-2?

Using InfoNet-2 would improve my job performance.	1 2 3 4 5 6 7
Using InfoNet-2 would increase my productivity.	1 2 3 4 5 6 7
Using InfoNet-2 would enhance my effectiveness in my job.	1 2 3 4 5 6 7
I would find InfoNet-2 useful in my job.	1 2 3 4 5 6 7

Learning to use InfoNet-2 would be easy for me.	1 2 3 4 5 6 7
I would find it easy to use InfoNet-2 to do what I want to.	1 2 3 4 5 6 7
It is clear and easy to understand how to use InfoNet-2.	1 2 3 4 5 6 7
I would find InfoNet-2 easy to use.	1 2 3 4 5 6 7

Is the knowledge available in InfoNet-2 meaningful to you?

The knowledge available in InfoNet-2 is meaningful to me.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 is very important to me.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 is personally meaningful to me.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 is meaningful to me.	1 2 3 4 5 6 7

What is your disposition to new technologies?

If I heard about a new information technology, I would look for ways to experiment with it.	1 2 3 4 5 6 7
Among my colleagues, I am usually the first to try out new information.	1 2 3 4 5 6 7
I like to experiment with new information technologies.	1 2 3 4 5 6 7

To what extent do you agree with the following statements?

The knowledge available in InfoNet-2 makes me have a large impact in my department.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 makes me have a great deal of control over what happens in my department.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 makes me have significant influence over what happens in my department.	1 2 3 4 5 6 7

To what extent do you agree with the following statements?

The knowledge available in InfoNet-2 makes me have significant autonomy in determining how I do my job.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 enables me to decide on my own how to go about doing my work.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 provides considerable opportunities for independence and freedom in how I do my job.	1 2 3 4 5 6 7

To what extent do you agree with the following statements?

The knowledge available in InfoNet-2 makes me feel confident about my ability to do my job.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 helps me be self-assured about my capabilities to perform my work activities.	1 2 3 4 5 6 7
The knowledge available in InfoNet-2 helps me master the skills necessary.	1 2 3 4 5 6 7

What is your intent of using InfoNet-2?

I intend to use InfoNet-2 in the next two months.	1 2 3 4 5 6 7
I intend to use InfoNet-2 for my work during the next two months.	1 2 3 4 5 6 7
I intend to use InfoNet-2 frequently during the next two months.	1 2 3 4 5 6 7

PART 2
Please indicate below:

How long have you been using InfoNet-2?
□ Less than 6 months
□ More than 6 months but less than 12 months
□ More than 12 months

On average, how frequent do you use InfoNet-2?
□ Not at all   □ Less than once a week   □ Once each week
□ Several times each week   □ About once each day   □ Several times a day

Age: _____

Gender: □ Male   □ Female

Education:
□ High School   □ College   □ University   □ Post-graduate
□ Others (Please Specify):_____

How long have you been working in the current position? _____[months]