

**Examining the Continued Usage of Electronic  
Knowledge Repositories:  
An Integrated Model**

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# **Examining the Continued Usage of Electronic Knowledge Repositories: An Integrated Model**

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## **ABSTRACT**

Knowledge has long been recognized as one of the most valuable assets in an organization. Managing and organizing knowledge has become an important corporate strategy for organizations to gain and maintain competitive advantages in the information age. Electronic knowledge repositories (EKR) have become increasingly popular knowledge sharing tools implemented by organizations to promote knowledge reuse. The goal of this study is to develop and test a research model that explains users' continued usage behavior of EKRs in public accounting firms. Theoretically grounded in the expectation-confirmation model (ECM) and commitment-based model, the research model presented in this study integrates both of these theoretical perspectives to study users' EKR continuance intentions.

This study surveyed 230 EKR users from four large public accounting firms. Partial least squares regression was used to test the hypotheses and the explanatory power of the model. Results indicate that perceived usefulness and commitment exhibit a sustained positive influence on continuance intention. Additionally, subjective norms are positively related to calculative commitment and moral commitment. Organizational identification is positively related to affective commitment and moral commitment. Perceived usefulness is positively related to affective commitment and calculative commitment. The model comparisons with the technology acceptance model (TAM) and ECM demonstrated that the integrated model presented in this research explained 1.6% and 0.8% additional variance in continuance intention than both ECM and TAM respectively. Additional multi-group analyses were also conducted to examine the differences between knowledge seekers and contributors and the differences between knowledge novices and experts.

This study raises theoretical implications in the area of knowledge management in general and EKRs in particular. It represents one of the first attempts to empirically examine users' continuance intention of knowledge management applications. This study has presented a different perspective on technology acceptance/continued usage by introducing commitment to explain continued IS usage. By integrating commitment and ECM, this study offers a useful framework for future studies on technology use. It demonstrates that both user commitment and perceived usefulness are strong predictors of EKR continuance intention. The results also raise interesting implications for practitioners interested in knowledge management and particularly for public accounting firms how to leverage EKRs to gain a competitive advantage.

## **Dedication**

This dissertation is dedicated to my beloved parents, Zhiyue Lin and Yulan Cui, who instilled the value of higher education in me at a very young age. Your unconditional love, support, understanding, and guidance provided me with the strength and determination to achieve this goal and continue to challenge myself.

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# **Chapter One**

## **Introduction**

Knowledge has long been recognized as one of the most valuable assets in an organization. Managing and organizing knowledge has become an important corporate strategy for organizations to gain and maintain competitive advantages in the information age. Knowledge management (KM) is defined 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” (Alavi and Leidner 1999).

Various KM initiatives have been implemented by organizations in order to help capture, maintain, archive, retrieve, and disseminate knowledge possessed by employees. According to an industry survey conducted by KPMG in 2000 (KPMG 2000), 81% of the surveyed organizations already had or were considering a KM program. Nearly 75% of those surveyed were looking to KM to play an “extremely significant” or “significant” role in improving competitive advantage, marketing and customer focus. About 65% of those surveyed thought that KM would benefit product innovation, revenue growth and profit (KPMG 2000). Organizational spending on KM efforts increased drastically over the past several years, as indicated by IDC reports (Babcock 2004). The growth comes as companies turn their focus from technology issues toward issues involving people and processes. Additionally, the federal government market for knowledge management solutions is projected to grow from \$850 million in 2004 to almost \$1.1 billion by 2009, according to a report released by INPUT, the leading provider of government market intelligence (INPUT 2005).

Of the various KM applications, electronic knowledge repositories (EKR) have become an increasingly popular tool implemented by many organizations for employees to leverage existing knowledge, stimulate the development of new knowledge and ideas, acquire knowledge directly and effortlessly, and make knowledge accessible so that the right knowledge can be obtained and effectively utilized by anyone within the organization (Davenport and Prusak 1998). EKRs are defined as electronic stores of content acquired about all subjects for which an organization has decided to maintain knowledge (Liebowitz and Beckman 1998). Two primary activities take place in an EKR, knowledge contribution and knowledge seeking. EKRs promote knowledge reuse and rely on employees to voluntarily collaborate and contribute knowledge to build a knowledge repository within the organization. Without employees' willingness to serve as primary sources of knowledge, EKRs would not be functional and useful. On the other hand, if employees are not using EKRs to retrieve or seek organizational knowledge, EKRs would not be serving their purpose of knowledge reuse and would not add value to the organization.

Prior studies on EKRs have examined both knowledge contribution and seeking as two separate topics (e.g., Kankanhalli et al. 2005a; Kankanhalli et al. 2005b). Research models have been developed and validated on users' contribution or seeking behavior using theoretical foundations such as social capital theory (Putnam 1993; Putnam 1995), social exchange theory (Blau 1964), and theory of planned behavior (Ajzen 1985). Various cost and benefit factors, such as organizational reward and enjoyment in helping others, are identified as significant in affecting knowledge contribution behavior (Kankanhalli et al. 2005a). Perceived output quality has been

reported to positively affect EKR usage for knowledge seeking (Kankanhalli et al. 2005b). Although previous studies provide important insights in understanding EKR, more research still needs to be undertaken to gain a deeper understanding of individual usage behavior from a holistic perspective. Since previous research mainly investigated knowledge contribution and seeking separately, there has been a lack of theoretically grounded and empirically generalizable research on the overall continued usage of EKRs. The main motivation for this study stems from the growing research attention on information systems (IS) continuance and the increasing need to study IS continuance in various contexts (Bhattacharjee 2001; Limayem et al. 2007). By examining EKR continued usage as a whole, one can also compare the effects of various factors across different user groups. Furthermore, there is a need to conduct more empirical research on the implications of EKRs in professional service firms (Morris and Empson 1998), especially in the context of the public accounting firms (Vera-Munoz et al. 2006). Public accounting firms are increasingly investing in knowledge management tools to encourage effective knowledge sharing (Vera-Munoz et al. 2006). It benefits the firms to gain insights about how the EKRs are utilized by employees and what motivates them to continue using the EKRs. Thus, additional research on EKRs and their implications are of interest to both academic researchers and practitioners.

The purpose of this research is to develop and empirically test a research model of EKR continued usage. More specifically, I address the following research questions: (1) what are the factors underlying a user's intention to continue using an EKR, (2) how do these factors influence continuance intention, and (3) how do the effects of these factors vary across different user groups? Theoretically grounded in the expectation-

confirmation model and commitment-based model from the IS continuance literature, I present a research model that integrates these two theoretical perspectives and empirically test the model using survey data on individuals' perceptions of EKR usage collected from employees of four large national public accounting firms. The results largely support the research model and reveal differences across user groups. This research contributes to both research and practice. From the research perspective, the study advances the theoretical understanding of IS continuance by integrating two theoretical perspectives and testing new factors and relationships. From the managerial perspective, the findings shed light on how organizations can promote the usage of EKRs which could improve organizational learning and increase efficiency.

The remainder of this dissertation is organized as follows: Chapter Two contains an overview of EKR and a synthesis of the related literature. Chapter Three discusses the theoretical background and motivations. Chapter Four presents the research model and hypotheses. Chapter Five describes the research methodology and survey design. Chapter Six includes a discussion of data analysis and results. Chapter Seven concludes this dissertation with a discussion of implications for research and practice, limitations, and suggestions for future research.

## **Chapter Two**

### **EKR and Related Literature**

#### **Electronic Knowledge Repository (EKR)**

There are two models of KM systems in the IS literature: the repository model and the network model (Alavi 2000). The network model of KM systems focuses on linkages among people for the purpose of knowledge exchange through personalization (Alavi 2000). An electronic knowledge repository (EKR), sometimes also referred to as a document repository or a knowledge base, is a part of the repository model of KM systems that emphasizes on the codification and storage of knowledge to facilitate knowledge reuse through access to the codified expertise. The repository model is used for explicit (i.e., codifiable) knowledge whereas the network model is used more for tacit (i.e., uncodifiable) knowledge exchange.

EKRs are becoming one of the most common components of KM systems, and they are integral to a variety of user tasks and organizational functions (Fulk et al. 2004). EKRs have been implemented in many well-known organizations, e.g., Accenture and Xerox. Davenport and Prusak (1998) stated in their study that 80% of KM initiatives they surveyed involved the use of EKRs. In the context of public accounting firms, besides providing central consultation units to resolve difficult client accounting policy issues (Salterio 1997), nearly all large public accounting firms have implemented EKRs or are in the process of upgrading existing EKRs so that employees can download collective information instead of having to “reinvent the wheel” each time a common problem arises (Head 2001).

EKRs are employed to capture, organize and store codifiable knowledge in online repositories to promote knowledge sharing and reuse in organizations (Markus 2001). They consist of servers where the knowledge directory and artifacts (e.g., templates, presentations, databases, industry best practices, plans, audio files, and/or video files) are made accessible to employees (Lawton 2001). EKRs are typically equipped with a search engine for users to find relevant information efficiently. Contents in EKRs are usually organized based on multiple levels of categories because unstructured aggregation of a vast volume of content may lead to user searches returning irrelevant documents or an excessive number of documents. Typically employees of various office locations can access the EKR through the company's intranet. Knowledge seeking and sharing is no longer restricted by geographical boundaries and time constraints. An effectively implemented EKR forms a virtual learning environment through which employees can actively seek useful information to solve tasks at hand.

## **Related Literature**

Prior research on EKRs has mainly focused on two perspectives, knowledge seeking and knowledge contribution. Table 2.1 synthesizes prior research on EKRs. Kankanhalli et al. (2005b) conducted an exploratory study and proposed a model for knowledge seeking behavior in EKRs. The research model was based on the theory of planned behavior (Ajzen 1985) and the theory of task-technology fit (Goodhue and Thompson 1995). The direct determinants of knowledge seeking usage were perceived output quality, perceived ease of use, knowledge sharing norms, resource availability, and incentive availability. Perceived output quality had dimensions of relevance, reliability, and timeliness of the knowledge embedded in the output obtained by the

knowledge seeker. Perceived ease of use came from the technology acceptance model and knowledge sharing norms may facilitate individuals' collaborative behavior. Resource availability refers to the explicitness or tacitness of the knowledge and incentive availability addresses the economic incentives for knowledge sharing. In addition, task characteristics, including tacitness and interdependence, were hypothesized to have a moderating effect on the relationship between the determinants and EKR usage. Their results indicate a positive relationship between perceived output quality and EKR usage. Resource availability is positively related to EKR usage for knowledge seeking when task tacitness is low, and incentive availability is positively related to EKR usage for knowledge seeking when task interdependence is high. They argued that perceived ease of use may not be a critical factor for users with extensive experience in information technology (Kankanhalli et al. 2005b).

Sharma et al. (2005) pointed out that Kankanhalli et al.(2005b)'s model did not measure intention and attitude, and so as a result, they applied the decomposed theory of planned behavior to study knowledge seeking behavior. Their proposed model tested antecedents to knowledge seeking attitude, pro-sharing norms, and perceived behavioral control. The results indicate that perceived usefulness (i.e., perceived output quality) and seeker effort emerged as dominant antecedents of seeker's attitude towards EKR usage. In addition, organizational culture and level of trust also influence seekers' attitude on EKR usage. Similarly, Bock et al. (2006) examined knowledge seeking behavior and found that collaborative norms positively impact individuals' knowledge seeking behaviors in EKRs, both directly and indirectly, through reducing the negative impact of future obligation on seeking.

Within an EKR, no seeking efforts would be successful unless employees share and contribute their knowledge on a continued basis. Thus, individuals' willingness to contribute their knowledge to continue building the knowledge base has become a key area for researchers to investigate. Kankanhalli et al. (2005a) employed social exchange and social capital theory to formulate and test a theoretical model to explain EKR usage by knowledge contributors. Their model focused on cost and benefit factors and included contextual factors such as trust, norms, and identification to test for moderating influences. Their results shed light on how extrinsic and intrinsic benefits may differ in terms of their impact on EKR usage by knowledge contributors. The distinctions between extrinsic and intrinsic benefits come from the source of the benefits, either external or internal. Extrinsic benefits include organizational reward, image, and reciprocity. Intrinsic benefits include knowledge self-efficacy and enjoyment in helping others. Intrinsic benefits directly affect EKR usage while extrinsic benefits appear to be moderated by contextual factors. Additionally, Qian and Bock (2005) conducted an empirical study on measuring the success of knowledge repository systems. Using the IS success model and information influence theory as the theoretical foundation, their study demonstrated the effects of the success factors, such as output quality and system quality, and found that knowledge repository systems' success should be measured at different stages of knowledge reuse: acquisition, refinement, distribution, and reuse.

While organizational EKRs have received academic interests, the use of public document repositories (PDRs) has become a valuable resource to provide users with information compiled by other individuals. Peddibhotla and Subramani (2007) qualitatively and empirically investigated the reviews and profiles submitted by users at

Amazon.com and found that the critical mass of contributors at the PDR not only to be prolific and contributing high quality reviews, but was also among the earliest contributors of reviews on products. They found that the quality and quantity of contributions are inversely related and the motives for quantity of the contributions are different from those related to the quality of the contributions.

**Table 2.1 – Summary of Prior EKR Research**

<b>Area</b>	<b>Study</b>	<b>Independent Constructs</b>	<b>Dependent Construct(s)</b>	<b>Theory</b>	<b>Sample</b>
Knowledge seeking	Bock et al. (2006)	Perceived ease of use, future obligation, perceived usefulness, seeker knowledge growth, self efficacy, resource facilitating conditions	EKR usage for knowledge seeking	Decomposed theory of planned behavior, social exchange theory	Professional graduate students with experience working in knowledge intensive industries
	Kankanhalli et al. (2005b)	Perceived output quality, perceived ease of use, knowledge sharing norms, resource availability, and incentive availability	EKR usage for knowledge seeking	Theory of planned behavior, theory of task-technology fit	Professionals from 8 public-sector organizations
Knowledge sharing	Kankanhalli et al (2005a)	Cost factors: Loss of knowledge power, codification effort, Extrinsic benefits: organizational rewards, Image, reciprocity Intrinsic benefits: knowledge self-efficacy, enjoyment in helping others	EKR usage by knowledge contributors	Social capital theory, social exchange theory	KM practitioners from 10 public organizations in Singapore
	Peddibhotla and Subramani (2007)	Contribution motivation, contribution quality, contribution quantity	Contribution behavior	Critical mass theory	User reviews on Amazon.com and user profiles
EKR Success	Qian and Bock (2005)	Organizational climate, prosocial motivation, refinement quality, system quality,	Individual impact, satisfaction, use	IS success Model	Business professionals in China and Singapore

## **Chapter Three**

### **Theoretical Background**

Information systems (IS) use has received significant academic interest in the past decade. IS researchers moved beyond examining individual users' initial IS acceptance/adoption to investigating the determinants of IS continuance or continued usage (Bhattacharjee 2001; Li et al. 2006; Limayem and Hirt 2003). Bhattacharjee (2001) posits that the success of a new IS depends more on users' continued usage of the IS rather than its initial adoption. Within an organizational context, users' initial acceptance of a new IS is assumed as the organization has invested in the new IS such as a KM system. Users' continued usage would be a better gauge for the success of an IS. Infrequent or inefficient usage would lead to wasted resources to implement an IS. Thus, it is critical to examine the factors that affect users' post-adoption behavior (Hong et al. 2006). In this chapter, I first provide a succinct review of the major theoretical frameworks used in IS continuance studies. I then discuss the reasons for applying the expectation-confirmation model and commitment-based model as the theoretical foundation for this study.

To study continued IS usage behavior, researchers have employed existing cognitive behavioral models, such as the theory of reasoned action, as the theoretical framework by which to study the factors and dimensions that influence the decision of continuance (continued usage). In addition, new perspectives such as the expectation-confirmation model and commitment-based model have been explored to study IS continued usage. Almost all existing continued usage research uses intention-based models as the theoretical foundation to study user continued usage behavior. Table 3.1

provides a summary of the major theoretical models that have been used in IS continuance research.

**Table 3.1 – Summary of Competing Research frameworks of IS Continuance**

<b>Research Framework</b>	<b>Independent Constructs</b>	<b>Dependent Construct(s)</b>	<b>Seminal Paper(s)</b>
Technology Acceptance Model (TAM)	Perceived usefulness, perceived ease of use	Behavioral intention to use, actual system use	(Davis 1989; Davis et al. 1989)
Unified theory of acceptance and use of technology (UTAUT)	Performance expectancy, Effort expectancy, Social influence, Facilitating conditions	Behavioral intention, usage behavior	(Venkatesh et al. 2003)
Expectation-confirmation Model (ECM)	Perceived usefulness, Confirmation	Satisfaction, continued IS usage intention	(Bhattacharjee 2001)
Commitment-based Model	Quality of alternatives, Trust, Affective commitment, Calculative commitment	Behavioral intention	(Li et al. 2006)
IS Success Model	Information Quality, System Quality, Service Quality	User satisfaction, use (intention to use), net benefits	(DeLone and McLean 2003; DeLone and McLean 1992)

### **The Technology Acceptance Model (TAM)**

The Technology Acceptance Model (TAM) has been the most widely accepted and applied theoretical framework to study IS acceptance and usage. Initially developed to study users' IS adoption intention and behavior (Davis 1989; Davis 1993), TAM has been regarded as a parsimonious and influential model in IS research (Lee et al. 2005). TAM successfully incorporated the theory of reasoned action (TRA) from social psychology which posits that behavioral intentions drive individual behavior and individuals' attitude and subjective norms influence individual behavioral intentions. TAM proposes that perceived usefulness and perceived ease of use predict an individual's

intention to use a system which eventually leads to actual system use. Perceived usefulness is also affected by perceived ease of use (Davis 1989; Davis 1993). A recent modification of TAM called the unified theory of acceptance and use of technology (UTAUT) reviewed and consolidated some of the main models that previous research had used to explain IS usage behavior (Venkatesh et al. 2003). UTAUT seeks to explain user intentions to use an IS and to explain subsequent usage behavior. It theorizes that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) directly affect user intention and behavior. One of the limitations of TAM is its omission of possible moderating variables. UTAUT now includes moderators such as age, experience, gender and voluntariness.

Since its inception, there have been numerous empirical validations and extensions of TAM. As examples, Wixom and Todd (2005) applied TAM in a data warehouse context. Hong et al (2006) compared competing models on continued IS usage, TAM, expectation-confirmation model and a hybrid model. Gefen and Straub (2000) applied TAM to evaluate perceived ease of use on IS adoption in an e-commerce setting. Further, there were meta-analyses conducted on past TAM studies (Lee et al. 2005; Ma 2004). The meta-analyses results reveal that many studies show a significant relationship between perceived usefulness and intention to use. Perceived ease of use appears to be an unstable measure with which to predict intention to use. Longitudinal studies suggest that the diminishing effect of ease of use indicates a “wearing out” of users’ initial inhibition concerning ease of use as they gain experience with and become more comfortable with using the system (Szajna 1996). Recent studies suggest that

including habit (i.e., automatic behavioral tendencies) limits the predictive power of behavioral intention (Limayem and Hirt 2003; Limayem et al. 2007).

## **The IS Success Model**

The original DeLone and McLean IS success model represents one of the first attempts to comprehensively define and evaluate IS success (DeLone and McLean 1992). The IS success model was developed based on a comprehensive review and synthesis of IS success literature. The IS success model consists of six interrelated dimensions of information system success: system quality, information quality, use, user satisfaction, individual impact, and organization impact. The model offers a clear structure for classifying the multitude of IS success measures and proposes interrelationships among the six dimensions. Due to the dramatic impact of the Internet on business operations, the IS success model has also been refined and adapted to measure e-commerce system success (DeLone and McLean 2003). Service quality was added to the model given the importance of IS support, and net benefits replaced impacts as they capture the balance of positive and negative impacts of the IS. In the updated model, they suggest intention to use is an attitudinal construct and use is a behavioral variable.

DeLone and McLean (2003; 1992) did not offer empirical validation of the models in their papers; instead, they called for additional research to further develop and validate the models. Since then, many research papers have cited and used the IS success model as a theoretical framework while others have validated, evaluated and extended the model (e.g., Rai et al. 2002; Seddon 1997). In particular, Rai et al (2002) called for future research to apply the existing IS success models to different and emergent IS settings as there may be different contextual factors that affect or contribute to a system's

success. Qian and Bock (2005) applied the IS success model in their empirical study on measuring the success of knowledge repository systems. The IS success model has also been extended to assess knowledge management system success (Jennex and Olfman 2003; Wu and Wang 2006) and knowledge community success (Lin et al. 2007).

### **The Expectation-Confirmation Model (ECM)**

Past TAM studies have been criticized because some researchers use TAM to study post-adoption behavior whereas the focus of TAM is users' initial IS acceptance (Lee et al. 2005). Given the significant differences between initial adoption and continued usage behavior in the IS context, the expectation-confirmation model (ECM) was developed and empirically validated to study continued usage behavior (Bhattacharjee 2001). ECM stems from the expectation-disconfirmation theory from the marketing literature. Expectations-disconfirmation theory states that expectations, combined with perceived performance, lead to post-purchase satisfaction. In addition, the positive or negative disconfirmation between expectations and performance mediates the effect on satisfaction. If a product outperforms consumers' expectations (positive disconfirmation), it will result in post-purchase satisfaction. If a product performs below expectations (negative disconfirmation), the consumer is likely to be dissatisfied (Oliver 1977; Oliver 1980).

ECM analogizes users' IS post-adoption behavior to consumers' post-purchase behavior. The model predicts users' intention to continue to use an IS with three antecedent constructs: user satisfaction, user confirmation, and post-adoption expectations, i.e., perceived usefulness (Bhattacharjee 2001). ECM emphasizes that the post-adoption expectation is more important in determining IS users' satisfaction level

than pre-adoption expectations. ECM combines perceived performance and confirmation because the effect of perceived performance is mediated by confirmation (Yi 1990). According to ECM, a user's confirmation and perceived usefulness determine satisfaction. Satisfaction positively influences a user's intention to continue using an IS. Furthermore, perceived usefulness is influenced by confirmation and directly affects users' continued usage intention. Compared to TAM, ECM is a more recently developed model which is still subject to empirical validation and application. Nevertheless, ECM draws attention to the substantial difference between initial adoption and continued usage decisions and provides a theoretical basis to explain an IS user's intention to continue using a system. Premkumar and Bhattacharjee (2008) compared the explanatory ability of TAM and ECM via a longitudinal study of computer-based tutorial usage. The results confirm that both models possess good explanatory powers while TAM provides a better prediction of intention. They also proposed an integrated model with a marginally better explanatory ability.

### **The Commitment-based Model**

The construct of commitment was introduced to the IS field in the early 1980's. It was mainly used to investigate the failure of information systems development and implementations. Ginzberg (1981) and others concluded that a state of commitment should be developed, because it increases the odds that appropriate actions will be taken to assure the success of a software project. Recently, commitment has been extended to the study of IS continuance. The commitment-based model is one of the newly developed IS continuance models anchored in several theories of commitment (Li et al. 2006; Malhotra and Galletta 2005). Recognizing that much less research has been

conducted on continued use of IS than on IS adoption, the commitment-based model examines how an individual's decision to continue using a system is influenced by his or her commitment toward the system

The origin of the constructs "commitment" and "organizational commitment" can be traced back to the 1970's (Buchanan 1974; Porter et al. 1974). Allen and Meyer (1990; 1991) synthesized the construct by proposing a three component conceptualization: affective, continuance or calculative, and normative or moral dimensions. Since then, commitment has been treated as a multidimensional concept and has been tested in different contexts (e.g., Bansal et al. 2004; Jaros et al. 1993). Affective commitment refers to an individual's attachment to, identification with, and involvement within the respective entity. Calculative or continuance commitment, refers to the continued membership in an organization because of perceived cost of leaving the organization and the lack of alternative job opportunities (Allen and Meyer 1990). Normative commitment, also called moral commitment (Jaros et al. 1993), refers to the internalized pressure or feeling of obligation to continue employment due to the work culture and other socially accepted norms (Allen and Meyer 1990).

The commitment-based model presents a different perspective on IS continuance than the predominantly used TAM or ECM approach. It introduces commitment theories to explain continued technology use (Li et al. 2006). Li et al. (2006) examined how an individual's decision to continue to use a website is influenced by his or her commitment toward the website and the vendor that supports it. Results indicated that affective and calculative commitments were both significantly associated with an individual's behavioral intention. Because the context of the study in website use, normative or moral

commitment was not considered relevant. However, it is still considered an integral dimension of commitment and has yet to be explored in IS continuance research. Malhotra et al. (2005), which tested a model based upon Kelman's social influence framework (Kelman 1958), provided new empirical insights about system users' commitment and its effect on volitional usage behavior. They measured commitment using identification, internalization, and compliance. Both identification and internalization are related to affective commitment and occur when users adopt behavior to achieve a self-defining relationship and the behavior is congruent with their own personal values. Compliance occurs when users adopt behavior to achieve rewards or avoid losing benefits (Malhotra and Galletta 2005). The results indicated that affective commitment positively influences usage behavior, and continuance commitment exhibits a negative influence from initial adoption to extended use.

### **Integration of ECM and Commitment-based Model**

Based on the above discussions, there are essentially four main research streams of IS usage research: TAM, ECM, IS success model, and commitment-based model. The IS success model has been primarily used as a framework for IS success rather than IS continued usage. Although the IS success model has made significant breakthroughs in measuring IS success, it has also received criticisms. Some of the strongest criticisms include combining variance and process models in one framework (Seddon 1997); blurred theoretical underpinning; and the unreality of the unidirectional relationship among use, user satisfaction, individual impact and organizational impact (Garrity and Sanders 1998). TAM, while widely regarded as parsimonious and useful, is preferable for understanding IS acceptance and adoption (Lee et al. 2005; Ma 2004).

The remaining theoretical frameworks, ECM and commitment-based model, are both specifically developed to examine IS continued usage. Together they present complementary perspectives for understanding IS usage behavior. ECM is considered a process model where users form pre-usage expectations and then post-usage perceptions such as perceived usefulness, confirmation, and satisfaction, which collectively influence post-initial acceptance behavior. ECM contains constructs such as perceived usefulness and confirmation which measure the functional or technical aspects of the IS usage. The commitment-based model is a post-acceptance model and focuses more on the psychological bond that a user develops after using the IS. In short, ECM is a satisfaction-based model which focuses more on attitude formed from using an IS while the commitment-based model focuses more on the psychological attachment developed from using an IS (Bhattacharjee 2001; Malhotra and Galletta 2005). Therefore, satisfaction and commitment are two distinct types of attitudinal constructs which would jointly influence a user's decision to continue using an IS. In fact, customer satisfaction and commitment have been clearly distinguished in consumer marketing research as two different antecedents to consumers' retention and future purchase intentions (e.g., Garbarino and Johnson 1999; Gustafsson et al. 2005). Therefore, based on the complementary nature of the two theories, a model that integrates ECM and the commitment-based model should explain more variance in IS usage intention than using either model alone. As a result, I propose two separate antecedents for EKR continuance intention: EKR commitment and satisfaction.

## **Motivations for Studying EKR Continued Usage in Public Accounting Firms**

Although previous studies on EKR have provided great insights on knowledge seeking and sharing behavior, they have largely examined knowledge contribution and knowledge seeking as two separate topics (e.g., Kankanhalli et al. 2005a; Kankanhalli et al. 2005b). No research has applied the IS continuance research frameworks to investigate EKR usage. Although a knowledge contributor's motivation may differ from that of a seeker, the same individual can be both a contributor and a seeker at different points in time. It is reasonable to investigate EKR usage taken as a whole by building and testing an integrated model grounded in IS continuance research theories. Since both knowledge contributors and seekers access and use the same system to either share or seek knowledge, an integrated model will enrich our understanding of what common factors influence usage overall and how they do so. Additionally, no research has compared how the various factors affect usage differently for various user groups (e.g., knowledge novices vs. knowledge experts, knowledge contributors vs. knowledge seekers).

Another limitation in prior EKR research is the lack of generalizability of results based on research samples. The data collection in prior EKR research came from users in multiple organizations mainly from Asian countries. Candidly recognizing this as a limitation for the results, additional research has been called for to study EKRs in different organizational settings (Kankanhalli et al. 2005a). Furthermore, there has been a lack of empirical research on the implications of EKRs in professional service firms, particularly in the context of the public accounting firms (Morris and Empson 1998).

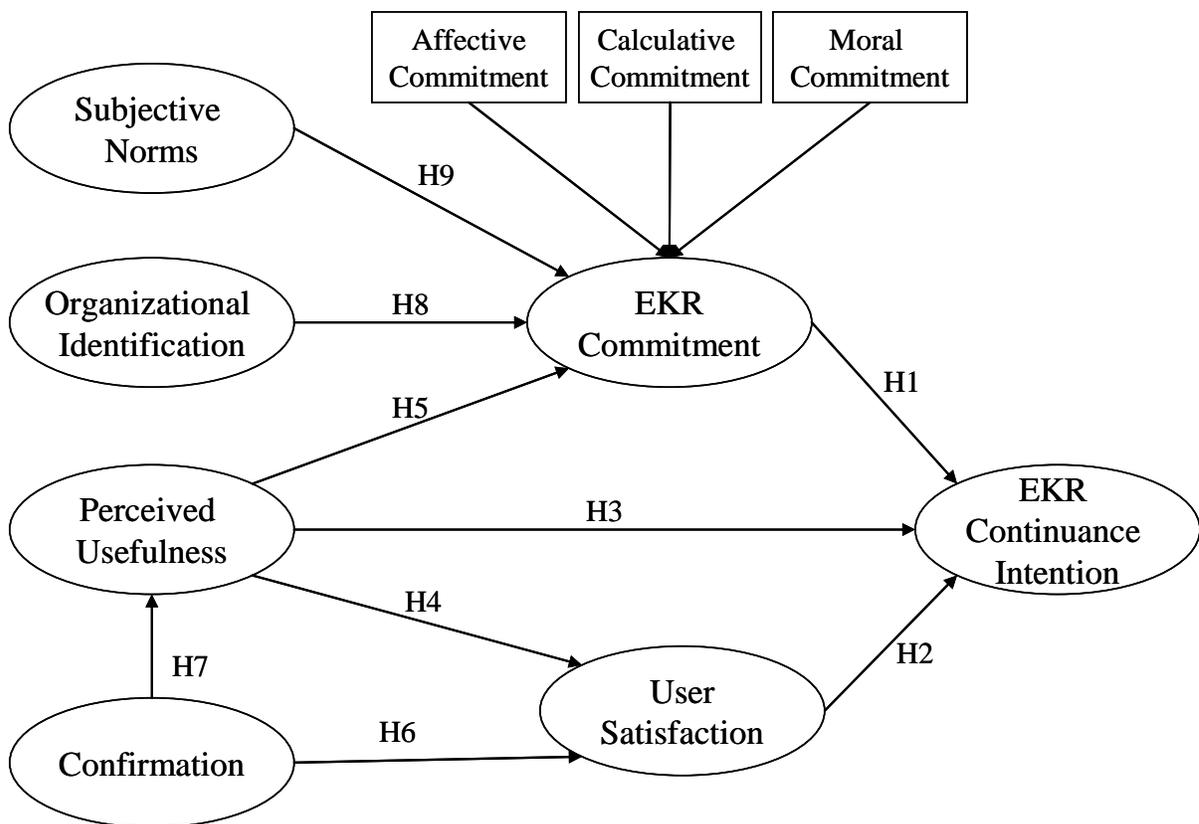
Vera-Munoz et al. (2006) specifically examined the factors that may enhance or hinder knowledge sharing in public accounting firms. They summarized two important reasons to study knowledge sharing in public accounting firms. First, current regulations and standards have broadened and intensified pressures on public accounting firms to enhance the quality, effectiveness, and efficiency of the audit process. Second, knowledge and expertise are unevenly distributed among the members of a project team (Vera-Munoz et al. 2006). They argue that knowledge sharing can help public accounting firms in leveraging the skills, knowledge, and best practices of their professional staff. Effective deployment of knowledge sharing activities is increasingly vital to the firms' competitive advantage, including gaining tangible benefits in terms of time and cost reductions. Thus, studying EKR in the context of public accounting firms makes a timely contribution to both accounting research and practice.

## Chapter Four

### Research Model and Hypotheses

Consistent with the theoretical perspectives and prior research aforementioned, I integrate the two newly developed theories of IS continuance, the expectation-confirmation model (ECM) and the commitment-based model to propose an integrated model of EKR continued usage (Figure 4.1). Table 4.1 provides the formal definitions of the constructs in the research model. Next, I discuss the hypotheses in detail.

**Figure 4.1 - Research Model**



**Table 4.1 - Definitions of Constructs**

<b>Construct (Abbreviation)</b>	<b>Definition</b>	<b>Adapted From</b>
Subjective Norms (SN)	An individual's perception that most people who are important to the individual think he or she should or should not use the EKR	(Venkatesh et al. 2003)
Organizational Identification (IDEN)	An individual's perception of oneness with or belongingness to an organization, where the individual defines him or herself in terms of the organization in which he or she is a member	(Ashforth and Mael 1989)
Perceived Usefulness (PU)	The degree to which an individual finds using an EKR useful	(Davis 1989)
Confirmation (CONF)	The degree to which an individual assesses the perceived performance of EKR and determine if their expectation of the EKR is confirmed	(Bhattacharjee 2001)
Commitment (COM)	The strength of an individual's identification and involvement with the EKR	(Porter et al. 1974)
Affective Commitment (AFFC)	An individual's positive attitude and emotional attachment toward using the EKR	(Meyer and Allen 1991)
Calculative Commitment (CALC)	An individual's awareness of the costs associated with not using the EKR	(Meyer and Allen 1991)
Moral Commitment (MORC)	An individual's sense of duty and obligation to use the EKR	(Jaros et al. 1993)
Satisfaction (SAT)	An individual's positive or negative feeling about the EKR	(Venkatesh et al. 2003)
Continuance Intention (CONT)	An individual's intention to continue using the EKR	(Bhattacharjee 2001)

## **User Continuance Intention**

To predict the initial acceptance of technology, a number of intention-based theories have evolved, i.e., the theory of planned behavior (Ajzen 1991), theory of reasoned action (Fishbein and Ajzen 1975) and the technology acceptance model (Davis 1989; Davis et al. 1989; Venkatesh et al. 2003). In previous IS continuance studies, the most predominantly measured dependent variable is users' continuance behavioral

intention (e.g., Hong et al. 2006; Premkumar and Bhattacharjee 2008). Behavior has been explained as a function of behavioral intentions. Behavior is directly influenced by a person's behavioral intentions in TAM and the underlying theories of reasoned action and planned behavior (Ajzen 1991; Davis 1989; Fishbein and Ajzen 1975; Venkatesh 2003). If a user's intention to continue using the EKR is positive, then it is expected that the user will exhibit the behavior to continue using the EKR. Therefore, I also use continuance intention as the dependent variable in this study.

### **EKR Commitment**

Commitment refers to the relatively enduring affect which is accumulated from all prior experiences (Li et al. 2006; Malhotra and Galletta 2005). In this study, I follow Allen and Meyer's (1990; 1991) three component model of commitment which has been applied in prior research in IS continuance: affective, calculative, and moral dimensions (Li et al. 2006; Malhotra and Galletta 2005). In accounting research, almost all commitment research has focused solely on antecedents and outcomes of one dimension, affective commitment (Collins et al. 1995; Ketchand and Strawser 2001). Additional research has been called to advance the understanding of the antecedents and outcomes of multiple dimensions of commitment (Smith and Langfield-Smith 2004).

Commitment is considered as a multidimensional construct "because the multiple dimensions are grouped under the same multidimensional construct because each dimension represents some portion of the overall latent construct" (Law and Wong 1999, p. 144). The three dimensions of commitment correspond to what a user *wants to do*, *needs to do*, and *ought to do*, respectively. The measures of the three dimensions of commitment have been developed and refined, and the three components are considered

clearly distinguishable (Meyer et al. 1993). Their construct validity and applicability to other forms of commitment, such as individual's commitment to purchase services, have been demonstrated (e.g., Herscovitch and Meyer 2002). The decision to use formative dimensions is primarily based on the notion that they "are observed variables that are assumed to cause a latent variable" (Bollen 1989, p. 65). Bollen (1989) recommended that if a change in the lower-order construct yields a change in the latent variable (higher-order construct), a formative model is appropriate. Javis et al. (2003) state four primary decision rules for identify constructs as formative:

- "Direction of causality is from items to construct. In other words, indicators are defining characteristics of the construct.
- Indicators need not be interchangeable.
- It is not necessary for indicators to covary with each other.
- The indicators are not required to have the same antecedents and consequences."

Following these guidelines, the three dimensions of commitment are designed to tap into the different aspects of the overall construct. An increase in affective commitment will not necessarily result in an increase in calculative commitment. On the contrary, an increase in any of the three commitment dimensions will result in a change in commitment. Therefore, commitment is conceptualized to be a second-order latent construct composed of affective, calculative, and moral dimensions.

Commitment theories suggest that a decision maker follows a line of actions to reflect an affective bond with the actions, to avoid losing various investments associated with earlier actions, and/or to justify that his or her earlier decision was right (Allen and Meyer 1990). Li et al. (2006) empirically tested the links between affective and calculative commitments to behavioral intention in a website use setting. Their results

demonstrate that both affective and calculative commitments were significantly associated with an individual's behavioral intention to continue to use a website. Malhotra et al. (2005) also tested the effects of affective and calculative commitments on users' continuance intention in volitional systems. The role of moral commitment has not been investigated empirically in the IS literature. In this research on EKR usage, employees may also develop a sense of obligation to use an EKR based on their beliefs and values toward the workplace. Therefore, I include all three dimensions in the overall construct of commitment. In an organizational EKR context, because the use of EKRs is not mandatory, commitment may exhibit a significant effect on users' continued usage intentions as previously observed in volitional settings. When a user develops a sense of commitment to the EKR, the feeling of attachment and connection generates a force to drive their continuous actions. Hence, consistent with previous findings and incorporating moral commitment as another formative dimension of commitment, I propose the following:

*H1: Users' commitment to the EKR is positively related to their EKR continuance intention.*

## **Satisfaction**

Satisfaction refers to an individual's positive or negative feeling about the EKR. Based on ECM, users' IS continuance intention is determined primarily by their satisfaction with prior use. Bhattacharjee (2001) posits that the construct satisfaction is a transient, experience-specific affect. Commitment, on the other hand, is a relatively more enduring and immersed affect transcending all prior experiences. Commitment can influence behavior independently of other types of attitudes (De Wulf et al. 2006).

Satisfaction, in contrast, has been distinguished as a different type of attitude or affect. Satisfaction has been theorized and validated as an important predictor of behavioral intention (Compeau et al. 1999; Thompson et al. 1991). End-user satisfaction has been found to be a significant factor in measuring success of IS, websites, and other IS contexts (Belanger et al. 2006; Doll et al. 1998; Lin et al. 2007; McKinney et al. 2002; Seddon 1997). These studies provide strong support that the greater the users' satisfaction towards the IS, the more likely they will intend to continue using it. Similarly, I theorize the following association between satisfaction and continuance intention in the EKR context:

*H2: Users' level of satisfaction with EKR is positively related to their EKR continuance intention.*

## **Perceived Usefulness**

Perceived usefulness is defined as the degree to which a user believes that a particular system can improve his or her work performance (e.g. increase productivity, improve efficiency) (Davis 1989). Perceived usefulness, a key construct in TAM, has been studied extensively in IS acceptance/adoption research. TAM posits that perceived usefulness directly affects user's IS acceptance decision and has been demonstrated as the most consistent and strongest factor in determining user intention (Ma 2004). According to TAM, in an organizational environment, if people expect a technology to increase their productivity and performance on the job, then their intentions to use the technology will be greater than that which can be attributed to their attitude toward the technology alone. ECM shares the same view with TAM in that the relationship would hold true in the post-acceptance contexts. Moreover, perceived output quality, which is conceptualized as an

important indicator of perceived usefulness, has been found to positively affect knowledge seekers' decision to use an EKR (Kankanhalli et al. 2005b).

In ECM, perceived usefulness represents a user's post-adoption expectation. It is considered a primary motivator of IS acceptance, and ECM suggests that it is also plausible that perceived usefulness can influence subsequent continuance decisions. The effect of perceived usefulness on users' attitude has been investigated thoroughly in many prior TAM research studies (e.g., Dennis et al. 1992; Venkatesh and Davis 2000; Venkatesh et al. 2003). Consistent with ECM (Bhattacharjee 2001), I assert that perceived usefulness to be a salient factor that influences a user's satisfaction. This leads to the following hypotheses:

*H3: Perceived usefulness is positively related to users' EKR continuance intention.*

*H4: Perceived usefulness is positively related to users' satisfaction with EKR use.*

Individuals develop a sense of commitment to the system through active participation and experience. Perceived usefulness essentially summarizes the benefits realized by users from using a system. A useful system promotes users to explore and participate more in the system, thus potentially leading to a higher commitment to the system. Perceived usefulness is conceptually similar to perceived value in the service marketing research field. The positive impact of perceived value on customer loyalty has been demonstrated at length in service marketing (e.g., Cronin et al. 2000). When users believe there are net benefits relative to the amount of time and effort taken to use a service and their needs for such a service persist, they will form attitudinal disposition in favor of continued usage of the service in the future. Teo et al. (2003) established evidence that, in the context of an online learning community, perceived usefulness

helped foster members' sense of belonging to the community. Sense of belonging is similar to affective commitment and develops from an individual's personal involvement in a system and makes the individual feel as though he or she is an integral part of the system. Therefore, when users perceive an EKR as beneficial and valuable because it helps them to complete job-related tasks more effectively and efficiently, they are more likely to develop commitment to the EKR through positive experience. Consequently, I expect the following:

*H5: Perceived usefulness is positively related to users' commitment to the EKR.*

## **Confirmation**

Confirmation refers to the user's assessment of the perceived performance of an IS relative to his or her initial expectations. Confirmation is positively related to satisfaction with IS use because it implies realization of the expected benefits of IS usage, while disconfirmation indicates failure to meet expectations. The confirmation-satisfaction association has been empirically examined by testing ECM (Bhattacharjee 2001; Hsu et al. 2004; Lin et al. 2005; Staples et al. 2002) in different IS settings. In the EKR context, a user's confirmation implies that she or he has achieved the expected benefits through the usage of the EKR. Therefore, confirmation will affect the user's satisfaction level positively.

According to ECM, confirmation will elevate users' perceived usefulness (Bhattacharjee 2001). Perceived usefulness could be adjusted by confirmation, especially when a user's initial perceived usefulness is unstable because he or she is uncertain what to expect from the usage of the IS (Hong et al. 2006). Therefore, I propose the following hypotheses on confirmation:

*H6: Users' extent of confirmation is positively related to their satisfaction with EKR use.*

*H7: Users' extent of confirmation is positively related to their perceived usefulness of EKR use.*

## **Organizational Identification**

According to social identity theory, individuals tend to classify themselves and others into various social groups, such as organizational membership, gender, and age cohorts (Tajfel and Turner 1986). Identification occurs when people adopt attitudes and behaviors in order to be associated with a satisfying, self-defining relationship with another person or group (O'Reilly III and Chatman 1986). Organizational identification refers to an individual's perception of oneness with or belongingness to an organization, where the individual defines him or herself in terms of the organization in which he or she is a member (Ashforth and Mael 1989). The concept of organizational identification has been seen as a crucial factor to understand the relationship between employees and their organization (Ashforth and Mael 1989; Dutton et al. 1994; Mael and Ashforth 1992).

In this study, I adopt the three-component conceptualization of organizational identification proposed by Edwards and Peccei (2007): self-categorization and labeling, sharing of organizational goals and values, and a sense of organizational belonging and membership. Self-categorization and labeling refers to the process by which individuals categorize and label themselves as a member of the organization. Integration of goals and value refer to the extent to which the organization's and the individual's values and goals are congruent. The sense of organizational belonging and membership refers to the extent to which employees experience a sense of belonging and psychological attachment to the organization (Edwards and Peccei 2007).

Research on member identification suggests that strength of identification determines some critical beliefs and behaviors, such as individual desire to remain with the organization and willingness to cooperate with others (Dutton et al. 1994). Organization identification has also been identified as a contextual factor which affects contributors' knowledge sharing behavior in EKR (Kankanhalli et al. 2005a). Systems usage behavior adopted through users' identification toward the organization tends to be integrated with an individual's existing values. The user is more likely to be immersed in the system usage and develop a sense of commitment due to the perceived congruence with one's own personal norms and values. Regardless of the voluntary or mandatory nature of the IS, if users believe using the system is intrinsically rewarding, they are more likely to want to use the system (Markus and Keil 1994). In an organizational context, knowledge sharing tools such as EKRs have been regarded as increasingly vital to sustain a competitive advantage (Vera-Munoz et al. 2006). In line with the organizational identification effects, since knowledge management applications, such as EKRs, are considered as important strategic tools for organizations (Miller and Shamsie 1996), their success relies on users' continued usage. Users with higher organizational identification will feel more motivated to help the organization grow and sustain growth by becoming more committed to using the EKR. Hence, I hypothesize:

*H8: Organizational identification is positively related to users' commitment to the EKR.*

### **Subjective Norms**

Subjective norms are a function of a person's beliefs about whether others including peers or superiors think he or she should perform the behavior, weighted by the person's motivation to comply with those others (Fishbein and Ajzen 1975). According

to the social influence model (Fulk et al. 1990), social influence exerted by the attitude and behavior of management and co-workers in a users' social and work circles can significantly impact the users' actions regarding technology use. If a user perceives that people important to the individual think the behavior should be performed, he or she is more likely to feel obligated or committed to comply with that behavior. Prior research suggests that subjective norms can be attributed to compliance in mandatory settings which causes it to have a direct effect on intention (Malhotra and Galletta 1999; Venkatesh and Davis 2000; Venkatesh and Morris 2000).

Based on this notion, in the EKR context, because the use is not mandatory or required, the link between subjective norms and continued usage does not have a strong theoretical underpinning. In their study of the relative importance of attitudes and group norms in determining frequency of drug use, Skinner and Cattarello (1989) discovered that commitment is an important mediator between group norms and behavior. The results indicate that the role of norms varies, in part, depending upon one's level of commitment to the behavior. Mayer and Allen (1997) suggested that commitment may develop through social influences when individuals internalize a set of norms concerning appropriate behavior. Thus, the more intense the social influence on using the EKR, the more likely that an individual will feel a normative pressure to use the EKR, and consequently form a sense of commitment to the EKR. Therefore, I propose:

*H9: Subjective norms are positively related to users' commitment to the EKR.*

**Table 4.2 - Summary of Hypotheses**

#	<b>Hypothesis</b>
H1	Users' commitment to the EKR is positively related to their EKR continuance intention.
H2	Users' level of satisfaction with EKR is positively related to their EKR continuance intention.
H3	Perceived usefulness is positively related to users' EKR continuance intention.
H4	Perceived usefulness is positively related to users' satisfaction with EKR use.
H5	Perceived usefulness is positively related to users' commitment to the EKR.
H6	Users' extent of confirmation is positively related to their satisfaction with EKR use.
H7	Users' extent of confirmation is positively related to their perceived usefulness of EKR use.
H8	Organizational identification is positively related to users' commitment to the EKR.
H9	Subjective norms are positively related to users' commitment to the EKR.

## **Chapter Five**

### **Research Methodology**

To test the model and hypotheses shown in Figure 4.1 and Table 4.2, I adopted the survey method for data collection. The survey method is appropriate because it is often used to investigate subjects' opinions and perceptions (Whitley 2002) and it can empirically test the generalizability of the research model (Fowler 1998). I examined the hypotheses by applying partial least squares (PLS) regressions to analyze the data.

#### **Instrument Development and Validation**

To develop the survey instrument, I followed the generally accepted instrument development guidelines (Moore and Benbasat 1991; Netemeyer et al. 2003; Straub 1989). Scale items and sources are shown in Appendix A. Using previously developed and tested measures wherever possible enhances validity of the research (Stone 1978). Table 5.1 provides a summary of the instrument development and validation process. Subsequently, I describe the instrument development and validation process in detail.

**Table 5.1 - Instrument Development and Validation Process**

<b>Step</b>	<b>Name</b>	<b>Description</b>
1	Development of initial item pool	I developed initial item pool based on literature review.
2	Unstructured card sorting	Four graduate students performed card sorting on the initial item pool by classifying similar items into categories. Item clarity and wording were also checked.
3	Structured card sorting	Four graduate students performed card sorting by grouping items based on defined categories. Item clarity and wording were also checked.
4	Pretest	Items were reviewed by two partners at two of the four participating accounting firms. Five professional service industry professionals and two doctoral students pre-tested the survey. Completion time and wording were also checked.
5	Pilot Study	The instrument was pilot tested by 26 business professionals. Reliability, item-total correlation, and exploratory factor analyses were run to ensure reliability and construct validity of the measures.

### **Conceptual Validation**

Although most of the items from the instrument were adapted and modified from previously published studies, they have not been applied in the EKR context. Therefore, all of the questions underwent a two-stage conceptual validation exercise based on procedures recommended by Moore and Benbasat (1991). Four graduate students participated in the first stage (unstructured sorting) as sorters. Each sorter was given the questions printed on index cards in random order. They were asked to independently sort the questions by placing related questions together and provide a label (construct) to each set of questions. This process helped to identify ambiguously or poorly worded questions. Overall the number of categories identified by the sorters ranged from 7 to 11. There was some confusion on the distinction between organizational identification and affective commitment. The items on the three dimensions of commitment also needed to be

refined. Some items for the three dimensions of commitment were grouped together which indicated a lack of discriminant validity. As a result, I reworded a few poorly worded items of affective commitment, calculative commitment and organizational identification based on the feedback from the sorters. The sorting results for perceived usefulness, confirmation, continuance intention, and satisfaction were adequate in general which indicated the robustness of the measures.

After revising the items based on the first stage sorting results, a different group of four graduate students was asked to participate in the second stage card sorting (structured sorting). Each sorter was given the modified questions from the first-stage printed on index cards and presented in random order. Unlike the first stage, the sorters were given the names and definitions of all the constructs. They needed to sort the questions independently by placing each question into the respective construct category or an “other” category which indicates no fit. This round the sorters were able to place almost all of the items onto the intended constructs (see Table 5.2). Overall, the four sorters correctly placed more than 96% of the items onto the intended constructs.

**Table 5.2 - Results of Structured Card Sorting Exercise**

Target Category	Actual Category										Total Items	Hit Rate (%)
	SN	IDEN	PU	CONF	AFFC	CALC	MORC	SAT	CONT	Other		
<b>SN</b>	24										24	100
<b>IDEN</b>		31			1						32	96.88
<b>PU</b>			16								16	100
<b>CONF</b>				12							12	100
<b>AFFC</b>					16						16	100
<b>CALC</b>						14	1			1	16	87.5
<b>MORC</b>					1	1	18				20	90
<b>SAT</b>								16			16	100
<b>CONT</b>									12		12	100
<b>Average</b>												97.15

### **Pre-Testing**

After the conceptual validation process, I conducted a pre-test to further evaluate the survey and measures. Netemeyer et al. (2003) recommend at least five or more participants for pre-testing. Following this recommendation, I first invited two partners from participating public accounting firms to review the web-based survey instrument to ensure the appropriateness of the questions. Based on their feedback and concern for time requirement, I also made slight modifications to the survey introduction and page layout to include percentage to completion progress bar at the top of each page. They had some concerns with the organizational identification measure. I made some wording changes to organizational identification and moral commitment items. I also removed two items of organizational identification which left it with two items per sub component, consistent with Edwards and Peccei (2007).

I recruited five business professionals who work in the professional service industry and two doctoral students with industry experience to pre-test the instruments. The participants accessed the survey through a web link and filled out the survey similar to the actual data collection procedures. They were asked to evaluate the survey based on the following criteria: clarity and quality of the survey instructions and items, estimated time to complete the survey, and general flow of the survey. The completion time of the survey ranged from 12 minutes to 19 minutes. The pretest subjects also provided feedback on the survey layout and screen design to improve the user friendliness of the web-based survey.

### **Pilot Study**

Straub (1989) recommends calculating reliability statistics on data from a pilot study prior to actual data collection. I conducted a small-scale pilot test by collecting 26 usable responses from professionals in the professional service industry for the pilot test. Due to the relatively small sample size of the pilot study, I ran a reliability analysis and calculated Cronbach's alpha and item-total correlation. Except for calculative and moral commitment scales, all the other scales indicated good reliability ( $> .7$ ) and item total correlations ( $> .4$ ) (Carmines and Zeller 1979). The reliability test uncovered measurement issues related to calculative commitment and moral commitment. I reworded two items for calculative commitment and deleted one item for moral commitment. I also ran exploratory factor analysis on some groupings of the constructs to validate the constituent items loaded on the same factor. The exploratory factor analysis revealed some cross-loading issues among subjective norms, confirmation, and perceived usefulness. To ensure at least three items per construct, I decided to drop two

items of subjective norms and one item of perceived usefulness to alleviate the cross-loading problem.

### **Final Survey Instrument**

After the survey development and validation process, the final survey instrument included four major components: (1) survey introduction and invitation to participate: a link was created for each participating firm and the introduction was customized for each firm using their specific EKR as examples. (2) items measuring the independent and dependent constructs in the research model; (3) a group of demographic questions such as years of experience, and tenure with the accounting firm; (4) multiple frequency of usage questions related to individual knowledge seeking and contributing behavior. Appendix A contains the final survey instrument which also includes an introduction/invitation to participate in the survey.

### **Sample and Data Collection**

#### **Sample**

Data were collected from professionals employed by four large national accounting firms. There are several reasons for choosing accounting professionals as the research sample for this study. First, large accounting firms qualify as professional service firms where most work is considered to be of an intellectual nature and where well-educated, qualified employees form the majority of the workforce (Alvesson 2000). Second, accounting professionals constantly engage in information search and processing tasks (Barrick 2001). It is common for accounting professionals to draw upon existing templates and documentation to fulfill current needs. Third, a recent study by Vera-

Munoz et al. (2006) calls for further empirical investigations on knowledge management issues in CPA firms. All of the participating firms use EKR and employees are not required to use the EKR to seek job-related information and share knowledge with one another.

Chin (2000b) suggests that PLS requires a sample size of 10 times either the construct with the greatest number of formative indicators or 10 times the largest number of structural paths directed at a particular construct in the structural model. Commitment is the construct with the greatest number of formative indicators. Both commitment and continuance intention have three structural paths which are the largest number directed at them. Based on these criteria, at least 30 responses would be needed. However, Goodhue et al. (2006) challenged this notion and concluded that Chin's recommendation yields low power. Generally speaking, a suggested rule of thumb for structural equation modeling (SEM) is a minimum sample size of 100 and some have recommended 200 to avoid drawing inaccurate inferences (Meyers et al. 2006). I conducted a power analysis to estimate the appropriate sample size (Chin and Newsted 1999). Based on an alpha of .05, a medium effect size of .15, and power of .8, approximately 110 subjects were needed (Cohen 1988).

### **Data Collection**

I contacted the ten largest public accounting firms listed in the 2007 public accounting report. Four firms, two Big 4 and two non-Big 4, agreed to participate in the study. Data were collected via a web-based survey posted on [www.surveymonkey.com](http://www.surveymonkey.com). Web-based surveys have exerted a profound influence on the survey process (Gunn 2002). Web-based data collection techniques have also become increasingly popular and prevalent

in academic research (Couper 2000). Advantages of Web-based surveys include lower cost, faster response time, greater response rate, ease of communication to respondents via email, easier to process data, and the ability to randomize questions for each respondent, etc (Sills and Song 2002; Solomon 2001). Some of the challenges associated with web-based surveys are page view discrepancy depending on screen size and browser, difference in level of computer self-efficacy, data privacy concerns, etc (Zanutto 2001). To minimize these concerns, I implemented controls to account for some of the potential threats. To encourage participation and mitigate non-response bias, the survey started with a letter describing the purpose of the survey, time requirement, participant anonymity, and data confidentiality (Lazar and Preece 1999). Survey questions were randomized each time a survey participant accessed the survey online. Each firm's contact person received an email invitation to participate in the study, along with the web link for the survey. The firm contact person then distributed the invitation to employees by email. Data were collected for a period of seven weeks beginning in mid-November 2007 to early January 2008. During the seven week time period, the firm contact person sent out two reminders to encourage participation. A total of 230 responses were received. Table 5.3 reports the sample size and the approximate response rate by firm. The approximate response rate is calculated by the number of respondents from each firm divided by the approximate number of people that the survey was sent to as indicated by the firm contact person. The final sample size is 230 subjects, which meets the sample size needed based on the power analysis conducted *a priori*. The response rate ranges from 10% to 43% with an average response rate of 25%.

**Table 5.3 - Sample Size and Response Rate**

<b>Firm</b>	<b># of Responses</b>	<b>Approximate Response Rate</b>
Firm A (Big 4 firm)	26	11%
Firm B (Big 4 firm)	99	43%
Firm C (Non-Big 4 firm)	81	35%
Firm D (Non-Big 4 firm)	24	10%
<b>Total</b>	<b>230</b>	

## **Chapter Six**

### **Data Analysis and Results**

This chapter begins with a descriptive analysis of the data and then provides an overview of PLS regressions which are used to test the research model and hypotheses. I then present the measurement model which includes measures of reliability, convergent and discriminant validity. The test of the structural model includes estimates of the path coefficients, which indicate the strengths of the relationships between the dependent and independent variables, and the  $R^2$  values, which represent the amount of variance in the dependent variable explained by the independent variables. Together, the  $R^2$  and the path coefficients (loadings and significance) indicate how well the data support the hypothesized model. Next, I describe the multi-group analysis in PLS and report the results. This chapter ends with a discussion of supplementary data analyses which reveal additional insights about the data.

#### **Descriptive Analysis**

Table 6.1 reports the summary demographics. Over half of the respondents are male (50.9%). Most of the respondents are below 30 years old (67.4%). Almost all of the respondents (98.3%) hold Bachelor's degrees or higher. Most of the respondents (61.3%) are staff and senior associates within the firm. In terms of years of experience in public accounting, 64.8% of respondents have less than five years of experience which is roughly consistent with the results of current positions within the firm. Most of respondents (73%) typically work at a client location with other team members nearby. From a work function perspective, 82.2% of respondents are in the audit practice.

**Table 6.1 - Summary of Respondents Demographics**

<b>Question</b>	<b>Categories</b>	<b>Number</b>	<b>Percentage</b>
<b>Gender</b>	Male	117	50.9%
	Female	113	49.1%
<b>Age Group</b>	25 or younger	81	35.2%
	26-30	74	32.2%
	31-40	41	17.8%
	41-50	24	10.4%
	51-60	9	3.9%
	61 or older	1	0.4%
<b>Education</b>	Associate's degree	3	1.3%
	Bachelor's degree	169	73.5%
	Master's degree	57	24.8%
	PhD	1	0.4%
<b>Rank</b>	Staff	65	28.3%
	Senior	76	33.0%
	Manager	36	15.7%
	Senior Manager	28	12.2%
	Partner/Director	25	10.9%
<b>Years of Experience</b>	Less than 1 year	30	13.0%
	1-2 years	49	21.3%
	3-5 years	70	30.4%
	6-10 years	40	17.4%
	Over 10 years	41	17.8%
<b>Work Setting</b>	I usually work at my office location alone	18	7.8%
	I usually work at my office location with other team members	35	15.2%
	I usually work at a client location alone	7	3.0%
	I usually work at a client location with other team members	168	73.0%
	I primarily work from home	2	0.9%
<b>Work Function</b>	Audit	189	82.2%
	Consulting/advisory services	15	6.5%
	Tax	16	7.0%
	Other	4	1.7%
	Chose not to answer	6	2.6%

Table 6.2 shows the means and standard deviation for each construct in the research model.

**Table 6.2 - Summary of Descriptive Statistics**

<b>Construct</b>	<b>Number of Items</b>	<b>Mean</b>	<b>Standard Deviation</b>
Affective Commitment (AFFC)	4	4.75	0.39
Calculative Commitment (CALC)	4	4.94	0.40
Confirmation (CONF)	3	5.01	0.29
Continuance Intention (CONT)	3	5.94	0.14
Organizational Identification (INDEN)	6	5.57	0.33
Moral Commitment (MORC)	4	4.25	0.45
Perceived Usefulness (PU)	3	5.80	0.08
Satisfaction (SAT)	4	5.13	0.21
Subjective Norms (SN)	4	5.77	0.33

## **PLS Overview**

Structural equation modeling (SEM) is used for data analysis. SEM is appropriate for testing theoretically justified models (Gefen et al. 2000). SEM is mainly used for confirmatory, rather than exploratory, purposes. That is, SEM is more appropriate when used to determine whether a certain model is valid, rather than finding a suitable model. Partial least squares (PLS) is a structural equation modeling technique that simultaneously assesses the reliability and validity of the measures of the theoretical constructs and estimates the relationships among these constructs. PLS is widely used in IS research and can be used to analyze the measurement and structural models with multi-item constructs (Chin 1998; Wasko and Faraj 2005). It is especially adept to handling formative indicators in addition to reflective indicators (Chin and Todd 1995). Moreover, PLS is appropriate when the theory is untested in a context domain (Gopal et al. 1992). Because the formative nature of the commitment dimensions, covariance-

based SEM, such as LISREL, is less appropriate. Furthermore, PLS is better suited than LISREL for testing moderating effects (Chin et al. 2003). In this study, the PLS software used to assess measurement and structural model is Smart PLS Version 2.0 Beta (Ringle et al. 2005). I also ran data analysis using PLS-Graph Version 3.0 which yielded consistent results.

## Measurement Model

An important step before testing the hypotheses is the assessment of the accuracy of the measurement model. The purpose of the measurement model analysis is to ensure the measures used are valid and that they adequately reflect the underlying theoretical constructs. The test of the measurement model includes the estimation of internal consistency (reliability) and the convergent and discriminant validity of the instrument items. Reliability is assessed with both Cronbach's Alpha and composite reliability. A value of at least 0.70 was used as the threshold to indicate adequate reliability (Nunnally 1978). Table 6.3 shows the reliability of the constructs. All of the constructs had satisfactory reliability and scored well above 0.70.

**Table 6.3 - Reliability of Constructs**

<b>Construct</b>	<b>Number of Items</b>	<b>Cronbach's Alpha</b>	<b>Composite Reliability</b>
Affective Commitment (AFC)	4	0.77	0.85
Calculative Commitment (CALC)	4	0.83	0.89
Confirmation (CONF)	3	0.90	0.92
Continuance Intention (CONT)	3	0.81	0.89
Organizational Identification (IDEN)	6	0.90	0.94
Moral Commitment (MORC)	4	0.92	0.94
Perceived Usefulness (PU)	3	0.81	0.88
Satisfaction (SAT)	4	0.92	0.95
Subjective Norms (SN)	4	0.93	0.95

Under confirmatory factor analysis, convergent and discriminant validity were assessed by checking item loadings to examine if items within the same construct correlate highly amongst themselves and if questions loaded higher on their intended constructs than other constructs. Furthermore, to test for convergent validity, the average variance extracted (AVE) was calculated for each construct. The AVE is calculated by taking the sum of the squared component loadings to an indicator and dividing by the sum of the squared component loading plus the sum of the error variance. The AVE attempts to measure the amount of variance that a latent variable component captures from its indicators relative to the amount due to the measurement error. Each AVE value was well above the recommended level of 0.50 (Fornell and Larcker 1981), which indicates good convergent validity of the items in each construct.

For satisfactory discriminant validity, the AVE from a construct should be greater than the variance shared between the construct and the other constructs in the model (Chin 1998). Table 6.4 presents the item loadings. Table 6.5 shows the latent construct correlations. The square roots of the AVEs are presented on the diagonal of the correlation matrix. In all cases, the square root of AVE for each construct is larger than the correlation of that construct with all the other constructs in the model, which indicates satisfactory discriminant validity.

To further examine discriminant validity, I also used the cross-loading method suggested by Chin (1998) to assess discriminant validity. As can be seen in Table 6.4, the item loadings in their corresponding columns are all higher than the loadings of the items used to measure the other constructs. Furthermore, when examining across the rows, the item loadings are higher for their corresponding constructs than for others.

Therefore, the measurements satisfy the two criteria recommended by Chin (1998). In summary, these results provide strong empirical support for the reliability, convergent and discriminant validity of the scales used in the research model.

**Table 6.4 - Item Loadings**

	AFFC	CALC	CONF	CONT	IDEN	MORC	PU	SAT	SN
AFFC1	0.70	0.35	0.41	0.27	0.30	0.52	0.38	0.49	0.36
AFFC2	0.81	0.54	0.56	0.44	0.38	0.45	0.55	0.55	0.49
AFFC3	0.79	0.46	0.61	0.54	0.34	0.41	0.63	0.67	0.53
AFFC4	0.78	0.45	0.47	0.24	0.35	0.65	0.36	0.46	0.32
CALC1	0.51	0.79	0.41	0.63	0.30	0.47	0.72	0.42	0.65
CALC2	0.52	0.84	0.35	0.35	0.30	0.67	0.45	0.36	0.49
CALC3	0.48	0.83	0.41	0.41	0.27	0.48	0.53	0.42	0.47
CALC4	0.39	0.80	0.26	0.39	0.28	0.51	0.39	0.30	0.48
CONF1	0.58	0.43	0.85	0.39	0.42	0.47	0.55	0.74	0.46
CONF2	0.54	0.35	0.87	0.43	0.41	0.37	0.56	0.62	0.45
CONF3	0.58	0.35	0.84	0.54	0.47	0.34	0.64	0.66	0.54
CONT1	0.43	0.47	0.46	0.93	0.39	0.30	0.67	0.52	0.69
CONT2	0.45	0.49	0.47	0.88	0.53	0.28	0.73	0.48	0.71
CONT3	0.44	0.52	0.53	0.93	0.47	0.35	0.71	0.55	0.75
IDEN1	0.39	0.29	0.44	0.42	0.88	0.31	0.42	0.37	0.42
IDEN2	0.37	0.32	0.52	0.50	0.81	0.26	0.55	0.47	0.50
IDEN3	0.42	0.31	0.36	0.35	0.80	0.35	0.31	0.36	0.37
IDEN4	0.35	0.28	0.46	0.51	0.88	0.25	0.50	0.42	0.45
IDEN5	0.36	0.29	0.40	0.34	0.84	0.35	0.31	0.39	0.33
IDEN6	0.38	0.31	0.42	0.47	0.88	0.34	0.39	0.42	0.45
MORC1	0.65	0.54	0.50	0.27	0.37	0.86	0.37	0.49	0.39
MORC2	0.43	0.45	0.27	0.18	0.25	0.79	0.15	0.25	0.25
MORC3	0.50	0.49	0.33	0.21	0.28	0.76	0.31	0.34	0.28
MORC4	0.50	0.61	0.35	0.39	0.27	0.78	0.43	0.34	0.56
PU1	0.57	0.60	0.64	0.71	0.43	0.38	0.93	0.67	0.70
PU2	0.57	0.58	0.63	0.75	0.45	0.34	0.91	0.63	0.73
PU3	0.58	0.60	0.64	0.69	0.47	0.39	0.94	0.70	0.67
SAT1	0.61	0.40	0.71	0.52	0.43	0.39	0.67	0.93	0.51
SAT2	0.63	0.47	0.72	0.58	0.43	0.39	0.69	0.93	0.53
SAT3	0.68	0.41	0.71	0.46	0.41	0.42	0.62	0.85	0.47
SAT4	0.62	0.38	0.73	0.50	0.45	0.44	0.64	0.91	0.50
SN1	0.44	0.54	0.44	0.59	0.35	0.47	0.53	0.42	0.82
SN2	0.46	0.47	0.48	0.57	0.41	0.38	0.58	0.42	0.76
SN3	0.46	0.58	0.47	0.67	0.42	0.39	0.64	0.50	0.85
SN4	0.41	0.46	0.47	0.72	0.43	0.26	0.70	0.44	0.79

**Table 6.5 - Construct Correlations (Diagonal Elements are Square Roots of the AVE)**

	<b>AFFC</b>	<b>CALC</b>	<b>CONF</b>	<b>CONT</b>	<b>IDEN</b>	<b>MORC</b>	<b>PU</b>	<b>SAT</b>	<b>SN</b>
<b>AFFC</b>	<b>0.77</b>								
<b>CALC</b>	0.59	<b>0.81</b>							
<b>CONF</b>	0.67	0.44	<b>0.85</b>						
<b>CONT</b>	0.48	0.54	0.53	<b>0.91</b>					
<b>IDEN</b>	0.45	0.35	0.51	0.51	<b>0.85</b>				
<b>MORC</b>	0.66	0.66	0.47	0.34	0.37	<b>0.80</b>			
<b>PU</b>	0.62	0.64	0.68	0.77	0.48	0.40	<b>0.93</b>		
<b>SAT</b>	0.70	0.46	0.79	0.57	0.47	0.45	0.72	<b>0.91</b>	
<b>SN</b>	0.55	0.64	0.57	0.79	0.49	0.47	0.75	0.55	<b>0.81</b>

### **Common Method Bias**

Common method bias may occur when survey participants provide information on both the predictor and criterion variables (Podsakoff et al. 2003), as might occur in this study. One way of minimizing the bias is by keeping the respondents answers anonymous, assuring them that there are no right or wrong answers, and that they should answer the questions as honestly as possible (Dinev and Hart 2006; Podsakoff et al. 2003). I followed these guidelines and informed all respondents that their answers would be kept strictly confidential and encouraged them to answer as objectively and candidly as possible. In addition, I performed Harman’s single factor test to check for the possible effects of common methods bias after data collection (Harman 1967). Harman’s single-factor test is arguably the most widely known approach for assessing common method variance in a single-method research design (Malhotra et al. 2006). In general, this test is used to see if a single factor will emerge from the factor analysis or if there is one general factor that explains the majority of the covariance in the independent and dependent variables (Aulakh and Kotabe 1997; Pavlou and Gefen 2005; Podsakoff and Organ 1986).

The basic assumption is that if a single factor emerges from the factor analysis that explains a significant amount of the variance in the data, there is strong evidence of common method bias. Following this approach, all the variables from the research model were loaded into an exploratory factor analysis and the unrotated factor solution was examined to determine the number of factors that were necessary to account for the variance in the variables. The results showed five factors emerged from the unrotated factor analysis accounting for 69.9% of the total variance; hence, I conclude that common method bias did not overly influence participants' responses.

### **Nonresponse Bias**

In survey research, there is always a possibility for non-response bias whenever sample persons who did not participate in the survey have somewhat different characteristics than those who participated (Fowler 1998). Some researchers have reported that people who respond to surveys answer questions differently than those who do not, while others have found that late responders answer differently than early responders, and that the differences may be due to the different levels of interest in the subject matter (Siemiatycki and Campbell 1984). Nonresponse adjustment methods can serve to reduce non-response bias. However, the total elimination of such bias is not possible. To test for nonresponse bias, I conducted t-tests to compare the means of the first half of the respondents to those of the last half of the respondents on key demographic variables such as age, gender, years of experience, position, and educational background. Table 6.6 shows the comparison t-test results. The findings indicated that there were no significant differences between the early respondents and late respondents

on any of the five demographic variables, leading me to believe that nonresponse bias was not a significant threat.

**Table 6.6 - Comparison Results for Nonresponse Bias**

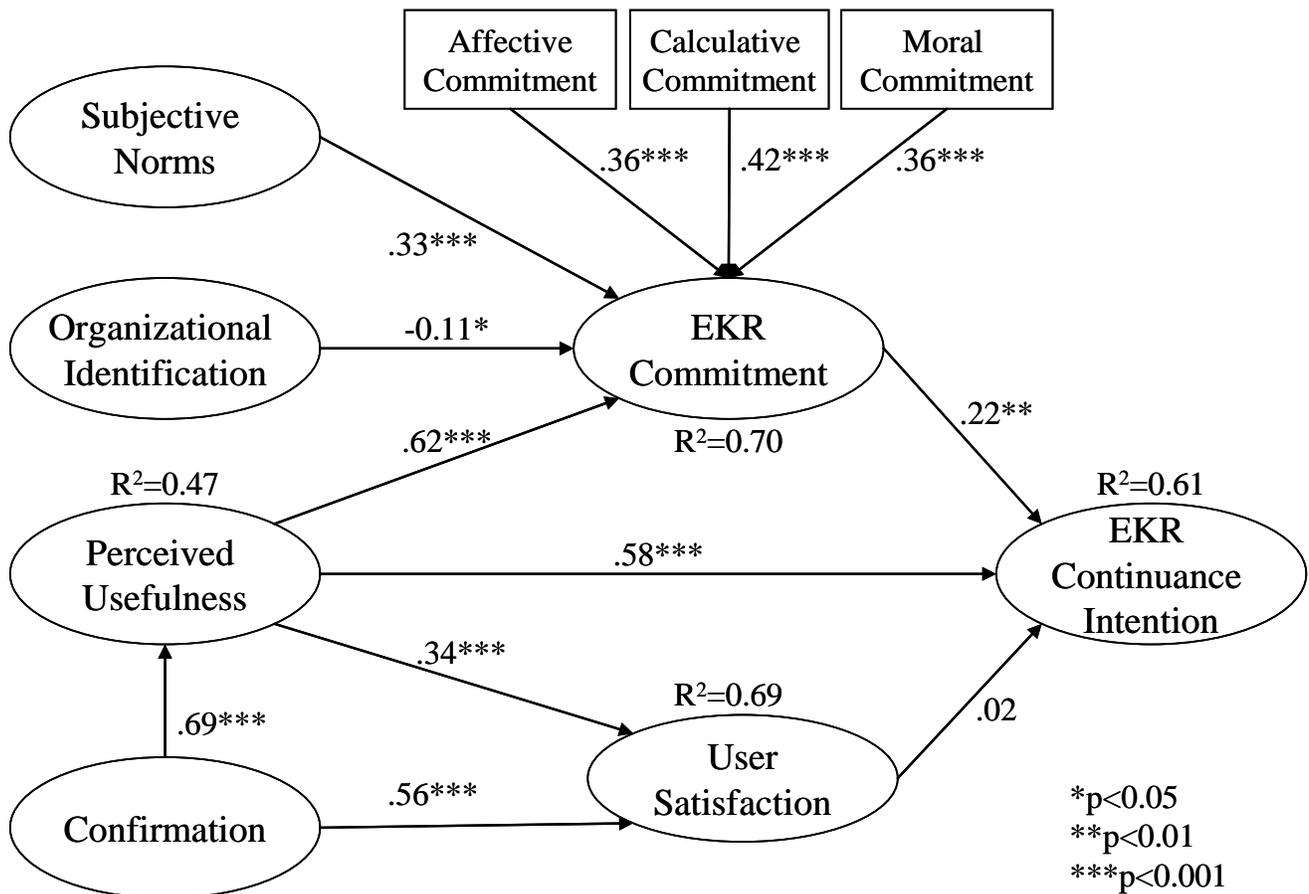
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
<b>Age</b>	Equal variances assumed	1.31	0.25	-0.15	228	0.88
	Equal variances not assumed			-0.15	225	0.88
<b>Gender</b>	Equal variances assumed	0.23	0.63	-0.53	228	0.60
	Equal variances not assumed			-0.53	228	0.60
<b>Years of Experience</b>	Equal variances assumed	0.92	0.34	-0.67	228	0.51
	Equal variances not assumed			-0.67	226	0.51
<b>Rank</b>	Equal variances assumed	0.14	0.71	-0.36	228	0.72
	Equal variances not assumed			-0.36	227	0.72
<b>Education</b>	Equal variances assumed	0.80	0.37	-0.77	228	0.44
	Equal variances not assumed			-0.77	228	0.44

## Structural Model

With a satisfactory measurement model and no apprehension for common method and nonresponse biases, I proceeded to test the structural model which includes estimates of the path coefficients indicating the strength of the relationships between the dependent and independent variables; and estimates of the  $R^2$  values, which represent the amount of variance in the dependent variable explained by the independent variables. I used the repeated indicator approach to estimate the second-order molar construct, commitment (Chin 2000b). Under the repeated indicator approach, the higher-order constructs are directly measured by manifest indicators for the first-order constructs. The repeated

indicators approach allows investigation of the relative path weights of the factors forming the higher-order constructs (Bassellier and Benbasat 2004; Staples and Seddon 2004). To examine the specific hypotheses (summarized in Table 4.1) proposed in the research model, I assessed the t-statistics for the standardized path coefficients by running bootstrap with 500 re-samples. I used one-tailed t-tests because the hypotheses were all unidirectional. The results of the analysis are depicted in Figure 6.1 and summarized in Table 6.7.

**Figure 6.1 - Results of PLS Analysis**



**Table 6.7 - Results of Hypothesis Testing**

#	Hypothesis	Path Coefficient	t-statistic	p-Value	Results
H1	Users' commitment to the EKR is positively related to their EKR continuance intention.	0.22	2.42	p<0.01	Supported
H2	Users' level of satisfaction with EKR is positively related to their EKR continuance intention.	0.02	0.24	p<0.49	Not Supported
H3	Perceived usefulness is positively related to users' EKR continuance intention.	0.58	5.34	p<0.001	Supported
H4	Perceived usefulness is positively related to users' satisfaction with EKR use.	0.34	4.67	p<0.001	Supported
H5	Perceived usefulness is positively related to users' commitment to the EKR.	0.62	8.59	p<0.001	Supported
H6	Users' extent of confirmation is positively related to their satisfaction with EKR use.	0.56	8.43	p<0.001	Supported
H7	Users' extent of confirmation is positively related to their perceived usefulness of EKR use.	0.69	14.76	p<0.001	Supported
H8	Organizational identification is positively related to users' commitment to the EKR.	-0.11	1.99	p<0.05	Not Supported (but supported in the opposite direction)
H9	Subjective norms are positively related to users' commitment to the EKR.	0.33	4.61	p<0.001	Supported

As shown in Figure 6.1, the model accounts for 61% of the variance in EKR continued usage, 69% of the variance in user satisfaction, 70% of the variance in users' EKR commitment, and 47% of the variance in perceived usefulness. All hypotheses were supported except for H2 and H8. Specifically, I found support for H1, a significant positive relationship between users' commitment to the EKR and their EKR continuance intention. H2 through H4, H6 and H7 replicate the expectation-confirmation model and the results are all significant. I also found strong support for H5 and H9; indicating users who rate perceived usefulness and subjective norms high are more likely to develop a sense of commitment to the EKR. However, contrary to original expectations, users' satisfaction and continuance intention did not yield a significant link. Interestingly, H8 exhibited a significant relationship in the opposite direction as originally predicted.

### **Multi-Group Analysis**

To examine the differences between knowledge seekers and knowledge contributors, I first analyzed the data to categorize the respondents into the two sub-groups. I categorized the respondents based on the following questions asked in the survey:

1. What is your primary purpose for using the knowledge base?
2. In the last six months, how many times have you used the knowledge base to find information or documents for work?
3. In the last six months, how many times have you contributed information to the knowledge base?
4. What is your frequency of seeking information from the knowledge base?
5. What is your frequency of contributing knowledge to the knowledge base?

6. Of the total time you spend on the knowledge base; what percentage of time do you spend on seeking information from the knowledge base?
7. Of the total time you spend on the knowledge base; what percentage of time do you spend on contributing information to the knowledge base?

I coded the data and triangulated the respondents' answers on the frequency and percentage of time spent seeking and contributing information to the EKR to prevent misclassification. The two groups were determined based on the frequency of contribution and seeking activities. Knowledge seekers were defined as those who have sought knowledge from the EKR but have never contributed. Almost all those who contribute to the EKR also seek from it. Knowledge contributors were defined as those who have contributed knowledge to the EKR but may also seek knowledge from it as well. Upon investigation of the data, there were a total of 52 respondents categorized as knowledge contributors and 178 respondents identified as knowledge seekers. Although there is a sizable discrepancy in the number of seekers versus contributors, the sample size is considered adequate for data analysis in PLS based on Chin (2000b)'s suggestion that PLS requires a sample size of 10 times either the construct with the greatest number of formative indicators or 10 times the largest number of structural paths directed at a particular construct in the structural model. Therefore, a sample size of 52 for the knowledge contributor group meets this requirement because a minimum of 30 responses would be needed since commitment is the construct with the greatest number of formative indicators, which are 3. However, caution still needs to be taken when interpreting and generalizing from these results due to the imbalance between the two sub-group sample sizes.

After examining the demographic and professional characteristics of the respondents, it is not surprising that an overwhelming majority of the respondents are knowledge seekers. First, over 82% of the respondents are in the audit practice. In the audit environment, it is extremely critical for the information posted on the EKR to be accurate. After conducting follow-up discussions with firm contacts, firms exercise a certain extent of centralized control on audit related knowledge and documentations. Therefore, audit professionals may not have the same flexibility to post information on the EKRs as other practices such as consulting and advisory services. Second, 64.8% of the respondents have less than 5 years of professional experience, and 61.3% of them are staff or senior associates. As professionals with less experience and lower rankings, they are more likely to be knowledge seekers than contributors. Third, prior research indicates that the availability of EKRs is no guarantee that employees will actively share their knowledge (Alavi and Leidner 1999) and there are far more knowledge seekers than contributors (Peddibhotla and Subramani 2007). Thus, it is not unexpected that there is only a small percentage of respondents who consistently contribute to EKR more than seeking knowledge. Table 6.8 presents a summary of descriptive differences between the knowledge seeker and contributor groups. By examining the differences in means, the constructs with the most apparent differences are affective commitment, organizational identification, and satisfaction. Table 6.9 shows the t-test results of the group mean comparisons. There are statistically significant differences among the construct means across the two groups.

**Table 6.8 - Descriptive Differences between Knowledge Seekers and Contributors**

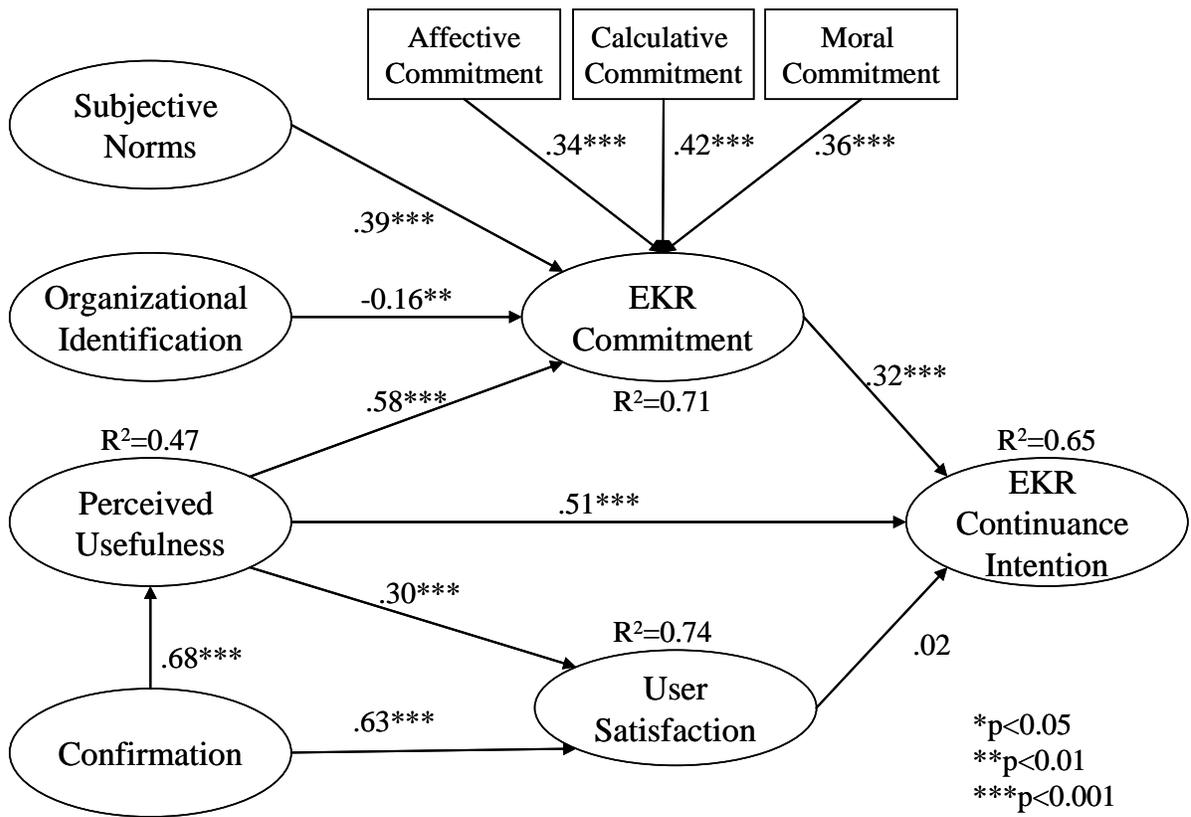
<b>Construct</b>	<b>Knowledge Seeker Mean (n=178)</b>	<b>Knowledge Contributor Mean (n=52)</b>
Affective Commitment (AFC)	4.61	5.21
Calculative Commitment (CALC)	4.91	5.06
Confirmation (CONF)	4.97	5.15
Continuance Intention (CONT)	5.90	6.04
Organizational Identification (INDEN)	5.45	5.96
Moral Commitment (MORC)	4.19	4.43
Perceived Usefulness (PU)	5.75	5.98
Satisfaction (SAT)	5.02	5.52
Subjective Norms (SN)	5.77	5.78

**Table 6.9 - T-test Results of Knowledge Seekers and Contributors Mean Comparisons**

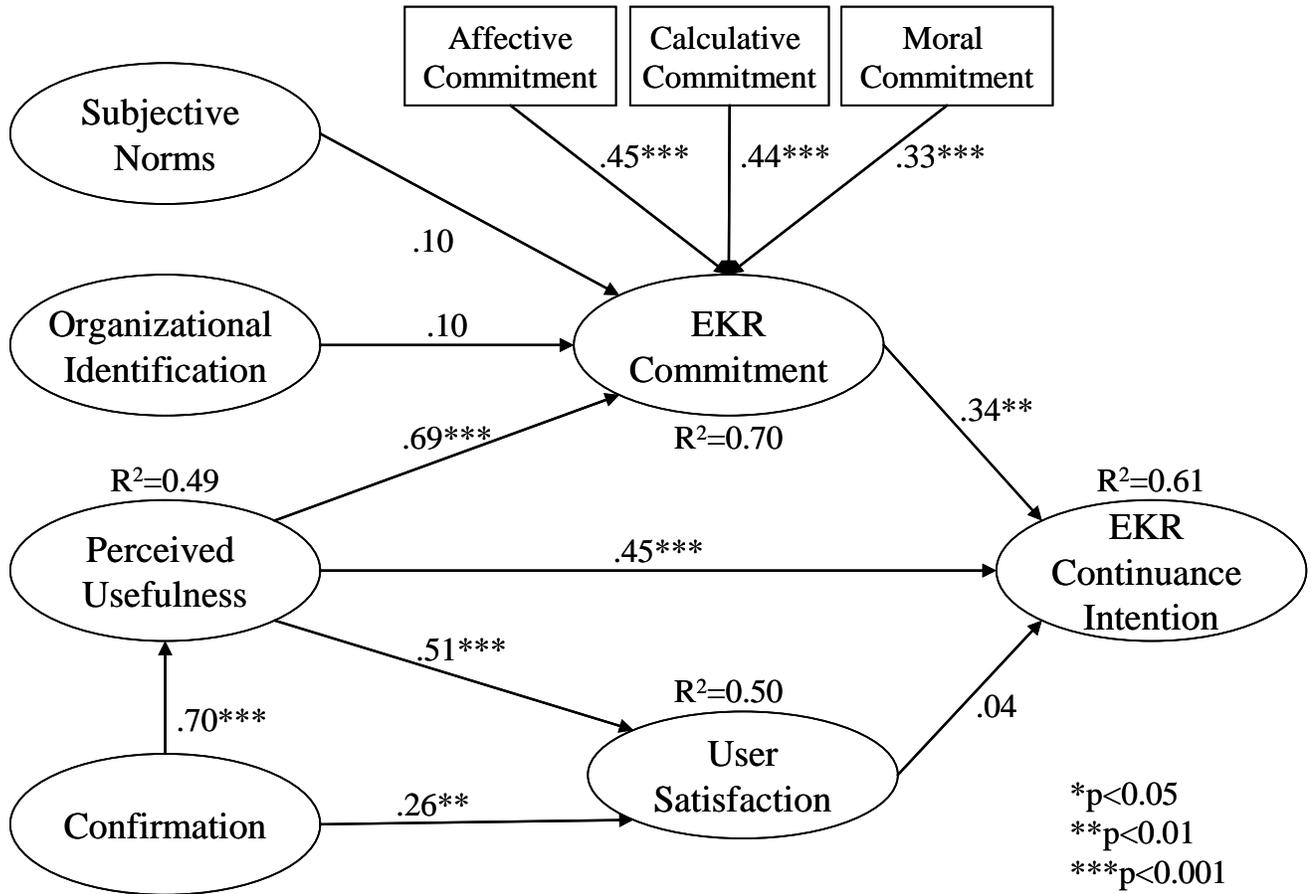
	<b>Levene's Test for Equality of Variances</b>			<b>t-test for Equality of Means</b>		
		<b>F</b>	<b>Sig.</b>	<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>
<b>AFC</b>	Equal variances assumed	1.43	0.23	-3.60	228.00	0.00
	Equal variances not assumed			-3.88	93.45	0.00
<b>CALC</b>	Equal variances assumed	0.04	0.84	-0.78	228.00	0.43
	Equal variances not assumed			-0.80	86.03	0.42
<b>MORC</b>	Equal variances assumed	2.65	0.10	-1.27	228.00	0.21
	Equal variances not assumed			-1.44	102.88	0.15
<b>SN</b>	Equal variances assumed	0.11	0.75	-0.06	228.00	0.95
	Equal variances not assumed			-0.07	95.04	0.95
<b>CONF</b>	Equal variances assumed	1.19	0.28	-1.11	228.00	0.27
	Equal variances not assumed			-1.21	94.77	0.23
<b>CONT</b>	Equal variances assumed	0.86	0.35	-0.80	228.00	0.42
	Equal variances not assumed			-0.87	93.63	0.39
<b>SAT</b>	Equal variances assumed	0.87	0.35	-2.84	228.00	0.00
	Equal variances not assumed			-3.03	91.79	0.00
<b>PU</b>	Equal variances assumed	0.04	0.84	-1.38	228.00	0.17
	Equal variances not assumed			-1.42	86.31	0.16
<b>IDEN</b>	Equal variances assumed	3.35	0.07	-2.82	228.00	0.01
	Equal variances not assumed			-3.27	107.23	0.00

I then tested the structural model for both groups and conducted t-tests to compare the path coefficients in the structural models for the two groups. Figures 6.2 and 6.3 present the structural model analysis for the knowledge seeker and contributor groups respectively.

**Figure 6.2 - Results of PLS Analysis for Knowledge Seeker Group**



**Figure 6.3 - Results of PLS Analysis for Knowledge Contributor Group**



There are several salient differences in the strengths of the path coefficients between the two groups. I then conducted t-tests to compare the path coefficients between the knowledge seeker and contributor groups to determine whether the differences are statistically different. I used the following formula suggested by Chin (2000a) to calculate the t-statistic:

$$t = \frac{Path_{sample\_1} - Path_{sample\_2}}{\left[ \sqrt{\frac{(m-1)^2}{(m+n-2)} * S.E.^2_{sample1} + \frac{(n-1)^2}{(m+n-2)} * S.E.^2_{sample2}} \right] * \left[ \sqrt{\frac{1}{m} + \frac{1}{n}} \right]}$$

Degrees of freedom = m+n-2 = 178 + 52 - 2 = 228

Table 6.10 presents path coefficients' comparisons of knowledge seeker and contributor groups. The path coefficients are significantly different between the two groups for H4, H6, H8, and H9.

**Table 6.10 - Summary Results of Knowledge Seeker and Contributor Group Comparisons**

#	Hypothesis	Path Coefficient (Seeker)	Path Coefficient (Contributor)	t-Statistic	Significant? p=0.05
H1	Users' commitment to the EKR is positively related to their EKR continuance intention.	0.32	0.34	-0.10	No
H2	Users' level of satisfaction with EKR is positively related to their EKR continuance intention.	0.02	0.04	-0.11	No
H3	Perceived usefulness is positively related to users' EKR continuance intention.	0.51	0.45	0.43	No
H4	Perceived usefulness is positively related to users' satisfaction with EKR use.	0.30	0.51	-2.51	Yes
H5	Perceived usefulness is positively related to users' commitment to the EKR.	0.58	0.69	-1.15	No
H6	Users' extent of confirmation is positively related to their satisfaction with EKR use.	0.62	0.26	4.31	Yes
H7	Users' extent of confirmation is positively related to their perceived usefulness of EKR use.	0.68	0.7	-0.32	No
H8	Organizational identification is positively related to users' commitment to the EKR.	-0.16	0.1	-3.74	Yes
H9	Subjective norms are positively related to users' commitment to the EKR.	0.39	0.1	3.16	Yes

I further classified the respondents into sub-groups based on level of expertise using years of experience in public accounting as a proxy. It is common in accounting research to classify level of expertise based on years of experience (e.g., Frederick et al. 1994; Tubbs 1992). The knowledge novice group represents those who have less than 2 years of experience in public accounting, where the knowledge expert group represents those who have more than 5 years of experience. This yields 79 novices and 81 experts in the two sub-groups. Table 6.11 presents a summary of descriptive differences between the novice and expert sub- groups. The experts consistently had higher scores than novices on all the constructs, and there are sizable differences between the means. Table 6.12 shows the t-test results of the group comparisons by knowledge expertise. There are significant differences between the two groups for all constructs. Thus, I proceeded to test the structural model of the two groups and compared how the effects of the constructs vary between knowledge novice and expert groups. I assessed the t-statistics for the standardized path coefficients of the two groups by running bootstrap with 500 re-samples.

Figures 6.4 and 6.5 present the structural model analysis for the knowledge novice and expert groups respectively. The structural models for the two groups showed several noticeable differences. Overall the model explained 13 percent more of the variance in continuance intention for the novice group than the expert group. In addition, the model explained 19 percent more of the variance in commitment for the novice group than for the expert group. Almost all the path coefficients are higher for the novice group than for the expert group, except for the links from confirmation to satisfaction, organization identification to commitment, and perceived usefulness to continuance intention.

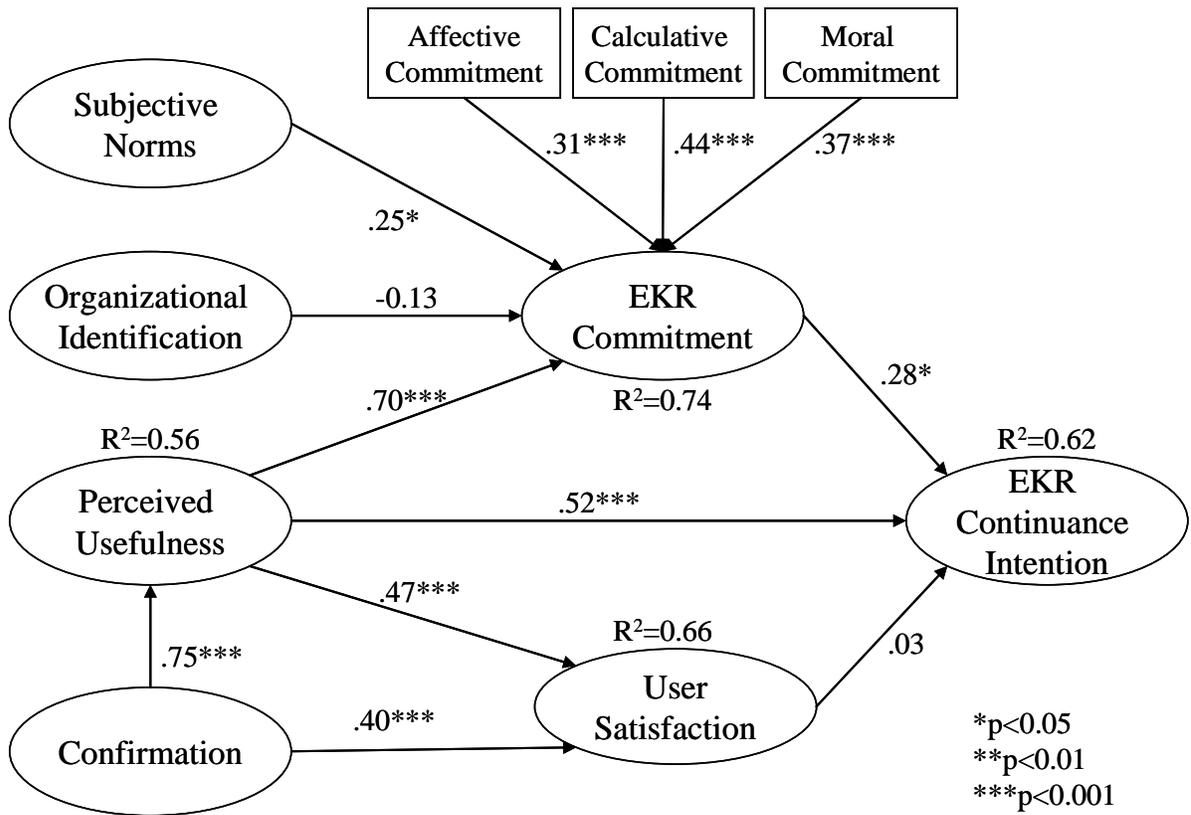
**Table 6.11 - Descriptive Differences between Knowledge Novices and Experts**

<b>Construct</b>	<b>Novice Mean (n=79)</b>	<b>Expert Mean (n=81)</b>
Affective Commitment (AFFC)	4.50	5.19
Calculative Commitment (CALC)	4.53	5.41
Confirmation (CONF)	4.90	5.35
Continuance Intention (CONT)	5.71	6.21
Organizational Identification (INDEN)	5.38	5.90
Moral Commitment (MORC)	4.09	4.49
Perceived Usefulness (PU)	5.43	6.25
Satisfaction (SAT)	5.01	5.45
Subjective Norms (SN)	5.51	6.08

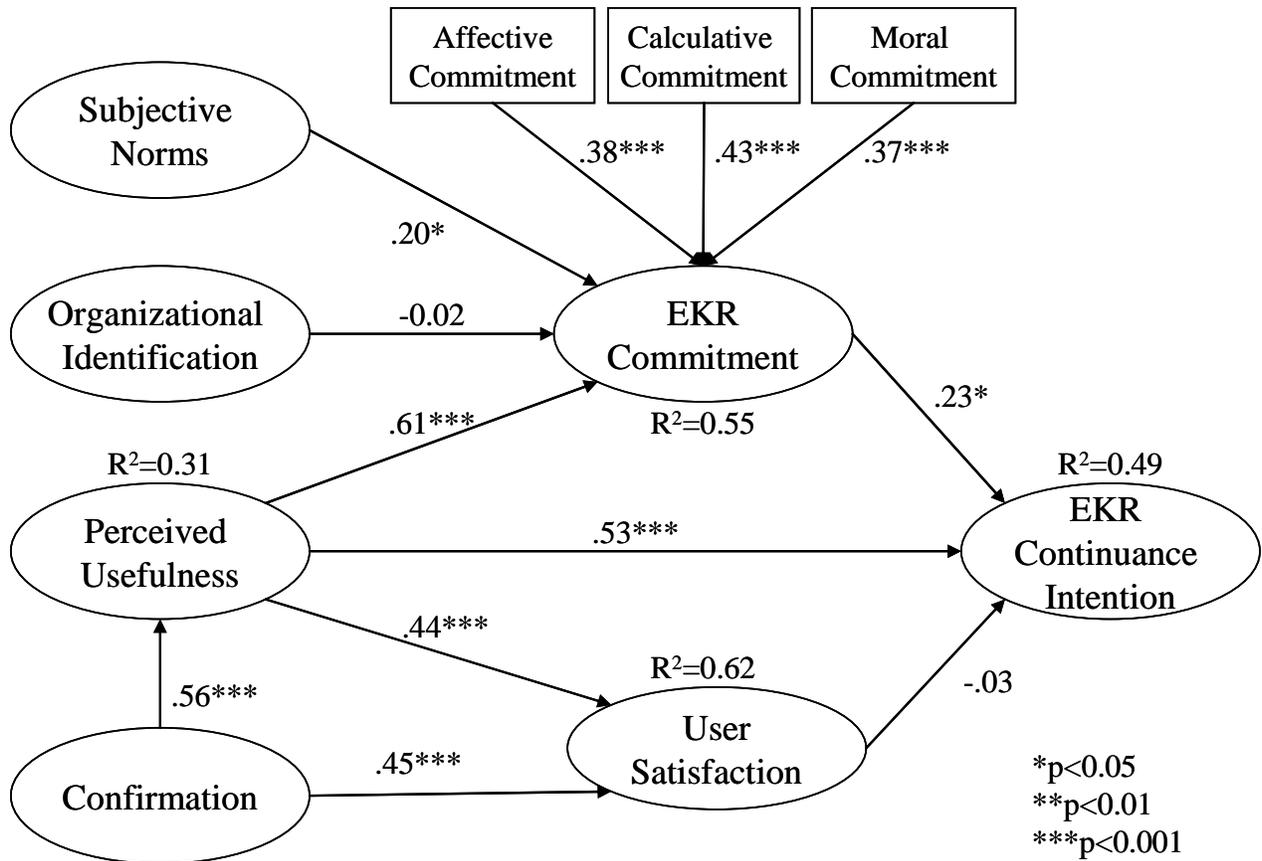
**Table 6.12 - T-test Results of Knowledge Novices and Experts Mean Comparisons**

		<b>Levene's Test for Equality of Variances</b>		<b>t-test for Equality of Means</b>		
		<b>F</b>	<b>Sig.</b>	<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>
<b>AFFC</b>	Equal variances assumed	2.02	0.16	-4.39	158	0.00
	Equal variances not assumed			-4.38	152	0.00
<b>CALC</b>	Equal variances assumed	0.16	0.69	-4.61	158	0.00
	Equal variances not assumed			-4.60	152	0.00
<b>CONF</b>	Equal variances assumed	2.05	0.15	-2.88	158	0.00
	Equal variances not assumed			-2.87	147	0.00
<b>CONT</b>	Equal variances assumed	1.81	0.18	-3.23	158	0.00
	Equal variances not assumed			-3.22	152	0.00
<b>IDEN</b>	Equal variances assumed	0.13	0.72	-2.84	158	0.01
	Equal variances not assumed			-2.83	157	0.01
<b>MORC</b>	Equal variances assumed	2.07	0.15	-2.15	158	0.03
	Equal variances not assumed			-2.14	151	0.03
<b>PU</b>	Equal variances assumed	6.27	0.01	-5.40	158	0.00
	Equal variances not assumed			-5.38	135	0.00
<b>SAT</b>	Equal variances assumed	1.06	0.31	-2.62	158	0.01
	Equal variances not assumed			-2.61	151	0.01
<b>SN</b>	Equal variances assumed	2.93	0.09	-4.00	158	0.00
	Equal variances not assumed			-3.99	146	0.00

**Figure 6.4 - Results of PLS Analysis for Knowledge Novice Group**



**Figure 6.5 - Results of PLS Analysis for Knowledge Expert Group**



Next I conducted t-tests to compare the path coefficients in the two sub groups to examine whether there were any significant differences. I again used the following formula suggested by Chin (2000a) to calculate the t-statistic:

$$t = \frac{Path_{sample\_1} - Path_{sample\_2}}{\left[ \sqrt{\frac{(m-1)^2}{(m+n-2)} * S.E.^2_{sample1} + \frac{(n-1)^2}{(m+n-2)} * S.E.^2_{sample2}} \right] * \left[ \sqrt{\frac{1}{m} + \frac{1}{n}} \right]}$$

Degrees of freedom = m+n-2 = 79 + 81 - 2 = 158

Table 6.13 presents path coefficients' comparisons of the knowledge novice and expert groups. The path coefficients are significantly different between the two groups for H7 only.

**Table 6.13 - Summary Results of Novice and Expert Group Comparisons**

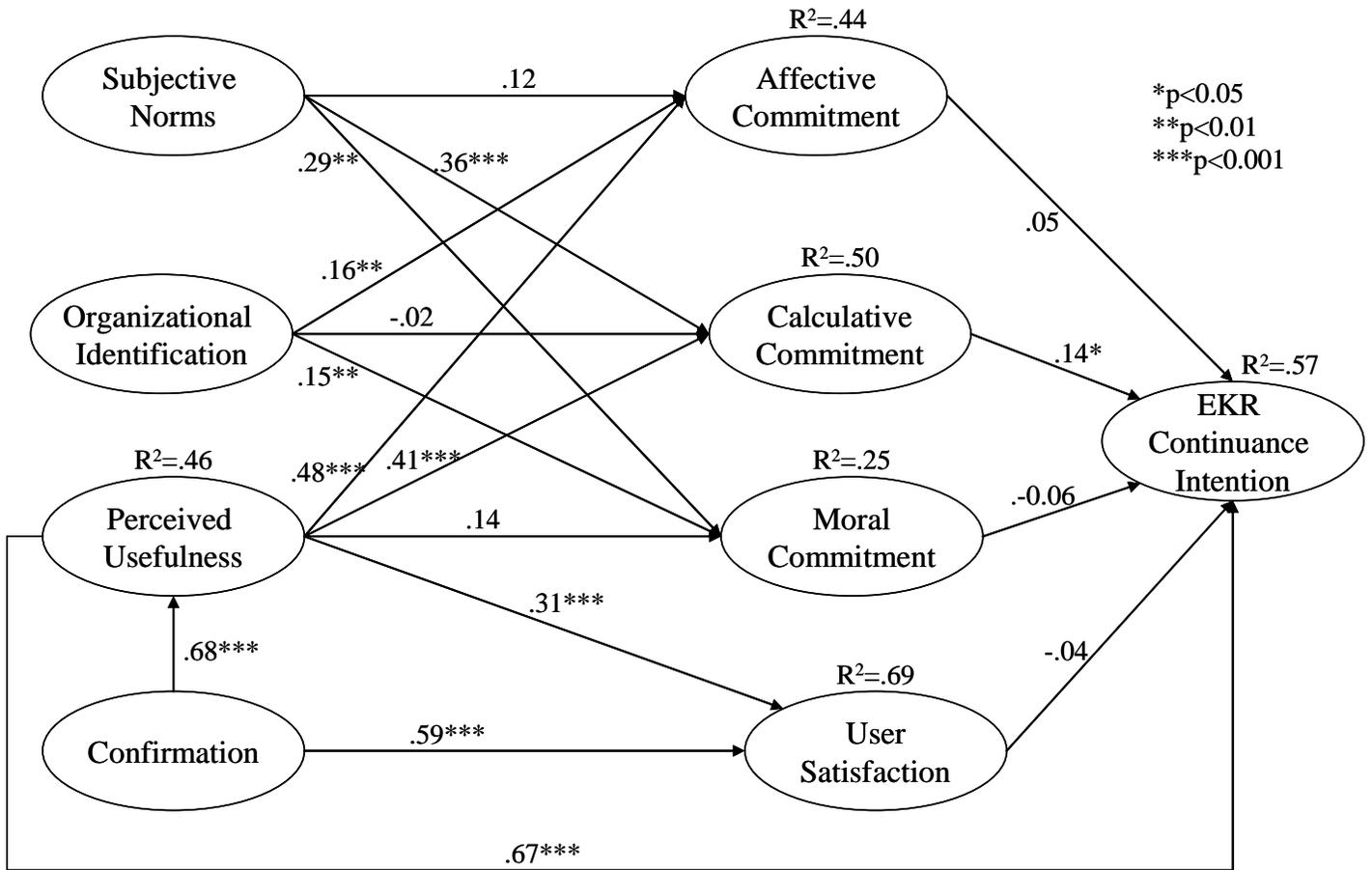
#	Hypothesis	Path Coefficient (Novice)	Path Coefficient (Expert)	t-Statistic	Significant? p=0.05
H1	Users' commitment to the EKR is positively related to their EKR continuance intention.	0.28	0.23	0.27	No
H2	Users' level of satisfaction with EKR is positively related to their EKR continuance intention.	0.03	-0.03	0.32	No
H3	Perceived usefulness is positively related to users' EKR continuance intention.	0.52	0.53	-0.05	No
H4	Perceived usefulness is positively related to users' satisfaction with EKR use.	0.47	0.44	0.22	No
H5	Perceived usefulness is positively related to users' commitment to the EKR.	0.7	0.61	0.49	No
H6	Users' extent of confirmation is positively related to their satisfaction with EKR use.	0.4	0.45	-0.42	No
H7	Users' extent of confirmation is positively related to their perceived usefulness of EKR use.	0.75	0.56	2.25	Yes
H8	Organizational identification is positively related to users' commitment to the EKR.	-0.13	-0.02	-0.71	No
H9	Subjective norms are positively related to users' commitment to the EKR.	0.25	0.2	0.30	No

## **Additional Data Analysis: Alternative Research Model**

I conducted some subsequent data analysis to explore the individual effects of the antecedents of commitment to the three formative dimensions of the commitment, similarly to Bansal et al. (2004). Instead of conceptualizing commitment as a second-order construct with formative first-order dimensions, I treated each dimension of commitment as a separate construct with the antecedents directly linked to each dimension. Figure 6.6 presents the results of the alternative model with path coefficients and significance levels.

As shown in Figure 6.6, this model accounts for 57% of the variance in EKR continued usage, 69% of the variance in user satisfaction, and 46% of the variance in perceived usefulness. Regarding the three types of commitment, the model accounted for 44% of the variance in affective commitment, 50% of the variance in calculative commitment, and 25% of the variance in moral commitment. Subjective norms significantly affect calculative commitment and moral commitment, but not affective commitment. Organizational identification significantly affects affective commitment and moral commitment, but not calculative commitment. Perceived usefulness significantly affects affective and calculative commitment, but is insignificant for moral commitment. The alternative model reveals additional insight on how the antecedents of commitment affect the three dimensions of commitment individually. Regarding the effects of the three types of commitment on continuance intention, only the link between calculative commitment and continuance intention is significant.

**Figure 6.6 - PLS Results of Alternative Model**

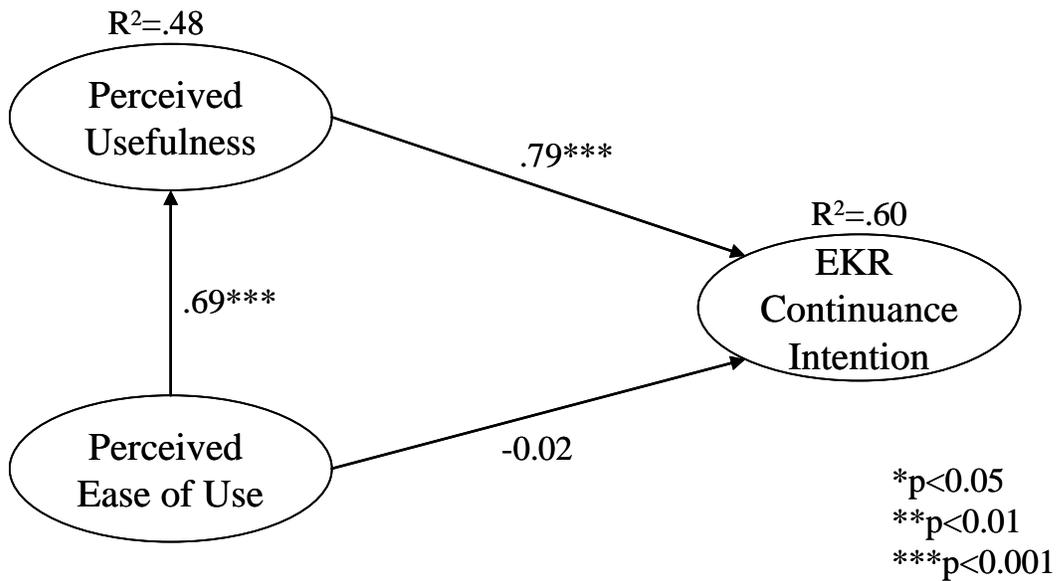


### **Additional Data Analysis: Model Comparison with TAM and ECM**

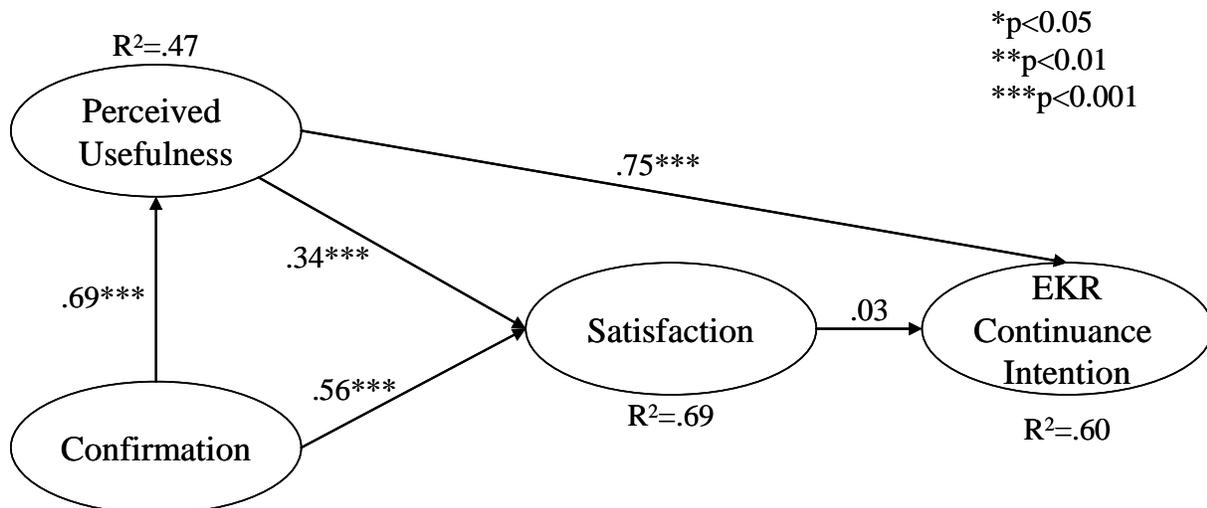
As described in Chapter 3, both TAM and ECM models have been used extensively in IS acceptance and continuance research. TAM is based on the theory of reasoned action, while ECM is derived from the expectation-disconfirmation theory. Although TAM was originally established to study IS acceptance, it has been used to examine post-acceptance behavior of an IS. ECM is designed exclusively to study post-adoption behavior and IS continued usage. My research model proposes the integration of commitment and ECM to explain users' continuance intention. In this section, I empirically compare the three models' explanatory power. By comparing my research

model to TAM and ECM, I can investigate whether the integrated model explains more IS continued usage than TAM and ECM. Findings from the comparisons can therefore help bridge the extant gap between acceptance and continuance research streams in IS. Figure 6.7 illustrates the PLS analysis of the TAM, and Figure 6.8 depicts the PLS analysis of ECM.

**Figure 6.7 - PLS Results of TAM**



**Figure 6.8 - PLS Results of ECM**



PLS analysis of TAM explained 60.3% of the variance in continuance intention. This explanation came mainly from perceived usefulness as the link between perceived ease of use and continuance intention was insignificant. Some prior TAM studies have yielded inconsistent results on the effects of perceived ease of use on usage intention. While ease of use may affect IS adoption/acceptance intention, the effect tends to diminish with time as users become familiar with the technology and learn how to use it (Karahanna et al. 1999; Venkatesh and Davis 2000). In the EKR context, most users were familiar with the EKR environment, namely the organizational intranet. This may have contributed to the insignificant effect of perceived ease of use.

PLS analysis of ECM explained 59.5% of variance in continuance intention, 68.5% in satisfaction, and 46.9% in perceived usefulness. This explanation came mainly from perceived usefulness and confirmation as the link between satisfaction and continuance intention was insignificant. Investigating the individual paths in ECM, one can see that satisfaction was successfully predicted by both perceived usefulness and confirmation. The effect of perceived usefulness on continuance is the most salient.

When comparing my research model to TAM and ECM, my model explained 61.1% of the variance in continuance intention, which is slightly better in its predicting ability than both TAM and ECM. However, my research model shows strong empirical support that commitment is also an important factor to consider in IS continuance research.

## **Chapter Seven**

### **Discussion**

#### **Summary of Major Findings**

This section contains a discussion of the significant findings of this research. The aim of this study was to develop and test a model of EKR continued usage to investigate the factors that affect accounting professionals' decision in continue using an organization's electronic knowledge repositories. Next I will discuss the major findings from the research model, multi-group analyses, the alternative research model and model comparisons.

#### **Research Model**

The results mostly provide support for the proposed theoretical model and qualified support for a majority of the hypothesized relationships. The results indicate that a significant predictor of individual continuance intention is user's commitment toward using the EKR. User satisfaction shows a weak relationship with continuance intention compared to commitment. This is consistent with the conceptual reasoning that commitment transcends satisfaction which is considered a transitory affect where commitment is a more enduring and long-lasting affect built from a compilation of previous experiences. The results clearly distinguish between satisfaction and commitment as two separate attitudinal constructs.

The results also indicate support for subjective norms and perceived usefulness as important antecedents to commitment. Users are likely to develop a sense of commitment from the influence of those around them. Additionally, if users perceive an

EKR to be useful and advantageous, it will help increase their user commitment.

Organizational identification demonstrated a significant relationship opposite to the original prediction. Although this finding is counter intuitive, the multi-group analysis shed light on why this effect was observed. The path coefficient of the knowledge novice group showed a much stronger negative correlation than the knowledge expert group.

Out of seventy-nine users in the knowledge novice group, seventy-eight have been employed for less than two years at their respective firms. On the contrary, only fifty-seven out of eighty-one users in the knowledge expert group have worked for their employers for more than six years. It is possible that with a relatively shorter tenure with the employer, the effect of organizational identification on commitment may not be as salient for the novice group. Therefore, organizational identification showed a negative but significant relationship in the overall sample.

Consistent with expectation-confirmation theory and IS continuance research, all hypotheses related to the ECM are highly significant except for H2. Confirmation and perceived usefulness both significantly affect user satisfaction, while confirmation is positively related to perceived usefulness. The insignificant relationship between satisfaction and continuance intention highlights the strength of commitment and perceived usefulness in predicting users' continuance intention.

The multi-group analysis revealed additional insights on the data analysis. There are several salient differences between knowledge seekers and contributors. Knowledge contributors have a stronger sense of organizational identification than knowledge seekers. This is consistent with the proposed hypothesis (H8) that organizational identification is positively related to users' commitment to the EKR. Knowledge

contributors in general identify themselves with the organization and they are motivated to actively and voluntarily contribute information to the EKR. In addition, knowledge contributors are less influenced by others in their commitment to the EKR than knowledge seekers. In other words, knowledge contributors use the EKR to seek and contribute knowledge because they want to, and knowledge seekers use the EKR because the people around them, such as co-workers and management, use it. Lastly, the factors impacting satisfaction are different between the two groups as well. Knowledge contributors appear to have a stronger association between perceived usefulness and satisfaction than seekers, and knowledge seekers have a stronger association between confirmation and satisfaction than contributors.

Based on the group comparisons of knowledge novices and experts, the only statistically significant difference between the two groups is H7. Knowledge novices appear to have a higher link between their confirmation and perceived usefulness than the knowledge experts. In other words, confirmation tends to elevate knowledge novices' perceived usefulness more than knowledge experts. For knowledge novice users, they may have lower initial usefulness perceptions of the EKR because they are not certain what to expect. As they gain experience in using the EKR, their initial expectations become confirmed and they will adjust their perceptions higher as a result of the confirmation experience (Bhattacharjee 2001).

### **Alternative Research Model**

The goal of the alternative research model is to analyze how the antecedents of commitment individually affect the three dimensions of the commitment. Although organizational identification did not show significance in impacting commitment in the

original research model, the alternative model revealed additional insight on its impact on the three dimensions of commitment. Organizational identification showed a significant link to both affective commitment and moral commitment. As users start to view the organization's goals and values as their own, they are more likely to become more involved in the organization and feel more emotionally attached which may lead to increased participation in organizational activities (Edwards 2005).

Subjective norms significantly influence both calculative and moral commitment. Under the influence of peers and upper management, users are more likely to feel obligated to use the EKR because the people around them are using it. Additionally, because of the social influence of others, one may perceive that the benefits of using the EKR outweigh the costs.

Perceived usefulness significantly affects both affective and calculative commitment, but not moral commitment. As a user recognizes the benefits and values gained from using the EKR, he or she will likely enjoy the use of the EKR because he or she maintains a positive attitude and loyalty toward the usage experience. Similarly, a user may also realize the cost of switching to another knowledge source is too high, thus developing calculative commitment.

### **Model Comparisons**

I conducted additional analysis to determine whether the proposed research model explains more variance than the major IS continuance theoretical frameworks, TAM and ECM. As shown in Figures 6.7 and 6.8, my research model explained an additional 1.6% of variance in users' continuance intention than ECM, and an additional 0.8% of variance in continuance intention than TAM. Further, the much higher predicable power of

commitment to continuance intention than to satisfaction highlights the value of incorporating the construct of commitment into the IS continuance research.

## **Theoretical Implications**

In this study, I developed and empirically tested an integrated research model of EKR continued usage. This study raises theoretical implications in the area of knowledge management in general and EKRs in particular. My research represents one of the first attempts to empirically examine users' continuance intention of knowledge management applications. I present a different perspective on technology acceptance/continued usage by introducing commitment to explain continued IS usage. By integrating commitment and ECM, my research offers a useful framework for future studies on technology use. It demonstrates that both user commitment and perceived usefulness are strong predictors of EKR continuance intention. The explanatory power of the research model demonstrates its usefulness to predict users' continuance intentions of KM technologies, such as EKRs. It also establishes the antecedents of commitment and satisfaction based on expectation confirmation theory and commitment theory.

This study is one of the first to incorporate the multi-dimensional commitment construct in IS continuance research. I distinguish between commitment and satisfaction and showed the strengths of their relationships to continuance intention individually. By including both commitment and satisfaction, the model offers additional theoretical insights to further explain IS continuance. Specifically, I conceptualize commitment as a second-order factor with three formative dimensions. By investigating the effects of subjective norms, organizational identification, and perceived usefulness on both commitment as a second-order factor and direct effects of the three dimensions, the

results shed light on how these factors affect commitment and its sub dimensions. Thus, it is important to consider the different dimensions of commitment rather than conceptualizing it as a unidimensional construct.

Apart from examining the factors that determine continuance intention, this study also contributes to theory by unveiling factors that do not appear to affect users' commitment to EKR, i.e., organizational identification. In further analysis comparing novices to experts, the findings indicate that organizational identification has different effects depending on users' years of experience and years of employment with the firm. By comparing the difference between knowledge seekers and contributors, the findings exhibit different strengths of relationships among the factors affecting commitment and user satisfaction between the two groups. Previous research has examined user behavior by treating users as a homogenous group. Thus, this study contributes to current research by enriching our understanding on importance of the factors for different EKR user groups.

Lastly, this study also makes a timely contribution to the ongoing accounting research on the knowledge management tools currently in use in public accounting firms (Vera-Munoz et al. 2006). By testing the research model in a public accounting organizational context, this study represents one of the first attempts to empirically examine user behavior of knowledge management tools in public accounting firms. Public accounting firms are increasing their spending on knowledge sharing applications to encourage knowledge exchange among professionals. The research model offers a basis to continue investigating research questions related to knowledge sharing in public accounting firms.

## **Managerial Implications**

The results of this study raise interesting implications for practitioners interested in knowledge management and particularly for public accounting firms on how to leverage EKR to gain a competitive advantage. For example, research shows that knowledge sharing is considered important for the effectiveness of the audit procedures (Vera-Munoz et al. 2006). Because of the globalization of accounting firms and regulatory requirements, it is more important than ever to utilize knowledge-sharing tools to encourage knowledge reuse. EKR enhance access to important materials and documents throughout the organization and promote knowledge reuse which minimizes duplication of efforts. Merely having these systems in place does not always guarantee effective knowledge management within the organization. By understanding what factors influence continued usage and how they affect users' usage behavior; the results shed light on how organizations can promote a higher usage level of EKR which should improve efficiency and organizational learning.

First and foremost, an EKR needs to contain useful and meaningful content. Perceived usefulness is one of most salient indicators shown in the research model. Firms should spend the resources and effort to improve the quality of the EKR to effectively use the knowledge databases. Second, not everyone will use the EKR just because they are there. Firms may consider implementing training and education programs to promote the usage. Third, user characteristics such as knowledge expertise may play a role in users' continued usage behavior. Knowledge novices and experts may also have different perceptions and motivations in using EKR. By understanding the differences between novices and experts, an organization can help foster employees'

sense of commitment to the EKR, and increase their willingness to electronically contribute their ideas and information. Furthermore, comparisons between knowledge seekers and contributors revealed differences in the way organizational identification and subjective norms affect individual EKR commitment. To increase employees' willingness and commitment to use the EKR, firms can provide open communication for employees to discuss their experience with the EKR. Fourth, management needs to develop strategies and tactics to encourage employees to actively and continuously share their knowledge in the EKRs. For example, implementing a reward and incentive program may boost users' sharing activities. Firms can also conduct initiatives to increase employees' organizational identification to encourage open knowledge sharing. In Table 7.1, I offer specific suggestions and guidelines for organizations on EKR usage, examples of which are based on the major findings and key insights.

**Table 7.1 - Management Guidelines to Encourage Continued Usage of EKR**

<b>Key Finding</b>	<b>Examples of Related Guidelines for Management</b>
Users' commitment to the EKR is positively related to their EKR continuance intention.	<ul style="list-style-type: none"> <li>• Deepen user affective and calculative commitment by openly encouraging employees to actively build and manage organizational knowledge</li> </ul>
Subjective norms are positively related to users' affective commitment and moral commitment to the EKR.	<ul style="list-style-type: none"> <li>• Establish clear communication within the organization to promote EKR usage</li> <li>• Promote dialogue among employees to all levels to discuss their EKR usage</li> </ul>
Users' extent of confirmation is positively related to their perceived usefulness of EKR and their satisfaction with EKR use.	<ul style="list-style-type: none"> <li>• Solicit employees' expectations of the EKR before modification and upgrade</li> <li>• Request employees' evaluation of the EKR in a timely manner</li> </ul>
Perceived usefulness is positively related to users' satisfaction, commitment with EKR use, and continuance intention.	<ul style="list-style-type: none"> <li>• Increase the quantity and quality of knowledge on the EKR</li> <li>• Generate knowledge and learning resources quickly and make them accessible at the point and moment of need</li> <li>• Regularly maintain and update the EKR avoid inaccurate and out of date information</li> </ul>
Organizational identification is positively related to users' affective and moral commitment to the EKR.	<ul style="list-style-type: none"> <li>• Establish explicit communication of the organization's goals and values</li> <li>• Increase employees' organizational identification by facilitating the individual's professional expectations and strengthening a professional identity</li> </ul>

## **Limitations and Suggestions for Future Research**

The results of this study should be interpreted in light of its limitations. First, this study investigates users' continuance intentions related to electronic knowledge repositories; one of the most commonly used knowledge management applications. The results may not be generalizable to other types of KM applications and knowledge sharing tools. Second, due to the imbalance in the number of knowledge contributors versus seekers, readers should be cautious when interpreting and generalizing from the results of the knowledge seeker and contributor group comparisons. I plan to collect additional data from knowledge contributors and subsequently re-run the group analysis to confirm and further explore current findings. Third, the use of EKR from the large public accounting firms may also limit the generalizability of the results. Future studies can validate the research model in small to mid-size firms as well as firms in other industries. Future research can also test and expand the model to other contexts. Fourth, this limitation originates from the biases inherent in most online survey-based research. Although I tried to minimize and test for nonresponse bias, I acknowledge that nonresponse bias will not be completely eliminated. While this limitation is recognized, using multiple firms and striving for a larger sample helped to increase the generalizability of the findings. Lastly, operational limitations prevented me from conducting a longitudinal study and collecting actual usage data as the dependent variable. I used behavioral intention as a proxy for continued usage behavior. While behavioral intention is predominantly used as the dependent variable in IS continuance research (e.g., Bhattacharjee 2001; Malhotra and Galletta 2005), a longitudinal examination and

multiple measurements of intention and actual behavior at different time periods would provide a more rigorous test of EKR continued usage (Limayem and Hirt 2003).

## **Concluding Remarks**

This study examined the integrated effect of the expectation-confirmation model and commitment-based model on users' continued usage of electronic knowledge repositories. The results demonstrate that perceived usefulness and commitment are the strongest predictors of users' continuance intention. In addition, this study indicates that subjective norms, organizational identification, and perceived usefulness affect various dimensions of commitment. The results further suggest that different user groups may have different expectations and motivations for using EKRs. My research represents one of the first attempts to integrate ECM and commitment to examine users' IS continued usage. Organizations considering implementation and innovations of EKRs may draw upon the results of this study and the management guidelines offered to ensure effective and successful knowledge sharing among employees.

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## Appendix A - Survey Instrument

### Instructions:

A PhD student from the department of accounting and information systems at Virginia Tech is seeking assistance with her dissertation which examines users' continued usage of knowledge repositories or knowledge bases in public accounting firms. A knowledge base is defined as an electronic store of content related to all subjects about which an organization maintains knowledge such as \_\_\_\_\_ and \_\_\_\_\_ used by employees at \_\_\_\_\_ to both contribute and seek useful information and documents for work-related tasks.

If you have used the knowledge bases, you are in a unique position to contribute to this research by answering questions in an online survey. To help her with data collection, please take a few minutes to fill out the online survey. Your response is anonymous and will be kept strictly confidential. The survey should take you approximately 10 minutes to complete. Please fill out the survey as accurately and candidly as you can.

Your response is very important and much appreciated. If you have any questions, please contact Hui Lin via email (hlin@vt.edu). Thank you very much for your assistance!

### Section I.

1. What is your primary purpose for using [the EKR]? (Please select the ONE best applicable answer)
  - a. To seek knowledge by finding relevant documents (e.g., PowerPoint presentation, documentation template)
  - b. To contribute knowledge by adding documents (e.g., PowerPoint presentation, documentation template)
  
2. On average, how much time do you spend on [the EKR] when you visit?
  - a. 15 minutes or less
  - b. 16 to 39 minutes
  - c. 40 to 59 minutes
  - d. 60 minutes or more
  
3. What is your frequency of using [the EKR]?
  - a. Never
  - b. Once a year
  - c. More than once a year
  - d. Once a month
  - e. More than once a month
  - f. Once a week
  - g. More than once a week
  - h. Daily

4. In the last six months, how many times have you used [the EKR] to find information or documents for work?
  - a. 0 – 3 times
  - b. 4 – 8 times
  - c. 9 – 13 times
  - d. 14 – 19 times
  - e. More than 20 times
  
5. In the last six months, how many times have you contributed knowledge to [the EKR]?
  - a. 0 – 3 times
  - b. 4 – 8 times
  - c. 9 – 13 times
  - d. 14 – 19 times
  - e. More than 20 times
  
6. What is your frequency of seeking knowledge from [the EKR]?
  - a. Never
  - b. Once a year
  - c. More than once a year
  - d. Once a month
  - e. More than once a month
  - f. Once a week
  - g. More than once a week
  - h. Daily
  
7. What is your frequency of contributing knowledge to [the EKR]?
  - a. Never
  - b. Once a year
  - c. More than once a year
  - d. Once a month
  - e. More than once a month
  - f. Once a week
  - g. More than once a week
  - h. Daily
  
8. Of the total time you spend on [the EKR]; what percentage of time is spent contributing information as opposed to seeking information?
  - a. 0 – 20%
  - b. 21 – 40%
  - c. 41 – 60%
  - d. 61 – 80%
  - e. 81 – 100%

9. Of the total time you spend on [the EKR]; what percentage of time is spent seeking information as opposed to contributing information?
- a. 0 – 20%
  - b. 21 – 40%
  - c. 41 – 60%
  - d. 61 – 80%
  - e. 81 – 100%
10. In general, how often do you use the knowledge base in your work?
- a. Never
  - b. Rarely
  - c. Sometimes
  - d. Very Often
  - e. Always

## Section II.

Please use the following scale to indicate the extent to which you agree with each of the statements below:

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

Construct	Scale Items	Adapted from
Subjective Norms	People who influence my behavior think I should use [the EKR].	(Venkatesh et al. 2003)
	People who are important to me think I should use [the EKR].	
	My supervisor is very supportive of the use of [the EKR] for my job.	
	In general, the organization has supported the use of [the EKR].	
Organizational Identification – Self-categorization and labeling	I feel strong ties with this organization.	(Edwards and Peccei 2007; Mael and Ashforth 1992; O'Reilly III and Chatman 1986)
	My membership with this organization is important to me.	
Organizational Identification – Belonging and membership	I feel sense of "ownership" for this organization rather than being just as an employee.	
	I am glad I chose to work for this organization rather than another company.	
Organizational Identification – Values and goals	The reason I prefer this organization to others is because what it stands for, it values.	
	What this organization stands for is important to me.	
Affective Commitment	I enjoy discussing the good aspects of the knowledge base with other people.	(Li et al. 2006; Meyer and Allen 1997)
	It is easy to become attached to the knowledge base.	
	The knowledge base has a great deal of attraction for me.	
	I feel a sense of belonging to the knowledge base.	

<b>Construct</b>	<b>Scale Items</b>	<b>Adapted from</b>
Calculative Commitment	My work would be negatively affected if I stop using [the EKR].	(Gounaris 2005; Li et al. 2006; Meyer and Allen 1997; Penley and Gould 1988)
	It would be too costly for me to stop using [the EKR].	
	It would be very hard for me to stop using [the EKR] right now, even if I wanted to.	
	There is a high cost to stop using [the EKR].	
Moral Commitment	I feel dedicated to [the EKR].	(Meyer and Allen 1997)
	I would feel guilty if I stopped using [the EKR] now.	
	I would not stop using [the EKR] right now because I have a sense of obligation to it.	
	I feel it is my duty to use [the EKR].	
Perceived Usefulness	Using [the EKR] improves my work performance.	(Venkatesh et al. 2003)
	I find [the EKR] useful in my work.	
	Using [the EKR] makes it easier to do my work.	
Confirmation	My experience with using [the EKR] was better than what I expected.	(Bhattacharjee 2001)
	The service provided by [the EKR] was better than I expected.	
	Overall, most of my expectations from using [the EKR] were confirmed.	
Satisfaction	On a scale of 1 to 7, how do you feel about your overall experience of [the EKR] use?	(Bhattacharjee 2001)
	very dissatisfied/very satisfied	
	very displeased/very pleased	
	very frustrated/very contented	
	absolutely terrible/absolutely delighted	
EKR Continuance Intention	I plan to keep using [the EKR] in the future	(Li et al. 2006)
	I intend to continue using [the EKR] in the future.	
	I expect my use of [the EKR] to continue in the future.	

### Section III.

11. Which age group do you belong to?
  - a. 25 or younger
  - b. 26-30
  - c. 31-40
  - d. 41-50
  - e. 51-60
  - f. 61 or older
  
12. What is your gender?
  - a. Male
  - b. Female
  
13. How many years of experience have you had in public accounting?
  - a. Less than 1 year
  - b. 1-2 years
  - c. 3-5 years
  - d. 6-10 years
  - e. Over 10 years
  
14. How many years have you been employed at [the accounting firm]?
  - a. Less than 1 year
  - b. 1-2 years
  - c. 3-5 years
  - d. 6-10 years
  - e. Over 10 years
  
15. What is your current position at [the accounting firm]?
  - a. Staff
  - b. Senior
  - c. Manager
  - d. Senior Manager
  - e. Partner/Director
  
16. How long have you held your current position at [the accounting firm]?
  - a. Less than 1 year
  - b. 1-2 years
  - c. 3-5 years
  - d. Over 5 years

17. What type of work setting do you work in?
- a. I usually work at my office location alone
  - b. I usually work at my office location with other team members
  - c. I usually work at a client location alone
  - d. I usually work at a client location with other team members
  - e. I primarily work from home
  - f. Other, please specify: \_\_\_\_\_

18. Where is your office location?

\_\_\_\_\_

19. What is the highest level of education you have completed?

- a. Associate's degree
- b. Bachelor's degree
- c. Master's degree
- d. Ph.D.

20. Please state your primary line of practice at [the accounting firm] (e.g., audit, tax, consulting)

\_\_\_\_\_

21. Please state your specific practice group at [the accounting firm] (e.g., corporate tax, ERP implementation, government & non-profit)

\_\_\_\_\_

22. Please state your industry specialization (e.g., financial services, utilities)

\_\_\_\_\_

**You are done!**  
**Thank you for your participation!**