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Making the Most of Information Technology & Systems Usage: A Literature Review, Framework and Future Research Agenda

Abstract

This detailed literature review has considered a relatively large quantity (152 total) of scholarly empirical publications, conference proceedings, books and popular market reports published over the last 15 years, i.e., from January 2000 to December 2014, in the field of human continuous usage behavior and in the context of information technology/systems. Based on the search results, the literature was synthesized, segregated into four major domains according to the purpose, nature and usage of the information technology/systems. The authors believe that this segregation within the information technology & systems continuous usage literature provides greater scalability, flexibility and space for future research. Moreover, this proposed segregation allows for future research to include more 'systems' in each category depending on the usage, relevance and nature of the 'systems' that will evolve over the period of time. Scalability will provide more insights and ideas that will help future research investigate and propose domain-specific conceptual or business models that will help facilitate an understanding of information technology/systems continuous usage according to the nature of the 'system.' Conclusions and recommendations are drawn and priorities are proposed for continuing research.

Keywords: Literature review; human behavioral intention to use; human-computer interaction; information technology/systems; Technology Acceptance Model

1. Introduction

Extensive research (e.g., Shank, 2013; Norris, Pauli, & Bray, 2007) has sought to explore the ways in which society and human beings have been affected by information technology/systems (IT/S) and how the IT/S revolution has changed the way we conduct our lives as well as our behavior. IT/S are human-related systems; humans use IT/S to fulfill their personal goals and desires; and they design, develop and operate IT/S to control and manage organizations' information databases. Organizations have invested in a plethora of IT/S, and the benefits that can be gained from these systems depend on their usage. Consequently, the adoption and the usage of IT/S continue to be an important consideration for organizations. As explained by Bhattacherjee (2001a), acceptance (or pre-adoption) generally refers to an individual's decision to use IT/S for the first time; continuous usage (or post-adoption) refers to the individual's decision to embrace the IT/S well beyond its first use and continuously exploit and extend the functionality built into IT/S.

Available evidence (e.g., Venkatesh, Brown, Maruping, & Bala, 2008; Jasperson, Carter, & Zmud, 2005) supports these arguments and strongly suggests that most IT/S are underutilized; users, including consumer and employees, apply a narrow band of IT/S features; users rarely initiate extensions of the available IT/S features; and organizations underutilize the functional potentials of the majority of the currently developed and deployed IT/S. Consequently, understanding post-adoption human behavior intention has emerged as an important issue in IT/S research (e.g., Saeed & Abdinnour-Helm, 2011). Investments and innovations in IT/S illustrate this phenomenon. According to the 'Information Technology (IT) Spending Forecast' published by Gartner (2014), worldwide dollar-valued IT spending will grow 3.2 % in 2014, reaching USD 3.8 trillion. The existing research has demonstrated that it costs approximately six times as much to recruit a new subscriber as it does to maintain

an old one in paid membership contexts (Spiller, Vlasic, & Yetton, 2007). For example, in the case of Internet service providers (ISPs), an extra 1 % retention can add as much as 5 % to the bottom line of the business (Vatanasombut, Igbaria, Stylianou, & Rodgers, 2008). Furthermore, many e-commerce companies, particularly online retailers, have begun to realize that because their competitors are just a click away, retaining the company's customer base in addition to attracting new customers are critical for sustaining a revenue base, profitability and a market share (Bhattacherjee, 2001a). Researchers have been intrigued by these arguments, and the IT/S continuous usage intention has evolved as a key dependent variable in marketing and IS research (e.g., Limayem, Hirt, & Cheung, 2007) and many studies have empirically examined its determinants (e.g., Lu & Yang, 2014).

The use of IT/S across diverse fields and the reliance on IT/S for high-end, routine operations and common use is growing. Practitioners, researchers, and government alike have begun to pay attention to long-term or continuous IT/S usage, which is a topic that is often neglected (Verhagen, Feldberg, Van den Hooff, Meents, & Merikivi, 2012). Nevertheless, ensuring the usage of information technology and communication resources in an organization is only one aspect of IT/S success, it is clearly one of the most important.

Against this background, this study seeks to contribute to the understanding of IT/S and strengthen 'information technology & systems continuous usage (IT/SCU)' as a field of study. To achieve this objective, this study has undertaken a detailed literature review by reviewing a relatively large quantity of studies to understand the continuous usage phenomenon and to help promote a higher utilization of IT/S across several organizations. In addition, this literature review aims to contribute to a better practical and theoretical understanding of the consequences that drive human behavioral intention towards embracing

and using information technology and systems. Similarly, the authors understand that this study will significantly contribute to the IT/SCU literature by exploring and analyzing the current state of knowledge, including where excess research exists and where new research is needed; and providing a solid theoretical foundation for the proposed field of study (Levy & Ellis, 2006).

Another significant contribution of this literature review is the proposed classification framework consisting of four broader domains: Continuous Usage of Mobile Information Systems, Continuous Usage of Electronic Business Information Systems, Continuous Usage of Social Information Systems, and Continuous Usage of Electronic Learning Information Systems.

The focus of our review covers articles published over the last 15 years, i.e., from January 2000 to December 2014 (inclusive), in the leading academic journals and conference proceedings that examine IT/SCU. In addition, popular market reports, ideas, and relevant books that are commercially available have been included.

Within the context of this review, we use the broader term "information technology/systems" to refer to a set of systems, technologies, processes, business applications, and software. Similarly, a broader term "human" is used to denote the unit of analysis or a participant, which includes users, netizens, members, students, faculty members, consumers, customers, employees, workers, managers / executives, and so forth. Although with a different landscape as discussed in the succeeding sections, the terms 'review' and 'literature review' are used interchangeably in this study.

The paper proceeds as follows. The succeeding sections provide a brief explanation of information systems, their historical background (Section 2) and a brief overview of previous literature reviews written in this direction (Sections 3). The research methodology and theoretical framework are presented in Section 4. The classification framework is presented and illustrated in Section 5. The results of the study are presented and discussed in Section 6 along with a synopsis of theoretical and practical implications. The study concludes with a discussion of future research possibilities.

2. Evolution of Information Systems - Definition and historical perspective

'*Computers have been considered as one of the most important inventions in the 20th century and the future technology trends exclusively emphasize enhancement in human-computer interaction*' (Wang & Nelson, 2014, p.82).

Given the myriad of definitions and dimensions used to describe information systems, the first challenge in conducting a detailed review of the prodigious range of information technologies and systems is arriving at an understanding of an IS and what is not considered an IS. Research has paid less attention to understanding the difference between an IS and the rest of the technology-based initiatives that cannot be considered an IS for one reason or another. Nonetheless, the research (e.g., Chang, 2013; Lee, 2009) has used the terms IS and IT interchangeably, and IT has been considered a subset of IS.

To better understand and provide a robust examination of IT/SCU, the authors divert their attention from empirical studies to other published sources, such as books, market analyses and reports. Belle, Nash, and Eccles (2003, p.24), in their book entitled, 'Discovering

Information Systems,' explained that for any technology-related initiative to be considered an information system, it should fulfill the basic components that interact, such as the hardware or physical equipment used to process and store data; the software and procedures used to transform and extract information from the data; the data that represent the activities of the business; the network that permits the sharing of resources between computers;, and the people who develop, maintain and use the system. Conclusively, IS appears to be a combination of three major parts: people, business processes, and Computers (information technology), which are commonly referred to by Frost, Pike, Kenyo, and Pels (2011, p.12) as the 'information systems triangle'. Providing an explicit understanding of information systems, Buckland (1991) argued that information systems are innovative systems that provide useful information services to keep human beings or users becoming informed.

Historically, until the 1960s, the development of data network technology led to the development and adoption of electronic data processing (EDP) systems. The most famous EDPs include transaction support systems (TSS), which were meant for lower-level non-management staff to process routine daily business transactions such as accounting and finance as well as to produce pre-defined management reports. Avram (1994) argued that TSS are information systems that collect data and distribute operational data both within and between organizations. Retrospectively, TSS helps planners and managers make short-term, limited-impact and tactical decisions. Table 1 provides a detailed evolutionary path of information systems in different eras.

"Insert Table 1 about here"

In the late 1960s, another capability was added to the computer systems to process data into more meaningful informative reports. As a result, research and business instigated the concept of the management support systems (MSS). The primary role of MSS was to support middle management in their decision-making processes. While some envisioned MSS as "central nervous systems" for organizations (Watson, Rainer, & Koh, 1991), in practice, they largely expanded the reporting system and provided middle management with structured, periodic reports. Li, Mcleod, & Rogers (2001, p.307) explained that *'Marketing was the first functional area to embrace the concept of a management support system and tailor it to the needs of its managers.'* Kotler (1966) introduced the term 'marketing nerve center' and explained the significance of creating a separate area for computer resources specifically dedicated to supporting marketing activity.

In the 1970s, subsequent to the emergence of multinationals in almost every business sphere and with technology altering the nature of competition, a new breed of information systems with unique characteristics began to emerge, providing assistance for specific decision-making tasks along with an interactive and dynamic support for higher management in their day-to-day decision-making processes. These systems were usually referred to as decision support systems (DSS).

In the early 1970s, business journals started to publish articles on DSS, management decision systems and strategic planning systems. For example, in 1976, Sprague and Watson published an article examining DSS and their application to banks. In 1971, Michael S. Scott Morton's book titled, 'Management Decision Systems: Computer-Based Support for Decision Making' was published. Professors Capon and Hulbert, in their paper published in 1975, described the application of decision system analysis (DSA) to four marketing decision

systems, such as pricing, forecasting, advertisements and new product development. They concluded that the application of DSA to key marketing decisions identified various inconsistencies in marketing operations and provided significant insights into the problems faced by a company, a large multinational British firm.

As the evolution of computer support for organizational personnel is considered, one group is conspicuously missing: the senior executives of firms (Watson, Rainer, & Koh, 1991). Although the earlier advancement in the information systems domain (e.g., TSS, MSS, DSS) was thought to serve different management levels in an organization, unfortunately, little support was provided to higher management. It became evident that most top executives did not directly use TSS, MSS or DSS to generate reports and analytics. Executive support systems (ESS) were developed during the 1980s in a growing number of firms (Power, 2007). During this time, advancements were also noticed in the development and deployment of artificial intelligence (AI) applications in business information systems. As a result, more advanced and self-operated information systems, such as expert systems (ES) and knowledge management systems (KMS), were introduced to large corporations and financial institutions to supplement complex decision-making process, producing better results and increased profits. In its current manifestation, KMSs fall into two broader categories: decision support technologies and the workgroup support systems (Lin, 2014). Decision support technologies are largely meant to support the existing organizational knowledge. The workgroup support systems are general systems that help groups of knowledge workers performances their jobs better.

Another interesting development that continues to elude practitioners and research alike within the information systems domain is the development and deployment of Enterprise

Recourse Planning (ERP) Systems. ERPs were first introduced during 1980s but their usage was observed during 1990s mainly in large organizations. An ERP system is a commercial software package that integrates business information and processes within and across all functional areas, enabling executives to manage resources efficiently and effectively (Nwankpa, 2015; Yoon, 2009). The prominent ERP system examples include SAP ERP software and Oracle's E-Business Suite (Chou, Chang, Lin, & Chou, 2014b). ERP systems have the potential capability to provide multiple end-users with rapid real-time information (Chou, Lin, Lu, Chang, & Chou, 2014a), strategic and competitive advantage (Nwankpa, 2015); and facilitate integrated and real-time planning, production, and customer response (Bradford & Florin, 2003). Consequent to these benefits, the ERP system has become the backbone of the information system of the company (Yoon, 2009).

3. Previous literature reviews on information technology & systems usage

A difference is observed between and among the terms 'review,' 'literature review' and 'meta-analysis'. As explained by Frohberg, Göth, and Schwabe (2009), a review is broader than a literature review but less empirical than a meta-analysis. Prior research has conducted literature reviews and meta-analysis in the broader field of IT/S and published in leading journals (See Appendix A). Nevertheless, a majority of these efforts have explored and synthesized the academic literature on single information systems, such as m-banking (Shaikh & Karjaluoto, 2015), m-technology (Sanakulov & Karjaluoto, 2013), e-banking (Hoehle, Huff, & Goode, 2012a), m-marketing (Varnali & Toker, 2010), m-learning (Frohberg, Göth, & Schwabe, 2009), m-payment (Dahlberg, Mallat, Ondrus, & Zmijewska, 2008), e-commerce (Ngai & Wat, 2002), m-commerce (Ngai & Gunasekaran, 2007), m-

internet (Gerpott & Thomas, 2014), knowledge management systems (Alavi & Leidner, 2001), and online communities (Malinen, 2015).

Other aspects of the landscape, such as IS security (Dhillon & Backhouse, 2001), IS outsourcing (Gonzalez, Gasco, & Llopis, 2006), business process reengineering (Lee & Dale, 1998), IT and organizational performance (Melville, Kraemer, & Gurbaxani, 2004), and supply chain management (Srivastava, 2007) were also synthesized and analyzed. Notably, none of these efforts has discussed the post-adoption scenario in the IS context. Nevertheless, an analysis of the research on information systems (1981-1997) was conducted by Claver, González, and Llopis (2000) in which the underlying aim was to highlight the most frequently researched topics, the research method used and to determine which authors published the most articles in the IT/S field. In our opinion, their objective did not fulfill the post-adoption literature review criteria. In another attempt, a detailed review of the IS literature to discover the extent of multi-method research was conducted by Mingers (2003). Here, the author addressed the question of the extent of multi-method research that is carried out and published in IS journals. The main conclusions of this review were that despite the availability of a high proportion of empirical papers in IS Journals, only approximately 20 % use a combination of methods. Of these, a large quantity of papers used the traditional methods of surveys, case studies, interviews, and observations. In addition, only 15 % of instances used ‘nontraditional’ methods (such as ethnography, action research, and consultancy), and these proportions have not changed significantly over time.

4. Research methodology

The research methodology used by Leitner and Rinderle-Ma (2014) was largely adopted. First, the research objectives and questions were identified, followed by an extensive literature search using both horizontal (e.g., Google Scholar) and vertical (e.g., ScienceDirect) search options. Based on the search results, the literature was synthesized and classified into four major domains to provide a guiding structure, effectively accumulate knowledge, and interpret research outcomes, gaps, and challenges.

4.1 Literature search

Using various key terms such as 'IS Continuous Intention,' 'IS Continuous Usage,' 'IS post-Adoption,' 'IS Continuous Acceptance,' 'IS Infusion,' 'IS Continuous Adoption' 'IS Assimilation' and 'IS Extended Usage' (abstract, title, keywords, methodology), researchers in the present study used Google Scholar to perform comprehensive horizontal searches (Leitner & Rinderle-Ma, 2014). Similarly, various scientific databases, notably ScienceDirect, Wiley, JSTOR, ACM, IEEE, ABI/INFORM, SAGE, Palgrave, Emerald, Inderscience, and Springer, were vertically searched. To examine the recent developments in this mature field, we set the investigation period from January 2000 to December 2014 (inclusive).

In addition, considering the interdisciplinary nature of this field, we searched for articles and conference proceedings across various journals in different disciplines such as marketing, finance, information technology, business and commerce. During the vertical search, relevant IS journals such as MIS Quarterly (MISQ), Computers in Human Behavior (CHB), Information and Management (I&M), Information Systems Journal (ISJ), European Journal of Information Systems (EJIS), and DSS were consulted. In addition, conferences such as the

IEEE International Conference on Information Society (i-Society), the IEEE International Conference on System Science (HICSS) and the ACM - SIGCHI Conference on Human Factors in Computing Systems were examined. Finally, we looked through the bibliographies of key articles to ensure that we had not overlooked other articles (Leidner & Kayworth, 2006).

4.2 Literature selection

Given the pure vastness, diversity and flexibility of the IT/SCU literature, we chose to limit our initial sample of empirical studies to those in which IT/SCU was significant themes of the manuscript. This strategy, as explained by Leidner and Kayworth (2006), is adopted and used to avoid having an unmanageable sample of articles with limited value. In addition, to broaden our understanding of the empirical IT/SCU, we also focused on identifying key non-empirical IT/SCU manuscripts and reading books or management journals that focused on theoretical and practical perspectives of continuous usage.

The resulting 152 relevant and useful peer-reviewed articles along with several conference proceedings, which came from 56 scholarly journals, 8 conference proceedings (see Appendix B), were selected, included and reviewed to build a comprehensive bibliography for this review, discussing continuous intention and usage in support of various information technologies, systems, tools and applications. IT/S such as m-banking, m-commerce, m-shopping, m-payments, internet (net) banking, virtual communities, social networking sites, social networking games, web-based services, computer-based assessments, e-learning, e-shopping and almost everything that met the purpose of this review were examined and

reviewed. We understand that this research was not exhaustive for a review, but it serves as a comprehensive base for an understanding of the research on IT/SCU.

The method for analysis of empirical IT/SCU studies included in this review was to first classify each study according to its focus on a designated category. Next, each empirical study was reviewed to determine the general IT/SCU theme, the research methodology used, the unit of analysis, the independent, dependent and control variables used, and relevant findings (See Appendices B and C). The data contained in these appendices provide the basis for a subsequent analysis to identify the themes in IT/SCU as well as the perceived gaps and directions for future research (Leidner & Kayworth, 2006).

4.3 Formation of the framework and domains

Considering a substantial quantity of articles, conference proceedings and a significant body of non-empirical work, the main challenge was to segregate and classify the literature into a meaningful and solid structure that addresses and organizes continuous human intention and IT/S usage. To that end, we have taken a fairly broad view. The literature was synthesized, segregated and classified into various domains according to the purpose, nature and usage of the IT/S. As a result, it was decided that four major domains should be created that consist of various IT/S.

During the second stage, the category validation was established through an interactive process of assessing, reviewing and revisiting this manual cataloguing of IT/S into different domains by a group of potential respondents that consisted of experts and academics with extensive IT/S experience. We then pretest the domain formation with three experts. The main objective of conducting this expert review was to ensure the clarity, relevance and

appropriateness of each system in its respective domains; these expert reviews helped us establish the domain validity. Based on the feedback and concerns received from the reviewers, necessary adjustments were made.

5. Classification framework

The studies selected and included in the review focused on the continuous behavior intention and use in support of IT/S. This review identifies and presents 54 information technology and systems classified into four broader domains: Continuous Usage of Mobile Information Systems (CUMIS), Continuous Usage of Electronic Business Information Systems (CUEBIS), Continuous Usage of Social Information Systems (CUSIS), and Continuous Usage of Electronic Learning Information Systems (CUELIS; see Figure 1, where *N* indicates the number of studies included in each domain).

"Insert Figure 1 about here"

Considering the importance and the pervasive role of IT/S, we believe that this segregation within the IT/SCU literature will provide greater scalability, flexibility and space for future research. In addition, this proposed segregation allows future research to include more 'systems' in each category, depending upon the usage, relevance and nature of the 'systems' that will evolve over the period of time. Scalability will provide more insights and ideas to help future research in investigating and proposing domain-specific conceptual or business models that will help to understand the IT/S continuous usage according to the nature of the 'system' (Appendix C provides a detailed summary of domain-specific distribution of articles).

We argue that our proposed framework is used as a meta-model to classify the existing massive and largely separate literature that influences the IT/S continuous human intention and usage. The framework is useful for these purposes because it is conceptually sound and draws from previous research; it eliminates redundancy in the findings and analysis and helps to bring clarity to the multiple topics and to the vague, conflicting terminology used in the professional and academic literature on IT/S continuous human intention and usage (Dahlberg, Mallat, Ondrus, & Zmijewska, 2008). Therefore, the aim is to categorize past research, analyze the research findings and identify and propose meaningful research questions for future research in each category or domain.

The first domain in this framework is called CUMIS. This domain was formed after considering an increasing number of studies in this domain and the exponential usage of smartphones, tablet PCs and other handheld devices for different purposes. Consequently, post-adoption studies on mobile banking (including mobile payments), mobile commerce (including mobile shopping), mobile services (including the mobile Internet) and so forth have been included in this domain.

The second domain called CUEBIS was formed after considering an exponential growth and usage in online shopping, e-commerce and enterprises systems. This domain includes electronic business and commerce-related applications and services, such as Internet or online banking, online shopping, and electronic purchasing. Similarly, online investments, online stock trading, financial planning, brokerage services and so forth have also been included in this domain. Enterprise or business systems such as ERP Systems, supply chain network, and customer relationship management were also included in this domain.

Social networking and virtual socialization (widely known as Web 2.0) have become increasingly important environments for social interaction. For social virtual worlds (SVWs) to be economically sustainable, attracting users and retaining existing users is a paramount issue (Mäntymäki & Merikivi, 2010). Concerning the growing usage and research in social networking and virtual worlds, the third domain is called CUSIS. This domain includes, among others, various papers that have investigated and discussed the usage of social networking sites (including SVWs), social networking games (considering the nature of *online games*, we have excluded it from this domain and included it in the CUEBIS domain), online communities (including virtual communities), and so forth. According to eMarketer (2013) the number of social network users around the world would rise from 1.47 billion in 2012 to 1.73 billion in 2013, an 18 % increase. By 2017, the global social network audience will total 2.55 billion. As a consequence of these predications, creating a separate domain on social IT/S will allow for valuable future research possibilities, as discussed in the succeeding sections.

The fourth and final domain in our proposed framework, called CUELIS, includes various technology and systems, such as electronic learning (including applications), electronic textbooks, student information systems, and cyber universities. To bring more clarity to this domain, we have excluded from this domain all e-leaning systems that are aimed at employees or managers as a part of their organization-wide on-the-job learning and training programs. Consequently, all of those systems have been included in the CUEBIS domain.

6. Results and discussion

The study of continued use has become one of “the most welcome developments” in recent IT/S research (Guinea & Markus, 2009, p. 433). As a result of their significance, continuous

usage behavior and intention to use IT/S have received great attention from researchers. Consequently, a growing body of literature in continuous intention and usage has discussed two distinct streams. The first stream is supported by the expectation confirmation theory proposed by Bhattacherjee (2001b), whereas the second stream, proposed by Jasperson, Carter, and Zmud (2005), is based on the theory of reasoned action and diffusion theory and suggests the initial use, habits, and a feature-centric view of technology as factors specifically relevant to continuous usage (Choi, Kim, & Kim, 2011). As a result, the first stream is more appropriate to study the consumer IT/S adoption and usage, and the second stream is more fitting to study the organizational IT/S adoption and usage.

This review yields several key findings and has been divided into four major sub-sections: major findings; domain-specific major findings; major models, theories and frameworks used in IT/SCU; and major factors that influence human continuous behavioral intention, attitude and use of IT/S.

6.1 Major findings

The studies included in this review investigated and identified several influences on human behavioral intentions, attitudes and actual usage in a variety of IT/S. For example, of the 152 studies included in this review, about 75 % of the studies predicted the continuous behavioral intention to use IT/S as a proxy for actual use (e.g., Agudo-Peregrina, Hernández-García, & Pascual-Miguel, 2014). Some studies (23 %) identified the consequences that affect the continuous or actual usage of IT/S, a process usually defined as the internalization of technology (e.g., Yim, Forman, & Kwa, 2013). Only one study (Verhagen, Feldberg, Van den Hooff, Meents, & Merikivi, 2012) used ‘attitude towards use’ as a behavioral variable in

understanding the usage of virtual worlds. Within the behavioral studies conducted in the IS literature and included in this review, only one study proposed a theoretical framework that compared the antecedents of intention and actual usage behavior in the same framework (Kim & Kwahk, 20007). The year-wise distribution of the literature included in this review revealed an interesting scenario. For example, it was found that more than half (58 %) of the studies on IT/SCU were published in the last five years i.e., from 2010–2014. Only one study was published in each of the years 2002 and 2000 (see Figure 2). Among the scholarly databases searched for the relevant articles, more than half of the papers (61 %) were found in *ScienceDirect* and *Wiley* scholarly databases, and the smallest quantities of articles were found in *ACM*, *INFORMS/ABI*, and *M.E. Sharpe* (see Figure 3).

"Insert Figure 2 & 3 about here"

Of the 56 journals identified and included in this review that have published articles on IT/SCU, nearly one-third of these journals (61 %) published only one article on IT/SCU during the period under review. Furthermore, of these 152 articles, *CHB* published the most articles (13 %), followed by the *ISJ* (8 %), *I&M* (8 %), *DSS* (eight, or 5 %), *Computers and Education* (C&E, 5 %) and others, such as *MISQ, Journal of Business Research, EJIS, Decision Sciences (DS) and Information Systems Research (ISR),* which led to a total of 56 % of articles. The remaining 5 % of articles were conference proceedings mostly published by *IEEE* (see Figure 4).

"Insert Figure 4 about here"

The average (mean) sample size was 508 participants. Quantitative research was the most popular method. A few studies used the qualitative research methodology. Within the ambit of quantitative research, mostly traditional methods were used to collect data such as online surveys (36 %) followed by on-site or paper-based surveys (32 %), web-based surveys (16 %), and e-mail/mail surveys (12 %). Figure 5 illustrates the types of data collection methods used. In differentiating between online and on-site surveys, Bhattacherjee (2001a) explained that online surveys have several advantages over paper-based or mail-in surveys; for instance, in online surveys, the sample is not restricted to a geographical location, large samples are possible, the surveys cost less, and the responses are faster.

"Insert Figure 5 about here"

A computer-assisted telephone interviewing (CATI) survey was used in one study (Hernández-Ortega, 2011). Of the 152 studies, only four studies (3 %) used interview or qualitative methodologies to collect primary data. While investigating the effect of consumer internet experiences on channel preferences and usage intentions across the different stages of the buying process, Frambach, Roest, and Krishnan (2007) conducted a mix of professionally administered focus group discussions and in-depth interviews among 24 consumers in the United States and Europe (the U.K., the Netherlands, and Sweden) to collect data.

Nearly one-third (67 %) of the studies solicited data from the users, netizens or members and students. The remaining (33 %) studies collected data from other participants, such as customers/consumers (14 %), working professionals such as owners, employees, workers, managers and staff members (13 %) and faculty members (2 %). A mix of participants including students, faculty members and employees was also used in five (3 %) studies (see

Figure 7). Among the most frequently investigated regions were East Asia (e.g., Taiwan, China, Hong Kong and South Korea) and North America (e.g., USA). A few studies applied to Europe (e.g., Finland, Estonia, Norway, Netherlands and Turkey) and other regions such as the Middle East (e.g., Saudi Arabia), Pacific Island countries (e.g., Australia and New Zealand) and Southeast Asia (e.g., Malaysia and Singapore). A few studies also used multiple locations and regions (see Figure 6). For example, Zhu and Kraemer (2005) investigated the post-adoption stages, that is, the actual usage and value creation in electronic business using the dataset of 624 firms across 10 developed and developing countries in the retail industry. In the context of e-learning continuous intention, Roca and Gagné (2008) used a web-based survey instrument to obtain the data from workers of various international agencies of the United Nations from a specific region of the globe made up of three or four countries.

"Please insert Figure 6 & 7 about here"

Analyzing the acceptance models used by these studies revealed a large and heterogeneous set. As discussed in a later section, a total of 41 technological and social psychological adoption theories, models, and frameworks provided foundations for investigations of IT/SCU (see Appendix B). Some authors used one specific adoption theory or an extension of it, such as the expectation confirmation theory (ECT; e.g., Chang & Zhu, 2012; Chou & Chen, 2009), expectation disconfirmation theory (EDT; e.g., Shi, Lee, Cheung, & Chen, 2010; Chiu, Hsu, Sun, Lin, & Sun, 2005), or the technology acceptance model (TAM; e.g., Wang, 2014; Lu, Chou, & Ling, 2009). Others combined different theories, such as ECM and TAM (Hong, Thong, & Tam, 2006), ECT and UTAUT (Venkatesh, Thong, Chan, Hu, & Brown, 2011), ECT and a two-factor theory (Najmul Islam, 2014), ECT and task-technology fit (Larsen, Sørebø, & Sørebø, 2009), or TAM and self-determination theory (Roca & Gagné,

2008). In addition, a few authors (e.g., Saraf, Liang, Xue, & Hu, 2013; Li, Browne, & Chau, 2006) have used self-constructed models (SCM) comprised of various independent variables adopted from different models, theories and frameworks. One of the intriguing findings of the literature review is an extensive usage of TAM in the post-adoption studies, which were earlier believed to be dominated by ECT. The synthesis of the literature revealed that in all 152 of these studies, TAM (its extension and/or usage with other theories/models) is used in 24 % of studies, followed by ECT/ECM (its extension and/or usage with other theories/models) in 13 % studies. The third most-used model was UTAUT (its extension and/or usage with other theories/models) in 4 % of studies included in this literature review.

Of these 152 studies, the largest quantity of the studies (32 %) fall under the CUEBIS domain; 28 % fall under the CUMIS domain; 21 % fall under the CUSIS domain;, and the rest, i.e., 19 % fall under the CUELIS domain (see Figure 1).

6.2 Major domain-specific findings

The advent and the adoption of mobile technology is quickly changing the way to run a business, as demonstrated by the usage of mobile commerce applications, and it has also enabled the transformation of the way that business and governments deliver their services (Wang, 2014). As a result, an extensive usage of mobile technology and Wi-Fi-enabled portable devices has convinced businesses and governments to prepare themselves to transition from electronic services to mobile services. In one of its recently published market survey reports, eMarketer (2014) predicted that the number of global smartphone users will surpass 1.75 billion by the end 2014 and concluded that smartphone adoption and usage will continue on a fast-paced trajectory through 2017.

A synthesis of studies included in the CUMIS domain reveals a few key findings. For example, out of 43 studies that fall under this domain, thirteen (or 33 %) have investigated m-internet, followed by seven (or 16 %) for m-Services & applications, six (or 14 %) for m-data services and applications, and five (or 12 %) for m-banking continuous intention and usage. Only three studies (or 7 %) were conducted on m-commerce and two studies (or 5 %) on m-payments usage. The lowest quantity of studies (i.e., one each) was conducted in the areas of m-ticketing, m-games and m-government, thereby leaving ample opportunity for scholars to conduct further investigations on these research areas.

In addition to the classification of IT/S that falls in this domain, this literature review has also revealed the quantity of studies published in peer-reviewed journals as opposed to conference proceedings. Most of the studies included in this domain were published in the *International Journal of Mobile Communications* (seven, or 16 %), *ISJ* (four, or 9 %), *DSS* (three, or 7 %) and *CHB* (three, or 7 %). This domain was largely dominated by scientific articles and only three (Kim & Kwahk, 2007; Mallat, Rossi, Tuunainen, & Oorni, 2006; Lin & Wang, 2005) were IEEE conference proceedings

When analyzing the geographic distribution of the papers, it was observed that more than two-thirds of the studies (67 %) were conducted in East Asia (China, South Korea, Hong Kong and Taiwan). A few were conducted in Europe (Finland and Norway), Southeast Asia (Singapore) and Pacific Island countries (Australia). No study on post-adoption within the 'systems' included in this domain was conducted in Africa, the Middle East or most of the South Asia region. Only one study (i.e. Lee, Kim, & Hong, 2007) was cross-cultural in nature. Investigating the effects of cultural characteristics on the post-adoption beliefs of m-

Internet users, Lee, Kim, and Hong (2007) conducted multiple large-scale online surveys in Korea, Hong Kong, and Taiwan and concluded that four cultural factors, i.e., uncertainty avoidance, individualism, contextuality, and time perception, have a significant influence on users' post-adoption perceptions of m-Internet services.

Analyzing the models used by these studies reveals a large and heterogeneous set because several technological and social psychological theories, models, and frameworks provided foundations for the investigations of the human continuous intention and usage of mobile technology and systems included in this domain. A close analysis of the domain revealed that the majority of studies (30 %) have used the TAM or an extension of TAM (e.g.,Wang, 2014; Verkasalo, López-Nicolás, Molina-Castillo, & Bouwman, 2010; Shin, Lee, Shin, & Lee, 2010). A few have combined TAM with different theories, such as IDT (Mallat, Rossi, Tuunainen, & Oorni, 2006), TRA (Nysveen, Pedersen, & Thorbjørnsen, 2005a), and TPB (Lin & Wang 2005). In addition, the majority of the authors, i.e., (e.g., Tojib & Tsarenko, 2012; Lin & Shih, 2008) have also used self-constructed models comprised of different constructs derived from various models or theories. The expectation confirmation model (ECM) proposed by Bhattacherjee (2001b) has rarely been used in this domain; only two studies (Thong, Hong, & Tam, 2006; Zhou, 2011a) have used the ECM or an extension of the ECM. For example, deliberating the importance of using an expanded ECM by incorporating the post-adoption beliefs of perceived usefulness (PU), perceived enjoyment (PE) and perceived ease of use (PEOU), Thong, Hong, and Tam (2006) explained that expanded ECM has good explanatory power; it can provide supplementary information that is relevant for understanding IT/SCU, and an expanded ECM presents IT product/service providers with deeper insights into how to address IT users' satisfaction and continued support.

The second domain, CUEBIS, consists of several IT/S, including e-commerce, e-shopping, ERPs, supply chain management, internet (online) banking, and so forth. Out of 49 IT/S included in this domain, 18 % of the studies investigated e-shopping continuous intention and usage, followed by e-learning for employees (10 %), ERP systems (10 %), and e-commerce (8 %). A few have also analyzed e-government initiatives and online banking. In this domain, the lowest quantity of studies has been conducted in the areas of supply chain management, web analytics, and online stock trading systems. Park, Kim, & Koh (2010) identified the main factors that influence the continuous usage intentions of firms that employ web analytics services (WAS) and characterize the relationships among the identified factors and concluded that a client firm's continuous usage intention was influenced by both satisfaction with the WAS provider and dependence on the WAS provider. In addition, the information quality among the several quality factors analyzed was significantly associated with client firm satisfaction. More recently, according to the International Data Corporation (IDC, 2013) forecast, the worldwide business analytics software market grew 8.7 % and reached USD 34.9 billion in 2012.

Most of the studies included in this domain were published in *ISJ* (six, or 12 %) and four each in the *EJIS*, *I&M* and *DSS*. A few studies were published in *CHB*, *Expert Systems and Applications* and *ISR.* Similar to the CUMIS domain, this domain is also largely dominated by scientific articles, and only two (Zhai, 2010; Wang & Lin, 2010) were IEEE conference proceedings.

The geographic distribution reveals an interesting scenario. More than half of the studies (51 %) were conducted in East Asia (China, South Korea, Hong Kong and Taiwan), and some were conducted in North America (18 %) and the Middle East (6 %). In addition, 8 % of the

studies were cross-cultural in nature. Europe, Spain and Estonia dominate the demographic criteria, and a total of 6 % of the studies were conducted in these countries. No study within the 'systems' included in this domain on post-adoption was conducted in Africa or South Asia (mainly comprising India, Pakistan, Bangladesh, Nepal and Bhutan).

Out of 49 studies included in this domain, 14 % have used a TAM or an extension of TAM (e.g., Hsu & Lu, 2004; Cheng, 2011; Lu, Chou, & Ling, 2009). A few have combined TAM with ECT (e.g., Al-Maghrabi & Dennis, 2012; Al-Maghrabi, Dennis, & Halliday, 2011). In addition, 35 % of the studies have used self-constructed models comprised of different constructs derived from various models or theories. The most anticipated expectation confirmation theory (ECT) does not seem to be convincing for the research in this domain. Only a few (6 %) of the studies have used ECT or an extension of ECT (e.g., Bhattacherjee, 2001a; Hoehle, Scornavacca, & Huff, 2012b).

The third domain, CUSIS, included the research carried out in the context of social networking sites/games, virtual/online worlds/communities, and so forth. Of the 31 studies included in this domain, more than half (58 %) have investigated human intention and the usage of indifferent social networking sites (SNSs), notably Facebook, Cyworld and Twitter. In addition, a few (19 %) analyzed social virtual worlds such as Habbo and Second Life. Among the prominent SNSs, Facebook received most of the attention from the research community. As a result, out of eighteen studies conducted on SNSs, 44 % examined human behavior in using Facebook. Only one study was found on Twitter (Park & Lee, 2010), and no scientific studies on other popular SNSs such as MySpace and Friendster were found.

Most of the studies included in this domain were published in *CHB* (36 %) and *I&M* (13 %). Two studies (6 %) were published in *Information Systems and e-Business Management* and one each in *DSS* (Al-Debei, Al-Lozi, & Papazafeiropoulou, 2013) and *Information*

Processing and Management (Park, 2014). Like two previous domains, this domain is also largely dominated by scientific articles, and only three (Shi, Lee, Cheung, & Chen, 2010; Mäntymäki & Merikivi, 2010; Ham, Park, Lee, & Moon, 2012) were IEEE conference proceedings.

A large quantity of studies (68 %) was conducted in the East Asia region comprised of China, South Korea, Hong Kong and Taiwan. A few (16 %) were conducted in Europe (Finland, Spain, Netherlands, and the U.K.), and three (10 %) were conducted in the USA. Notably, no study was conducted on CUSIS in regions such as Southeast Asia, South Asia, Africa, Pacific Island countries (Australia, New Zealand) and the Middle East, which comprise several important emerging markets, such as India and South Africa.

This domain seems to be largely dominated by self-constructed models. Out of 31 studies included in this domain, more than half (55 %) used self-constructed models comprised of different constructs derived from various models or theories. Two studies (6 %) used an extension of ECT (Chang & Zhu, 2012, Kang, Hong, & Lee, 2009), and only one has used an extension of TAM (Van der Heijden, 2003).

The fourth and last domain, CUELIS, is largely dominated by online, Internet and web-based learning information systems, tools and applications. Only one study investigated student information systems (Saeed & Abdinnour-Helm, 2011), learning management systems/Moodle (Najmul Islam, 2014), electronic courseware (Park et al., 2007), and electronic textbooks/e-texts (Stone and Baker-Eveleth, 2013). Consequently, the participants of the studies that fell under this domain were largely the students and faculty members.

Upon investigation, it was revealed that the research (e.g., Chiu, Hsu, Sun, Lin, & Sun, 2005) has divided the e-learning methodology into two major categories: The first, called the synchronous e-learning system, provides a real-time two-way interaction between learners and instructors that is facilitated by technological tools such as videoconferencing, teleconferencing, chat rooms, etc. The second method, called the asynchronous e-learning system, is a self-study learning system where the interaction with the instructor is largely carried out through email, voicemail, message boards and forums in a non-real-time mode.

Among the peer-reviewed journals, *C&E* has published the highest quantity of studies (24 %) on the 'systems' included in this domain, followed by *CHB* (17 %) and *I&M* (10 %). One study was published in *MISQ* and *Information Research*. Unlike the previous three domains, this domain is dominated by scientific articles, and no conference proceeding was found in this review. Demographically, a large quantity of studies was conducted in Taiwan (38 %) and the USA (24 %). Two each were conducted on China and Hong Kong. A few studies were also conducted in Europe (Norway, Finland and Spain), but no study was conducted Africa, the Middle East or South Asian countries.

The studies included in this domain have predominantly used ECT and TAM as theoretical models to test the hypotheses, conduct analyses, and record the findings. Out of the 29 studies in this review, 35 % of the studies used an extension of TAM (e.g., Park, Lee, & Cheong, 2007) or combined TAM with another model or framework, such as ISSM (Saeed & Abdinnour-Helm, 2008) and EDT (Premkumar & Bhattacherjee, 2008). Similar to TAM, 21 % used either an extension of ECT (e.g., Limayem & Cheung 2011) or combined ECT with another model or framework, such as TTF (Larsen, Sørebø, & Sørebø, 2009). A few studies (21 %) also used self-constructed models in the systems included in this domain.

Conclusively, these domains have revealed a few significant, highly interesting and useful findings for future research, which will be discussed in the following sections in detail. Nevertheless, it may be pertinent to argue that the research on post-adoption in the context of IT/S conducted in the last two decades is evidently unbalanced. A few geographic regions and systems dominate the investigation criteria, and a few others have been either completely overlooked or ignored. Despite the increased attention from peer-reviewed publications, conference proceedings and popular market reports, there is still no common understanding for many information systems, including the concepts of web-based learning, electronic learning, and online learning.

6.3 Major models, theories and frameworks used in IT/SCU

Various theoretical frameworks, models and theories to study IT/S acceptance and use have emerged over the last three decades (Agudo-Peregrina, Hernández-García, & Pascual-Miguel, 2014). Starting with the theory of reasoned action-TRA (Fishbein & Ajzen, 1975) and the rest of models that stem from it, such as the TAM (Davis, 1989), the theory of planned behavior, or TPB (Ajzen,1991), and the unified theory of acceptance and use of technology or UTAUT (Venkatesh, Morris, Davis, & Davis, 2003). Another model, the cognitive model (COG), was proposed for continuance behavior; it combines some of the variables used in both TAM and ECM (Liao, Palvia, & Chen, 2009).

Although ECT has been used in marketing research to study consumer satisfaction and post-purchase behavior (Venkatesh, Thong, Chan, Hu, & Brown, 2011), it was adapted from the consumer satisfaction/dissatisfaction model (Liao, Palvia, & Chen, 2009; Churchill & Suprenant, 1982; Oliver, 1981), and it helps predict consumer behavior before, during, and after a purchase in various contexts in terms of both product and service repurchases (Al–Maghrabi & Dennis, 2012). In addition to ECT, TAM has often used by the information

research community as the theoretical basis in support of information systems usage research (e.g., Verkasalo, López-Nicolás, Molina-Castillo, & Bouwman, 2010). Davis (1989) suggested TAM. It examines the mediating role of the PEOU and PU in the relationship between system characteristics (external variables) and the probability of system use (an indicator of system success). Recently, Venkatesh and Davis (2000) proposed an extended version of his model, TAM 2, in which a 'subjective norm' was included. TAM was not specifically developed to predict continued usage intention but was originally developed to focus on the motivations of users to accept a new technology instead of the continual use of a technology (Stone and Baker-Eveleth, 2013, Hong et al., 2006). However, in the last decade, extensive research has used it in post-adoption studies (e.g., Agudo-Peregrina, Hernández-García, & Pascual-Miguel, 2014; Wang, 2014).

In addition to popular information system theories and models, other theories, such as contingency theory (Khalifa & Liu, 2007), two-factor theory (Lee, Shin, & Lee, 2009), the push–pull–mooring framework (Hsieh, Hsieh, Chiu, & Feng, 2012), and social capital (and exchange) theory (Park, 2014; He, Qiao, & Wei, 2009) are also used to examine the continuous usage of IT/S. Park (2014), using social exchange theory (Thibaut & Kelley, 1959), investigated the effects of personalization on user continuous behavior in social networking sites and hypothesize that personalization influences the continued use of social networking sites through two factors: switching cost (extrinsic factor) and satisfaction (intrinsic factor). The authors conclude that personalization increases switching costs and satisfaction, which results in further use of SNSs. It is therefore necessary to consider both extrinsic and intrinsic factors of user perceptions when adding personalization features to social networking sites. Likewise, using the two-factor theory developed by Herzberg, Mausner, and Snyderman (1959), Lee, Shin, and Lee (2009) concluded that information quality is the motivator and that system quality is the de-motivator of mobile data services

usage. Similarly, information quality had a stronger influence on mobile data services usage when the main motive was utilitarian rather than hedonic.

6.4 Major factors that influence human continuous behavioral intention, attitude and use of IT/S

Several independent and dependent variables appear in the analysis and investigations of varying aspects of human decision-making processes related to the usage behavior that exceeds the simple, shallow, and routine use (Hsieh & Wang, 2007) of information technology and systems. In particular, three main dependent variables (i.e., attitude, intention, and usage) and several independent variables emerged from this review.

Of these three dependent variables, a majority of the studies focus on the antecedents of the intention to use (e.g., Chiu, Wang, Fang, & Huang, 2014; Hartono, Holsapple, Kim, Na, & Simpson, 2014) and actual usage (e.g., Wang, 2014; Saraf, Liang, Xue, & Hu, 2013; Chang, 2010). Only one study investigates the antecedents of attitude (Verhagen, Feldberg, Van den Hooff, Meents, & Merikivi, 2012). Understanding the users' motivations to engage in virtual worlds (VWs), Verhagen and colleagues found a significant and direct relationship between PU and entertainment value on the attitude towards VW continuous usage.

Multiple studies also attempt to identify the antecedents and drivers of post-adoption human behavioral intention and usage behavior. A few significant antecedents are 'consumer satisfaction,' 'PU,' 'PEOU,' 'subjective norms' and 'PE'. Nearly half of the studies (43 %) used 'satisfaction' and 'PU' as key intrinsic factors to empirically establish the influence of these antecedents on continuous behavioral intention and usage. For example, in the mobile banking context, continuous intention is found to be solely dependent on the satisfaction of customers (Reji Kumar & Ravindran, 2012). In another empirical study, students' e-text

continuous intentions are directly and meaningfully influenced by their satisfaction and PU of electronic textbooks (Stone & Baker-Eveleth, 2013); user satisfaction with Web 2.0 applications (Facebook, iGoogle, Plurk, Twitter, and YouTube) and online knowledge groups significantly affects electronic word-of-mouth, which in turn significantly influences their continuous intention (Chen, Yen, & Hwang, 2012; Wang & Lin, 2010). Similarly, satisfaction and PU were found to play a significant role in the continuous intention and usage of web analytical services (Park, Kim, & Koh, 2010), Internet-based learning technologies (Limayem & Cheung, 2011), online shopping (Khalifa & Liu, 2007), and cyber university systems (Liao, Chen, & Yen, 2007). When empirically investigating the employees' extended use of enterprise resource planning systems in a large manufacturing firm, Hsieh and Wang (2007) concluded that the PEOU and PU affect extended use, but notably, in the presence of PU and PEOU, satisfaction had no direct effect on the extended use of ERP systems. In the context of mobile data services and applications (MDSA), usefulness and enjoyment found positively associated with perceived monetary value, which means the MDSA users with higher levels of perceptions of usefulness and enjoyment will increase their perceptions of monetary value, resulting in a greater formation of habits and an enhancement of continuous intention, which ultimately lead to an increase in actual usage (Kim, 2012).

Exploring the continuous intention in the context of social networking websites, Hsu, Yu, and Wu (2014) concluded that satisfaction and PU are two important motivators of attitude, but the effect of satisfaction on attitude is much greater than its effect on PU. Cumulatively, prior empirical studies on IS acceptance and continuous usage have examined the consumer usage behavior in the short and long term (e.g., Lin, Fan, & Chau, 2014). In all of these major post-adoption studies, it is important to note in this argument that the research has persistently

found satisfaction to be one of the significant consequences of success for developing a continuous usage behavior and a surrogate for post-adoption expectations.

The role of satisfaction as a predictor of intention is critical and has been well-established in the information systems, management, marketing, and reference disciplines (Chiu, Lin, Sun, & Hsu, 2009a). Indeed, the marketing literature confirms that customer satisfaction is one of the main drivers of repurchasing, as has been verified in various different industrial and social contexts (e.g., Khalifa & Liu, 2007). Liao, Palvia, and Chen (2009), while giving a comprehensive comparison of the three theoretical models i.e., TAM, ECM and the cognitive model (COG), clarified the variations in users' adoption behavior across various stages of IS usage. They demonstrate that the determinants and mechanisms of users' adoption decisions are moderated by usage experience. In addition, outcome expectations are the major antecedents of initial adopters' attitude and satisfaction, which in turn have significant effects on the intention to use. Conclusively, a growing body of research (e.g., Deng, Turner, Gehling, & Prince, 2010; Flavián, Guinalíu, & Gurrea, 2006) has generally established user satisfaction as an important factor leading to continued usage decisions and user retention for a variety of information systems.

A different set of consequences was also observed while investigating various technologies and systems included in this literature review. All of these consequences have mostly been analyzed only once in the context of post-adoption, for example, the *sense of belonging* (Lin et al. 2014), *credibility trust and benevolence trust* (Wu, Huang, & Hsu, 2013), *number of peers* (Lin & Lu, 2011), *community integration* (Sánchez-Franco, Villarejo-Ramos, & Martín-Velicia, 2011), and *perceived controllability* (Hsu and Chiu, 2004). Wu, Huang, & Hsu (2013), concluded that *benevolence trust* has appeared to be one of the most important

and direct determinants of users' continuous usage of online social networks (OSNs). Benevolence trust is the belief that business partners have the intent and motivation to offer benefits in specific new situations. In another study, while expanding the scope of educational research from superficial commitment and usage behavior to more sophisticated levels of social networking sites, such as Facebook, Sánchez-Franco, Villarejo-Ramos, and Martín-Velicia (2011) concluded that students' *social integration* provides strong support for the professors to adopt or continue using SNSs in learning processes.

A degree of synergy between satisfaction and flow experience also emerged from a few studies that reported that satisfaction and flow experience have significant effects on continuous intentions and is thus an important variable for IT/S (e.g., Hsu, Yu, & Wu, 2014; Chang, 2013). A few studies have reported that flow experience positively mediates the relationship between user satisfaction and continuous intentions; both human-computer interaction and social interaction lead to user satisfaction and flow experience (Chang, 2013); flow experience has an influence on users' satisfaction (Chang & Zhu, 2012).

7. Implications:

As observed, most of the studies included in this literature review have manifested valuable theoretical and practical implications, which have been synthesized and presented in the following sub-sections.

7.1 Implications for research

Extend research has provided valuable implications for research. For example, extending the prospect theory and providing additional theoretical reasons for understanding customers' repeat purchase intentions in B2C e-commerce, Chiu, Wang, Fang, and Huang (2014)

explained that users' choices to avoid or seek risk vary across the types of value under evaluation. Theoretical frameworks that are meant to predict the risk-taking behavior of end-users should consider the differential influence of the nature of e-shopping goals. While measuring perceived security in B2C e-commerce website usage, Hartono, Holsapple, Kim, Na, and Simpson (2014), make important contributions to IT/S research by identifying and validating three important dimensions of perceived security i.e., perceived confidentiality, perceived availability, and perceived non-repudiation. The recognition of these major dimensions of perceived security provides the research with an opportunity to highlight the significance of each of these dimensions for improving customers' intentions.

A study conducted by Hsu and Lu (2004) significantly contributes to a theoretical understanding of the factors that promote entertainment-oriented IT usage, such as online games. The study suggested that entertainment-oriented IT is different from task-oriented IT in terms of their reasons for use. The authors clarified that the task-oriented IT usage is primarily meant to improve organizational productivity, and therefore, the TAM stresses the need for PU and PEOU as key determinants. However, in the context of entertainment-oriented IT, the study demonstrated that the importance of individual intentions to use involves other variables, such as social norms and flow experience.

Lin and Wang (2005) provide a few implications for research and suggest that TAM appeared to be better than TPB in explaining the behavioral intention to use an information system such as m-commerce. (The superiority of TAM over TPB is also endorsed by Wang, Lin, and Luarn (2006) in the context of m-services usage.) As a result, PU and PEOU were found to be significant consequences of the behavioral intention to use m-commerce. In addition, perceived self-efficacy and perceived financial resources were found to be significant

consequences of behavioral intention. Therefore, measuring perceived self-efficacy and perceived financial resources as developed by this study provides valid instruments for assessing the perceived knowledge and financial resources of using m-commerce. In the same fashion, the study conducted by Mallat, Rossi, Tuunainen, and Oorni (2006) provides several theoretical contributions to m-commerce and adoption research. Here, the study presents two empirically tested and valid constructs found to be significant in predicting mobile service use: mobility and use situation. These important constructs, as concluded by Mallat, Rossi, Tuunainen, and Oorni (2006), capture the mobile dimension of service adoption and explain the competitive advantage of mobile service use compared with other service options. Predicting the consumer intention to use mobile services, Wang, Lin, and Luarn (2006) provided several implications for research. One of the significant contributions of their research work is the validation of the m-banking acceptance model developed by Luarn and Lin (2005). The findings of their study strongly support the feasibility of using Luarn and Lin's model to understand the acceptance of m-services by individuals.

7.2 Implications for practice

Several valuable practical implications, specifically with regard to strategy and marketing, were reported in several studies that investigated different post-adoption consequences relating to various information technologies and systems. A synthesis of these findings revealed valuable implications for the industry. For example, when researching user values in using smartphones, Jung (2014) reported significant marketing implications and suggested that marketers can utilize the findings of his research to develop successful marketing strategies. Lin, Fan, and Chau (2014) provided several implications for research on social networking sites (SNS) and reported that the sense of belonging is a strong emotional

reaction predictor for SNS, and consequently, it plays a crucial role in SNS continuous usage. SNSs have been used by different companies as massive marketing tools to attract customers. It therefore represents an important social media channel for reaching diverse demographic groups and customers for promoting products. Zhou (2013a), after examining the continuous usage of m-Internet services from the perspective of the resistance to change, suggested that a good interface design coupled with a few convenient and value-added services can considerably help in building consumer trust for continuous usage of m-Internet services and increase the switching costs.

The study on continuous online shopping conducted by Al-Maghrabi & Dennis (2012) provides managers with useful and important information about planning their e-commerce websites and marketing strategies and argued that the managers should build positive word-of-mouth to increase the perceptions of current customers and their friends and family members about usefulness, quality, interactivity, and enjoyment of their website. Zhou (2013b) implies that service providers should improve system, information and service quality to facilitate the continuous usage in the context of m-payment services.

How the organizational absorptive capacity matters in the assimilation of enterprise information systems (called ERP Systems) was the research interest of Saraf, Liang, Xue, and Hu (2013). They found a significant relationship between potential absorptive capacity (PACAP) and enterprise information system assimilation and called for organizational leaders to build the capability to better acquire and integrate external knowledge. In this reference, specific initiatives such as help desks, mentoring programs and retraining workshops all create an exceedingly accessible source of external knowledge for ERP users in their organizations. Understanding the factors that affect the continuous intention of m-

banking, Chen (2012) reported that relationship quality is a significant element of developing a successful long-term relationship between consumers and m-banking service providers and an essential factor that causes consumers to retain continuous intention to the providers.

Providing implications for service providers in the telecom industry, especially in promoting m-data services usage, Lee, Shin, and Lee (2009) suggested that the industry may first profile people according to their main usage motivations for customized target marketing to optimize a service provider's business performance. Chiu and Wang (2008) implied that a reasonable understanding and relationship of performance expectancy, effort expectancy, and positive subjective task value with web-based learners is likely to establish longer-term relationships between and among the web-based learners, developers and designers of web-based learning sites. As a result, the developers and designers should presumably employ ways to reduce monotony and exploit web-based learners' playful characteristics.

On professional virtual community (PVC) usage, Chen (2007) conducted a longitudinal study and suggested that because the technological factors dominate a member's decision to stay with the PVC, managers of virtual communities should increase and maintain their websites' quality, such as system and knowledge quality, to satisfy PVC participants. In addition, managers should create an environment for positive and active knowledge-based communications between members. This can, however, be achieved by having a mechanism in place for blocking or punishing deceptive communications. Zhu and Kraemer (2005) tested their theoretical model on a dataset of 624 firms across 10 different developed and developing countries in the retail industry and suggested intriguing managerial implications in the context of e-business post-adoption. For instance, the authors suggested building technology competence, which includes tangible technologies, intangible managerial skills,

and human resources. Moreover, a careful attention must be paid to the economic and regulatory aspects that may affect technology diffusion across different countries.

Citing another important implication for practice, Hsu and Lu (2004) emphasized the importance of social influences on online games. The authors suggested that online game managers should generate positive word-of-mouth and use mass advertisements to achieve a perception of a critical mass; i.e., the more users in an online game, the more user-generated experience it is likely to offer, and thus, the more users it will attract. This idea, which is commonly known as a *dynamic loop* and was founded by Hagel III and Armstrong (1997), intends to yield increasing returns in an online or virtual community**.**

8. Conclusion

'*Post-adoptive behavior occurs after an IS artifact has been implemented, made accessible to the user and applied by the user in accomplishing his/her work activities. This behavior may be quite different from the behavior in initial adoption stages*' (Recker, 2010, p.78).

The current study seeks to achieve several objectives, such as unifying and synthesizing disparate streams of research on IS usage into a more coherent body of knowledge, identifying and framing the research methodologies, frameworks, approaches and models applied in this field, revealing the intriguing development and consolidation of the consequences and antecedents used in prior research to study and analyze human behavioral intention toward information system usage, providing a conceptual framework, and finally recommending directions and priorities for future research.

Given the pure vastness, diversity and flexibility of the IS continuous usage literature, we chose to limit our initial sample of empirical studies to those studies in which both IS and their continuous usage were significant themes of the manuscript. The resulting 152 relevant and useful peer-reviewed articles, a few conference proceedings and a few market reports, were selected, included and reviewed to build a comprehensive bibliography for this review, discussing continuous behavioral intention and usage in support of various information technologies, systems, tools and applications (see Appendix B).

The studies selected and included in the review focus on continuous behavior intention and use in support of IT/S. This review identifies and presents several information technology and systems that were later classified into four broader domains: Continuous Usage of Mobile Information Systems (CUMIS), Continuous Usage of Electronic Business Information Systems (CUEBIS), Continuous Usage of Social Information Systems (CUSIS), and Continuous Usage of Electronic Learning Information Systems (CUELIS).

It is not surprising that various IT/S such as m-Internet, m-banking, m-services, e-commerce, e-shopping, social/virtual networking, electronic and web-based learning have been the most researched systems, as calculated by the number of papers. In fact it is more surprising that in the CUMIS domain, the studies were on m-games, m-payments and m-ticketing; in the CUEBIS domain, the studies were on customer relationship management systems and web-analytics services; in the CUSIS domain, the studies were on social networking games; and in the CUELIS domain, the studies were on e-courseware, and studies on e-texts were almost non-existent.

While analyzing the quantity of studies published in various journals, we concluded that *CHB*, *ISJ* and *I&M* dominate the literature. Moreover, the demographic distribution of articles also revealed interesting traits. For example, most of the studies on IT/S continuous usage included in this review were conducted in East Asia (Taiwan, China, South Korea, and Hong Kong) and North America (USA only). The fewest investigations were conducted in Southeast Asia, the Middle East, and South Asia. Notably, no studies were conducted in Africa or Central Asian states. Certainly, the purpose of highlighting these facts is not to deprecate future research in East Asian or North American regions in the context of IT/S post-adoption but to inspire future research directions and highlight the gaps for future research.

In all of these studies, the survey methodology was widely and frequently used. A few studies used interviews and a mix of interviews, surveys and focus groups. Among the list of the participants, students dominated the selection criteria. The majority of the studies included in this review were published during the years 2010 and 2011. Analyzing the acceptance models used by these studies reveals a large and heterogeneous set. Our findings revealed that the most anticipated ECT (or ECM) was not specifically developed to focus post-adoption studies; most of the research has used TAM or an extension of TAM to investigate the human continuous usage behavior. A large quantity has also used a self-constructed model to test hypotheses and reach a conclusion. However, in all of these self-constructed models, the authors integrated different models and frameworks, such as the TAM, the TPB, the expectation disconfirmation model, and flow theory (Hsu et al., 2014), expectation confirmation theory, two-factor theory and the satisfaction model (Najmul Islam, 2014), the TAM, the motivational model and the theory of network externalities (Mäntymäki & Salo,

2011) to construct a research model that investigates the factors that motivate users to continue to use IT/S.

8.1 Limitations

Some limitations of this review offer opportunities for additional research (Shaikh & Karjaluoto, 2015). First, the post-adoption or continuous usage scenario is the core of this research, so it excludes the initial use, acceptance or adoption of IT/S, another important area of research. Incorporating all of these aspects of IT/S into future literature reviews would be useful for delineating the evolving technologies and systems and providing a complete and state-of-the-art picture of IT/S research. Second, despite clear reasons to commence the review in January 2000, a number of information technologies and systems also existed before that point. Third, our research was limited to renewed online libraries and journals and included a few conference proceedings. The relevant research on IS continuous usage has been published in many journals, such as MISQ, and a number of conference proceedings and conceptual papers (e.g., Huili & Zhong, 2011) may be included in future research. Other sources such as working papers, articles, and book chapters may also be available sources. Fourth, while our literature review was extensive and covered four major research domains, it is possible that some articles were missed. Finally, due to space limitations, the appendix B included in this review does not contain a column listing the major findings of all of the studies included in this review (Hoehle, Scornavacca, & Huff, 2012b). Nevertheless, the interested researchers are welcome to contact the corresponding author to obtain more detailed information on the development of this paper.

8.2 Future research directions

The following recommendations for research derive partly from the directions, recommendations, and suggestions mentioned in the reviewed studies as well as from the analysis of the results of the present study.

There has been an absolute dearth of qualitative research in all domains. We understand that a qualitative research approach may uncover new consequences that define consumer continuous usage behavior on information technology and systems. We have segregated the research in various domains; future research can examine the systems in each domain separately and record valuable findings. In this way, domain-specific literature reviews are also recommended with the purpose of bringing my discipline in the previous research and opening new possibilities for future research.

In addition, a few cross-country, transnational, cross-cultural and longitudinal studies that analyze the behavioral consequences of the continuous usage of information systems such as m-banking, m-payments, e-commerce and so forth are recommended. Moreover, a few studies that compare rural and urban population segments using various information systems are also useful and therefore recommended. Future research may also consider collecting a data sample from the regions that have either not been visited earlier or have drawn less attention from the research community, such as most of the European Union Countries, Africa, the Middle East, Central Asian States, Australia, New Zealand and South Asia. Several investigations in the areas of m-ticketing, m-games and m-government post-adoption, student information systems, learning management systems, electronic courseware and electronic textbooks/e-texts are also recommended.

Another exciting area for future research is the growing interest of organizations in developing and using e-collaboration technologies/systems. In practice, as explained by Serçe Swigger, Alpaslan, Brazile, Dafoulas, and Lopez (2011), e-collaboration is about creating effective collaborations between and among different departments in an organization or with other organizations with the purpose of sharing business information to ensure better planning and decision making and improved efficiency. The prominent examples of e-collaboration technologies/systems include web-based chat tools, web-based (asynchronous) conferencing tools, e-mail/v-mail, collaborative writing tools, group decision support systems, teleconferencing and even social networking platforms. Future research in these directions would likely provide valuable insights.

Considering the enormous benefits and potential risks associated with the usage of IT/S and to protect the consumer interest, many mature and emerging countries have formalized the usage and implementation of various information systems such as m-banking, m-payments, m-government and so forth by introducing regulatory frameworks. Future studies of these frameworks could prove valuable. Moreover, as argued by (Shaikh & Karjaluoto, 2015), most consumers are most likely not aware of such legal or regulatory frameworks that govern the products or services they use. Investigating consumer behavior, awareness and understanding in this area would be worthwhile.

Another recommendation concerns new IT/S such as Payment & Settlement Systems, Adaptive Systems, Recommender Systems, Dynamic Personalized IS and Smart Tourist Management Systems. Empirical studies on the post-adoption or continuous usage of these systems are recommended. Alternatively, they can also be accommodated under a separate domain called ‘Expert Systems.’

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Figure 1: Proposed Framework

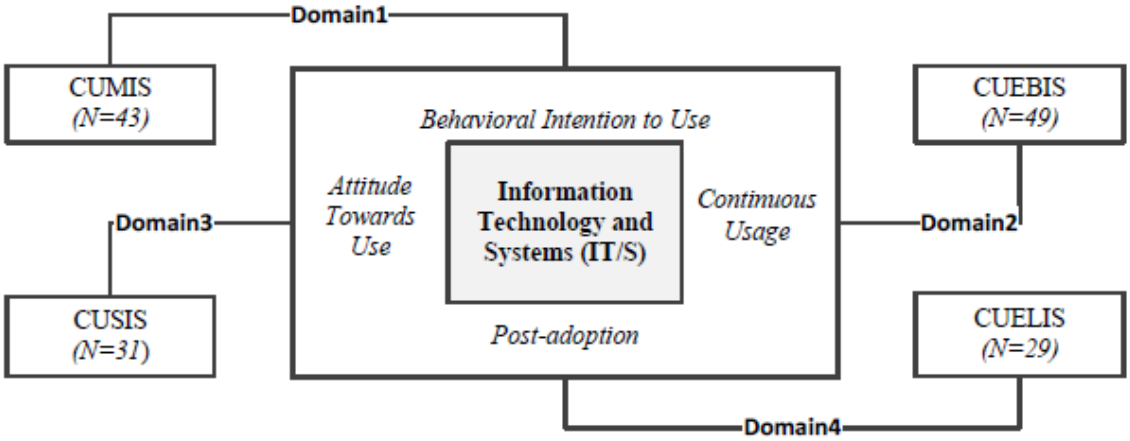


Figure 2: Year-wise distribution of Articles on IT/SCU

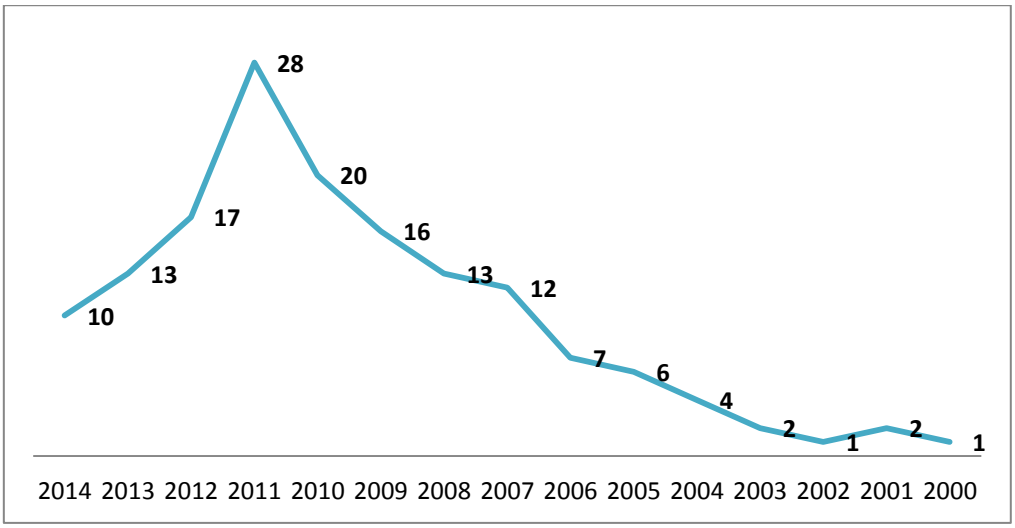


Figure 3: Scientific database-wise distribution of Articles (>5 Articles Published on IT/SCU)

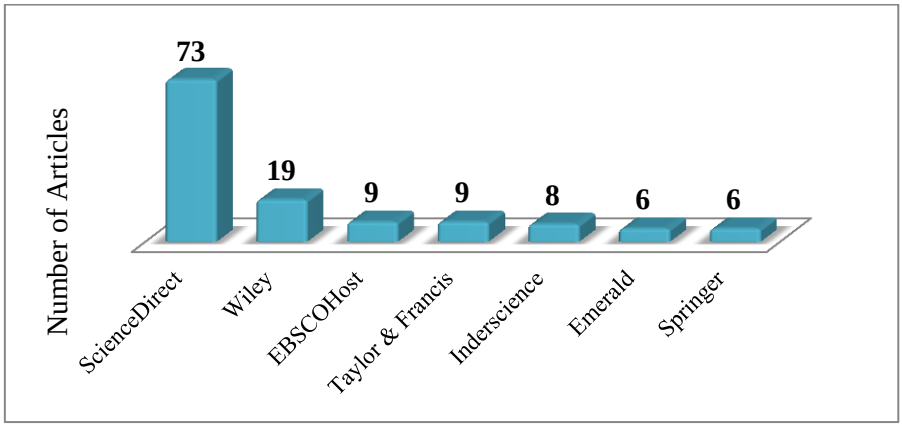
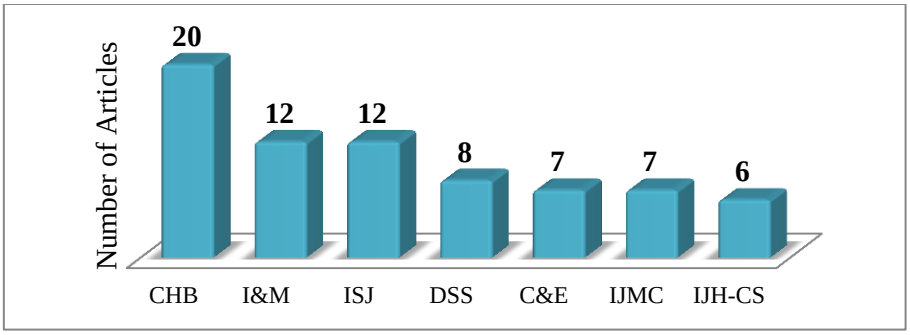


Figure 4: Journal-wise distribution of Articles (>5 Articles Published on IT/SCU)



CHB-Computers in Human Behavior; I&M-Information and Management; ISJ-Information Systems Journal; DSS-Decision Support Systems; C&E-Computers and Education; IJMC-International Journal of Mobile Communications; IJH-CS- International Journal of Human-Computer Studies.

Figure 5: Data collection methodology used in the Journals included in this literature review

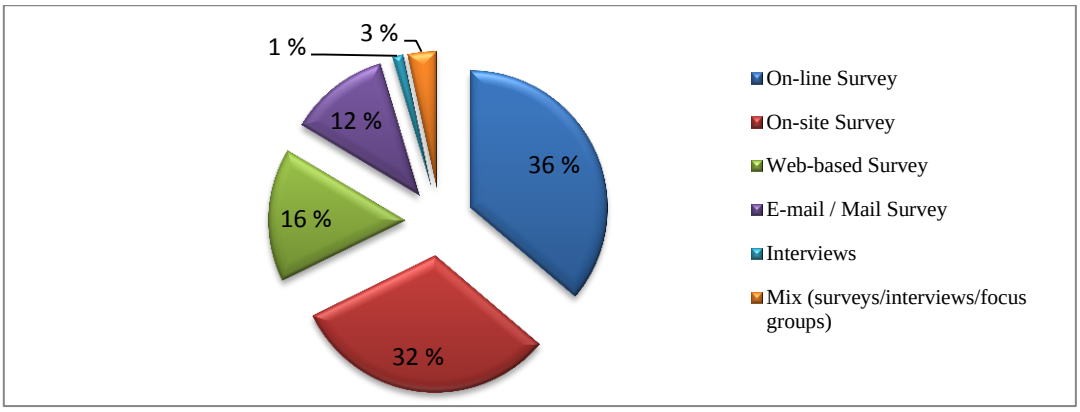


Figure 6: Region (Location) Profile

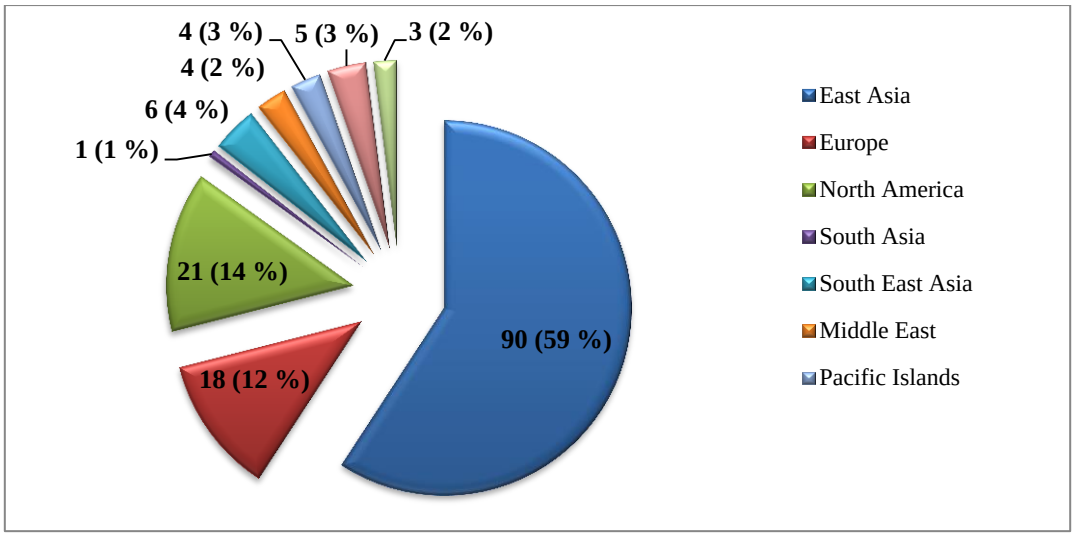
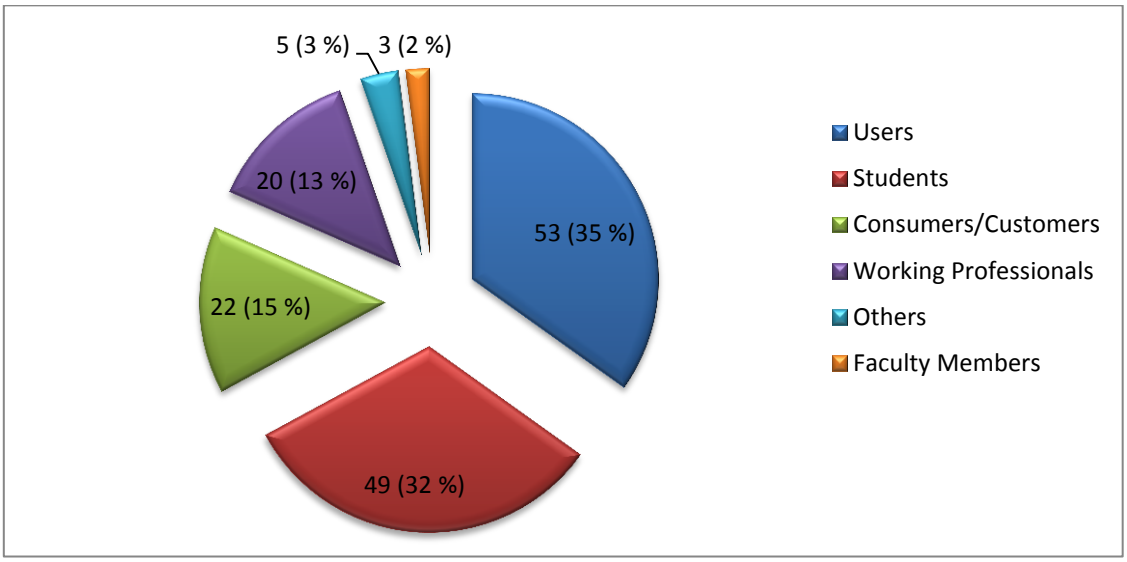


Figure 7: Participants' Profile



List of Tables and Appendices:

Table 1: A Snapshot of the evolution of IT/S

(Source: Hirschheim and Klein, 2012; Power, 2007; Ellison, 2007; Harper, 2003)

Era	**Target Technology / System**
First Era	Transaction Processing Systems
1960s	Management Information Systems (MIS)
	Ethernet
	COBOL
	3rd Generation Framework (IBM 360)
	Database
	Auto Teller Machines (ATMs)
Second Era	Decision Support Systems (DSS)
1970s	Minicomputers
	Mid-range Computers
	Computer Mouse
	Personal Computers
	Electronic Data Interchange
	E-Business (including E-Commerce)
Third Era	Enterprise Resource Planning (ERP) Systems
1980s	Executive Information Systems
	Expert Systems
	Knowledge Management Systems

	Internet Banking
	Mobile Technology
	Radio-Frequency Identification (RFID)
	Global System for Mobile Communications (GSM)
Forth Era	Ubiquitos computing (including Smart Phones, Tablet PCs, Laptops, etc.)
1990s	Search engines
	Social Network Sites (Web 2.0)
	Wireless Application Protocol (WAP)
	Mobile Commerce
	Mobile Banking
	EMV/Chip-based Payment Cards (Debit, Credit etc.)
	Web-based DSS
Fifth Era	Near Field Communication (NFC)
2000s – Cont.	Android (Operating system)
	Social Banking

Appendix A: Summary of reviews, literature reviews and meta-analysis conducted on IT/S:

S. No.	Citation	Title of Study / *Name of the Journal*	Target IS	Nature of the Study
1	Shaikh and Karjaluoto (2014)	m-Banking adoption – A literature review (*Telematics & Informatics)*	m-Banking Adoption	Literature Review and Meta-analysis
2	Gerpott and Thomas (2014)	Empirical research on mobile Internet usage – A meta-analysis of the literature (*Telecommunication Policy)*	m-Internet Usage	Meta-analysis
3	Gallagher and Savage (2013)	Cross-cultural analysis in online community research: A literature review *(Computers in Human Behavior)*	Online Community	Literature Review
4	Merali et al. (2012)	Information systems strategy: Past, present, future? *(Journal of Strategic IS)*	Strategic IS (SIS)	Meta-analysis
5	Hoehle et al. (2012)	Three decades of research on consumer adoption and utilization of electronic banking channels: A literature analysis *(Decision Support Systems)*	e-Banking Channels	Literature Review
6	Varnali and Toker (2010)	Mobile marketing research: The-state-of-the-art *(Int. J. of Information Management)*	m-Marketing	Literature Review / Review (terms used interchangeably)
7	Frohberg et al. (2009)	Mobile Learning projects – a critical analysis of the state of the art *(Journal of Computer Assisted Learning)*	Mobile Learning Projects	Literature Review
8	Dahlberg et al. (2008)	Past, present and future of mobile payments research: A literature review *(E-Commerce Research and Applications)*	m-Payments	Literature Review
9	Ngai et al. (2008)	RFID research: An academic literature review (1995–2005) and future research	Radio Frequency Identification	Literature Review

		directions *(Int. J. of Production Economics)*		
10	Rom and Rohde (2007)	Management accounting and integrated information systems: A literature review *(Int. J. of Accounting Information Systems)*	Management Accounting and Integrated Information Systems	Literature Review
11	Ngai and Gunasekaran (2007)	A review for mobile commerce research and applications *(Decision Support Systems)*	m-Commerce	Review
12	Srivastava (2007)	Green supply-chain management: A state-of-the- art literature review *(Int. J. of Management Reviews)*	Green Supply-Chain Management	Literature Review
13	Gonzalez et al. (2006)	Information systems outsourcing: A literature analysis *(Information & Management)*	IS Outsourcing	Analysis / Literature Review
14	Leidner and Kayworth (2006)	A Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict *(MIS Quarterly)*	Culture in IS	Review
15	Wang and Butler (2006)	System deep usage in post-acceptance stage: a literature review and a new research framework *(Int. J. Business Information Systems)*	IS	Literature Review
16	Sieber (2006)	Public Participation Geographic Information Systems: A Literature Review and Framework *(Annals of the Association of American Geographers)*	Public Participation Geographic IS	Literature Review
17	Liao (2005)	Expert system methodologies and applications—a decade review from 1995 to 2004 *(Expert Systems with Applications)*	Expert System Methodologies and Applications	Literature Review
18	Melville et al. (2004)	Information Technology and Organizational Performance: An Integrative Model of IT Business Value *(MIS Quarterly)*	Information Technology and Organizational Performance	Review
19	Liao (2003)	Knowledge management technologies and applications—literature review from 1995	Knowledge Management Technologies and	Literature Review

		to 2004 *(Expert Systems with Applications)*	Applications	
20	Grieger (2003)	Electronic marketplaces: A literature review and a call for supply chain management research *(European Journal of Operational Research)*	e-Marketplace	Literature Review
21	Mingers (2003)	The paucity of multi-method research: a review of the information systems literature *(Info. Systems J.)*	IS	Literature Review
22	Ngai and Wat (2002)	A literature review and classification of electronic commerce research *(Information & Management)*	Classification of e-Commerce Research	Literature Review
23	Dias (2001)	Corporate portals: a literature review of a new concept in Information Management *(Int. J. of Information Management)*	Corporate portals	Literature Review
24	Alavi and Leidner (2001)	Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues *(MIS Quarterly)*	Knowledge Management and Knowledge Management Systems	Review
25	Dhillon and Backhouse (2001)	Current directions in IS security research: Towards socio-organizational perspectives *(Info. Systems J.)*	IS Security	Literature Review
26	Haigney and Westerman (2001)	Mobile (cellular) phone use and driving: a critical review of research methodology *(Ergonomics)*	m-Phone Usage	Literature Review
27	Claver et al. (2000)	An analysis of research in information systems- 1981-1997 *(Information & Management)*	IS	Analysis / Literature Review

Appendix B: Summary of Articles on IT/SCU Included in this Review

S.No.	Citation	Methodology, Participants and Location	M/T/F	DV
1	Agudo-Peregrina et al. (2014)	Survey of 147 graduate students in Spain	TAM+	INT
2	Chiu et al. (2014)	Survey of 782 Yahoo!Kimo customers in Taiwan	SRF	INT
3	Hartono et al. (2014)	Survey of 436 online shoppers/customers in SK	MECT; PT	ATT
4	Huang et al. (2014)	Survey of 405 Facebook users in Taiwan	U> FT	INT
5	Jung (2014)	interviews* of 54 undergraduate students in SK	TAM+.	USAGE
6	Lin et al. (2014)	Survey of 742 college students in USA	*SCM*	INT
7	Najmul Islam (2014)	Survey of 314 faculty and students in Finland	*SCM*	INT
8	Park (2014)	Multimethod study (Interview & survey) of 677 students in USA	*SCM*	INT
9	Wang (2014)	Survey of 326 online service users/consumers in China	SET	USAGE
10	Zhou et al. (2014)	Survey of 464 Second Life users in China	NIL	INT
11	Al-Debei et al. (2013)	Survey of 403 Facebook users in Jordan	TPB+-	INT
12	Chang (2013)	Survey of 358 Facebook Game users in Taiwan	*SCM*	INT
13	Hsu et al. (2013)	Survey of 482 Facebook users in Taiwan	*SCM*	INT
14	Kang et al. (2013)	Survey of 278 Cyworld users in SK	*SCM*	INT
15	Ko (2013)	Survey of 283 bloggers in Taiwan	*SCM*	USAGE
16	Saraf et al. (2013)	Survey of 77 employees in China	*SCM*	USAGE
17	Stone and Baker-Eveleth (2013)	Survey of 469 university students in USA	ECM	INT
18	Veiga et al. (2013)	Survey of 153 employees in USA	*SCM*	USAGE
19	Wu et al. (2013)	Survey of 676 Facebook users in Taiwan	UTAUT+	INT
20	Yim et al. (2013)	Survey of 413 suppliers in USA	IDT	USAGE
21	Zhou (2013a)	Survey of 277 mobile internet users in China	*SCM*	USAGE
22	Zhou (2013b)	Survey of 195 mobile payment users in China	ISSM; FT	INT
23	Zhou (2013c)	Survey of 234 mobile internet users in China	*SCM*	USAGE
24	Al–maghrabi and Dennis (2012)	Survey of 234 university students in SA	TAM; ECT	INT
25	Chang (2012)	Survey of 302 e-Learning systems users in Taiwan	*SCM*	INT
26	Chang and Zhu (2012)	Survey of 283 SNS users in China	ECT+	INT
27	Chen (2012)	Survey of 390 m-Banking users in Taiwan	*SCM*	INT
28	Chen et al. (2012)	Survey of 409 Web 2.0 users in Taiwan	*SCM*	INT
29	Chiu et al. (2012)	Survey of 454 Yahoo!Kimo customers in Taiwan	*SCM*	INT
30	Ham at al. (2012)	Field Survey of 171 virtual community users in SK	*SCM*	INT
31	Hoehle et al. (2012)	Survey of 210 net banking users in NZ	ECT+	INT
32	Hsieh et al. (2012)	Survey of 319 bloggers in Taiwan	PPMF	INT
33	Kang et al. (2012)	Survey of 370 m-Banking users SK	*SCM*	USAGE
34	Kim (2012)	Survey of 317 m-data services & applications users in SK	*SCM*	INT

35	Kim and Hwang (2012)	Survey of 719 m-Internet users in SK	*SCM*	USAGE
36	Lin (2012)	Survey of 165 university students in Taiwan	TTF-ISCT	INT
37	Pi et al. (2012)	Survey of 126 online stock trading users in Taiwan	*SCM*	INT
38	Reji Kumar and Ravindran (2012)	Survey of 184 m-Banking users in India	*SCM*	INT
39	Tojib and Tsarenko (2012)	Survey of 603 advanced m-services users in Australia	*SCM*	USAGE
40	Verhagen et al. (2012)	Survey of 846 Second life users in the Netherlands	MT	ATT
41	Al-Maghrabi and Dennis (2011)	Survey of 465 faculty and students in SA	*SCM*	INT
42	Al-Maghrabi at al. (2011)	Survey of 465 faculty and students in SA	TAM; ECT	INT
43	Barnes (2011)	Survey of 339 Second Life users in UK	*SCM*	INT
44	Chang and Zhu (2011)	Survey of 278 netizens in China	TPB+	INT
45	Cheng (2011)	Survey of 328 employees of eight financial services companies in Taiwan	TAM+	INT
46	Choi et al. (2011)	Nationwide Survey of 997 M-Data Services users in SK	*SCM*	INT
47	Hernández-Ortega (2011)	Interview** of 100 employees in Spain	*SCM*	INT
48	Hung et al. (2011)	Survey of 144 faculty members in Taiwan	ECT+	INT
49	Jung (2011)	Survey of 194 Second Life users in Turkey	*SCM*	INT
50	Lee (2011)	Survey of 1266 3G mobile phone users in Taiwan	*SCM*	INT
51	Lee et al. (2011)	Survey of 552 business employees in Taiwan	TAM; IDT	INT
52	Li et al. (2011)	Survey of 213 owners and managers of SMEs in USA	*SCM*	INT
53	Liang and Yeh (2011)	Survey of 390 m-Game users in Taiwan	TAM; TRA-	INT
54	Limayem and Cheung (2011)	longitudinal survey of 505 e-learning technologies users HK	ECT+	INT
55	Lin (2011)	Survey of 256 university students in Taiwan	*SCM*	INT
56	Lin and Lu (2011)	Survey of 402 Facebook users in Taiwan	MT; NE	INT
57	Lu et al. (2011)	Survey of 961 AliPay users in China	VF; TTF	INT
58	Mäntymäki and Salo (2011)	Survey of 2481 Habbo users in USA	*SCM*	INT
59	Pai and Tu (2011)	Survey of 210 staff members in Taiwan	UTAUT; TTF	INT
60	Park et al. (2011)	Survey of 204 college students in USA	AERCF	INT
61	Rodon et al. (2011)	Multimethod qualitative study of 27 participants in Spain	NIL	USAGE
62	Saeed and Abdinnour-Helm (2011)	Survey of 1008 college students in USA	TAM+	USAGE
63	Sánchez-Franco et al. (2011)	Survey of 99 Facebook users in Spain	*SCM*	USAGE
64	Shin and Shin (2011)	Survey of 280 Social Network Game users in SK	*SCM*	INT
65	Venkatesh et al. (2011)	longitudinal study of 3159 HK citizens using e-government services	ECT; UTAUT	INT
66	Zhou (2011a)	Survey of 437 university students in China	UTAUT; FT	USAGE
67	Zhou (2011b)	Survey of 269 m-service users in China	ECT+	INT
68	Zhou and Lu (2011)	Survey of 269 m-service users in China	*SCM*	USAGE
69	Bock at al. (2010)	Survey of 144 employees and part-time students in Singapore	EDT, CDT-	INT
70	Chang (2010)	Survey of 246 university students in Australia	*SCM*	USAGE
71	Deng et al. (2010)	Survey of 289 university students in USA	EDT+	INT
72	Fang and Chiu (2010)	Survey of 142 virtual communities members in Taiwan	*SCM*	INT

73	Jin et al. (2010)	Survey of 240 university students in China	*SCM*	INT
74	Kang and Lee (2010)	Field Survey of 254 Cyworld students in SK	*SCM*	INT
75	Kim et al. (2010)	Survey of 290 university students in Singapore	*SCM*	USAGE
76	Lee (2010)	Survey of 363 university students in Taiwan	*SCM*	INT
77	Lin and Bhattacherjee (2010)	Survey of 485 university students in Taiwan	*SCM*	INT
78	Lu et al. (2010)	Survey of 262 m-Phone users in China	TAM; NE	USAGE
79	Mäntymäki and Merikivi (2010)	Survey of 2215 Habbo users in Finland	TAM; ECT	INT
80	Ng and Kwahk (2010)	Survey of 157 university students in Singapore	SQBT	INT
81	Park and Lee (2010)	Survey of 105 university students in SK	*SCM*	INT
82	Park et al. (2010)	Survey of 152 CIO/CEOs and departmental managers in SK	ISSM+	INT
83	Ramayah et al. (2010)	Survey of 1616 university students in Malaysia	ISSM	INT
84	Shi et al. (2010)	Survey of 125 Facebook users in HK	EDT+	INT
85	Shin et al. (2010)	Survey of 244 m-Internet users in SK	TAM+	USAGE
86	Verkasalo et al. (2010)	Survey of 579 m-Application users in Finland	TAM+	INT
87	Wang and Lin (2010)	Survey of 298 knowledge discussion group users in China	*SCM*	INT
88	Zhai (2010)	Survey of 176 enterprises in China	TOE	INT
89	Chiu et al. (2009a)	Survey of 311 PCHome Online customers in Taiwan	TAM+	INT
90	Chiu et al. (2009b)	Survey of 360 PCHome Online customers in Taiwan	TAM+	INT
91	Chou and Chen (2009)	Survey of 305 employees in Taiwan	ECT	INT
92	Gu et al. (2009)	Survey of 910 m-Banking users in SK	TAM+	INT
93	He et al. (2009)	Multi-method study (Interview and survey) of 64 employees in China	SCT	USAGE
94	Hu et al. (2009)	Survey of 518 e-Tax service users in HK	*SCM*	INT
95	Kang et al. (2009)	Survey of 349 university students in SK	ECT+	INT
96	Kim et al. (2009a)	Online & offline survey of 192 m-Banking users in SK	*SCM*	INT
97	Kim et al. (2009b)	Survey of 542 university students in SK	TAM; VHM	INT
98	Kuo et al. (2009)	Survey of 387 university students in Taiwan	*SCM*	INT
99	Larsen et al. (2009)	Survey of 135 faculty members in Norway	ECT; TTF	INT
100	Lee et al. (2009)	Survey of 478 m-Data Service uses in SK	TFT	USAGE
101	Lu et al. (2009)	Survey of 337 airline customers in Taiwan	TAM+	INT
102	Qureshi et al. (2009)	Survey of 745 staff, faculty and students in NZ & Ireland	*SCM*	INT
103	Sørebø et al. (2009)	Survey of 124 faculty members in Norway	ECT+	INT
104	Tao et al. (2009)	Survey of 185 university students in Taiwan	TAM; ECT; AT	INT
105	Chiu and Wang (2008)	Survey of 286 university students in Taiwan	UTAUT+	INT
106	Hung and Cho (2008)	Survey of 682 university students in HK	*SCM*	USAGE
107	Jones et al. (2008)	Multi-method study (Survey and focus group) with 104 employees in USA	*SCM*	USAGE
108	Kim et al. (2008)	Nationwide Survey of 3559 m-Date Service users in SK	*SCM*	INT
109	Koivumäki et al. (2008)	Survey of 610 m-services users in Finland	UTAUT	INT
110	Limayem and Cheung (2008)	Survey of 505 university students in USA	ECT+	INT

111	Lin and Huang (2008)	Survey of 192 knowledge management system users in Taiwan	TTF; SCT	USAGE
112	Lin and Shih (2008)	Survey of 433 m-Commerce consumers in Taiwan	*SCM*	INT
113	Premkumar and Bhattacherjee (2008)	Survey of 175 university students in USA	TAM; EDT	INT
114	Roca and Gagné (2008)	Survey of 166 workers in multiple countries	TAM; SDT	INT
115	Saeed and Abdinnour-Helm (2008)	Survey of 1032 university students in USA	TAM; ISSM	USAGE
116	Vatanasombut et al. (2008)	Survey of 1004 online Banking users in USA	CTT	INT
117	Wei and Zhang (2008)	Survey of 279 university students in China	TAM; SLT	INT
118	Chen (2007)	Survey of 360 members of a professional virtual community in Taiwan	*SCM*	INT
119	Chiu et al. (2007a)	Survey of 289 web-based learning students in Taiwan	ISSM; FT	INT
120	Chiu et al. (2007b)	Survey of 202 web-based learning students in Taiwan	STV; FT	INT
121	Eriksson and Nilsson (2007)	Survey of 1831 net banking users in Estonia	*SCM*	USAGE
122	Frambach et al. (2007)	Multimethod study (interview & focus group) with 300 users at various locations	Nil	INT
123	Hsieh and Wang (2007)	Survey of 200 employees in a large manufacturing firm in China	TAM; ECT	USAGE
124	Khalifa and Liu (2007)	Survey of 122 e-shopping customers in USA	CT	INT
125	Kim and Kwahk (2007)	Survey of 290 university students in Singapore	*SCM*	USAGE
126	Lee et al. (2007)	Large-scale on-line surveys of 5121 m-Internet users in SK, HK & Taiwan	IT; CLM	INT
127	Liao et al. (2007)	Survey of 469 university students in Taiwan	EDM; TPB	INT
128	Park et al. (2007)	Survey of 191 university students in USA	TAM+	INT
129	Yao at al. (2007)	Survey of 183 manufacturers, distributors, and retailers in USA	*SCM*	USAGE
130	Hong et al. (2006)	Survey of 1826 m-internet users/members in HK	TAM; ECM; TAM+ECM	INT
131	Hsu et al. (2006)	Survey of 201 university students in Taiwan	TPB+	INT
132	Li et al. (2006)	Survey of 335 university students in HK	*SCM*	INT
133	Mallat et al. (2006)	Survey of 360 citizens in Finland	TAM; DIT	INT
134	Roca et al. (2006)	Survey 172 workers at multiple locations	TAM+	INT
135	Thong et al. (2006)	Survey of 811 m-internet services users in HK	ECM+	INT
136	Wang et al. (2006)	Survey of 258 m-service users in Taiwan	TAM; TPB, MBAM	INT
137	Cheung and Huang (2005)	Survey of 328 university students in USA	TAM; TRA; IDT	USAGE
138	Chiu et al. (2005)	Survey of 183 university students in Taiwan	EDT+	INT
139	Lin and Wang (2005)	Survey of 258 m-Commerce users in Taiwan	TAM;TPB	INT
140	Nysveen et al. (2005a)	Survey of 684 m-Chat service users in Norway	TAM; TRA	INT
141	Nysveen et al. (2005b)	Survey of 2038 upper secondary school students in Norway	TAM+	INT
142	Zhu and Kraemer (2005)	Survey 624 employees at multi locations	TOEF; RBT	USAGE
143	Bhattacherjee and Premkumar (2004)	Two longitudinal studies involving 400 students in USA	EDT+	INT
144	Chu et al. (2004)	Survey of 158 public officials in Taiwan	TPB	INT
145	Hsu and Chiu (2004)	Field Survey of 149 e-tax filing service users in Taiwan	DTPB	INT

146	Hsu and Lu (2004)	Survey of 233 online game users in Taiwan	TAM+	INT
147	Van der Heijden (2003)	Survey of 828 Dutch generic portal site users in Netherlands	TAM+	INT
148	Yi and Hwang (2003)	Survey of 109 blackboard class management system users in USA	TAM+	INT
149	Zhu and He (2002)	Survey of 2664 citizens in China	*SCM*	USAGE
150	Ang et al. (2001)	Survey of 42 public agencies in Malaysia	*SCM*	USAGE
151	Bhattacherjee (2001)	Survey of 172 online brokerage users in USA	ECT	INT
152	Karahanna and Limayem (2000)	Survey of 384 users at a large financial institution in USA	TAM+	USAGE

*Laddering interviews (Gutman, 1982); **Computer Assisted Telephone Interviewing (CATI); HK-Hong Kong; SK-South Korea; NZ-New Zealand; SA-Saudi Arabia; M/T/F-Model/Theory/Framework Used; ATT-Attitude; INT-Intention; DV-Dependent Variable

SET-Social Exchange Theory; SCM-Self-constructed Model; TAM-Technology Acceptance Model; U&GT- U&G Theory; FT-Flow Theory; MECT-Means-end Chain Theory; PT-Prospect Theory; SRF-Self-regulation Framework; IDT- Innovation Diffusion Theory; UTAUT- Unified Theory of Acceptance and Use of Technology; ISSM- Information Systems Success Model; TPB- Theory of Planned Behaviour; ECM/T-Expectation-confirmation Model/Theory; MT-Motivation Theory; PPMF-Push–Pull–Mooring Framework; TTF-Task-Technology Fit; MT-Motivation Theory; NE-Network Externalities; TRA- Theory of Reasoned Action; AERCF-Appraisal-emotional Response-coping Framework; VF-Valence Framework; TOE Framework; EDM/T-Expectation-disconfirmation Model/Theory; SQBT-Status Quo Bias Theory; CDT- Cognitive Dissonance Theory; SCT-Social Capital Theory; AT-Agency Theory; TFT-Two-factor Theory; VHM-Van der Heijden's Model; CTT-Commitment–Trust Theory; SCT-Social Cognitive Theory; SLT-Social Learning Theory; SDT-Self-determination Theory; CT-Contingency Theory; IT-Interaction Theory; CLM-Cultural Lens Model; STV-Subjective Task Value; MBAM-M-banking Acceptance Model; TOEF-TOE Framework; RBT-Resource-Based Theory; DTPB- Decomposed Theory of Planned Behaviour; ISCT-Information Systems Continuous Theory.

Appendix C: Summary of the Domain-specific distribution of Articles on IT/SCU

S. No.	No. Of Articles	Year	Citation	Database	Journal	Technology
				Domain1_ Continuous Usage of Mobile Information Systems (CUMIS)		
1	1	2014	Jung (2014)	Wiley	Information Systems Journal	M-Phones
2	2	2014	Wang (2014)	ScienceDirect	Computers in Human Behavior	M-Government (m-Tax Message Platform)
3	3	2013	Zhou (2013a)	SAGE	Information Development	M-Internet
4	4	2013	Zhou (2013b)	ScienceDirect	Decision Support Systems	M-Payments
5	5	2013	Zhou (2013c)	Inderscience	International Journal of Mobile Communications	M-Internet
6	6	2012	Reji Kumar and Ravindran (2012)	EBSCOHost	Journal of Internet Banking & Commerce	M-Banking
7	7	2012	Chen (2012)	Inderscience	International Journal of Mobile Communications	M-Banking
8	8	2012	Kang et al. (2012)	Taylor & Francis	Journal of Organizational Computing and E- Commerce	M-Banking
9	9	2012	Kim (2012)	ScienceDirect	Telecommunications Policy	M-Data Services & Applications (Apps Store)
10	10	2012	Kim and Hwang (2012)	Springer	Information Systems Frontiers	M-Internet
11	11	2012	Tojib and Tsarenko (2012)	ScienceDirect	Journal of Business Research	M-Services
12	12	2011	Park et al. (2011)	EBSCOHost	Journal of Electronic Commerce Research	M-Services
13	13	2011	Zhou (2011b)	Taylor & Francis	Behaviour and Information Technology	M-Services
14	14	2011	Choi et al. (2011)	ScienceDirect	Journal of Business Research	M-Data Services
15	15	2011	Lee (2011)	ScienceDirect	Computers in Human Behavior	M-Data Services
16	16	2011	Zhou and Lu (2011)	Taylor & Francis	International Journal of Human-Computer Interaction	M-Internet
17	17	2011	Liang and Yeh (2011)	Springer	Personal and Ubiquitous Computing	M-Games
18	18	2011	Zhou (2011a)	SAGE	Information Development	M-Internet
19	19	2011	Lu et al. (2011)	ScienceDirect	Information and Management	M-Payments

20	20	2010	Deng et al. (2010)	Palgrave	European Journal of Information Systems	M-Internet
21	21	2010	Kim et al. (2010)	Inderscience	International Journal of Mobile Communications	M-Internet
22	22	2010	Chang (2010)	Inderscience	International Journal of Mobile Communications	M-Phones
23	23	2010	Ng and Kwahk (2010)	Inderscience	International Journal of Mobile Communications	M-Internet
24	24	2010	Lu et al. (2010)	Wiley	Information Systems Journal.	M-Short Message Service (SMS)
25	25	2010	Verkasalo et al. (2010)	ScienceDirect	Telematics and Informatics	M-Applications (Internet / Mapping / Games)
26	26	2010	Shin et al. (2010)	Springer	Information Systems Frontiers	M-Internet
27	27	2009	Kim et al. (2009a)	Wiley	Information Systems Journal.	M-Banking
28	28	2009	Kuo et al. (2009)	ScienceDirect	Computers in Human Behavior	M-Services
29	29	2009	Kim et al. (2009b)	ScienceDirect	Expert Systems with Applications	M-Data Service
30	30	2009	Gu et al. (2009)	ScienceDirect	Expert Systems with Applications	M-Banking
31	31	2009	Lee et al. (2009)	EBSCOHost	Journal of the Association for Information Systems	M-Data Service
32	32	2008	Lin and Shih (2008)	Inderscience	International Journal of Mobile Communications	M-Commerce
33	33	2008	Kim et al. (2008)	Inderscience	International Journal of Mobile Communications	M-Data Services
34	34	2008	Koivumäki et al. (2008)	ACM	Personal and Ubiquitous Computing	M-Services
35	35	2007	Lee et al. (2007)	M.E.Sharpe	International Journal of Electronic Commerce	M-Internet
36	36	2007	Kim and Kwahk (2007)	IEEE	Proceedings	M-Internet
37	37	2006	Thong et al. (2006)	ScienceDirect	International Journal of Human-Computer Studies	M-Internet
38	38	2006	Mallat et al. (2006)	IEEE	Proceedings	M-Ticketing
39	39	2006	Hong et al. (2006)	ScienceDirect	Decision Support Systems	M-Internet
40	40	2006	Wang et al. (2006)	Wiley	Information Systems Journal.	M-Services
41	41	2005	Lin and Wang (2005)	IEEE	Proceedings	M-Commerce
42	42	2005	Nysveen et al. (2005)	Emerald	Journal of Consumer Marketing	M-Chat Services
43	43	2005	Nysveen et al. (2005)	SAGE	Journal of the academy of marketing science	M-Services

Domain2_ Continuous Usage of Electronic Business Information Systems (CUEBIS)						
44	1	2014	Chiu et al. (2014)	Wiley	Information Systems Journal	E-Commerce (B2C)
45	2	2014	Hartono et al. (2014)	ScienceDirect	Decision Support Systems	E-Commerce (B2C)
46	3	2013	Saraf et al. (2013)	Wiley	Information Systems Journal	ERP Systems
47	4	2013	Veiga et al. (2013)	Palgrave	European Journal of Information Systems	Enterprise Systems
48	5	2013	Yim et al. (2013)	Emerald	Journal of Business and Industrial Marketing	Supply Chain Management
49	6	2012	Hoehle et al. (2012)	EBSCOHost	Journal of Computer Information Systems	Internet Banking
50	7	2012	Chiu et al. (2012)	ScienceDirect	Decision Support Systems	E-Purchase
51	8	2012	Al–maghrabi and Dennis (2012)	Inderscience	International Journal of Business Information Systems	E-Shopping (E-retailer)
52	9	2012	Pi et al. (2012)	EBSCOHost	International Journal of Business & Management	E-Stock Trading
53	10	2011	Pai and Tu (2011)	ScienceDirect	Expert Systems with Applications	CRM System
54	11	2011	Venkatesh et al. (2011)	Wiley	Information Systems Journal.	E-Government
55	12	2011	Hernández-Ortega (2011)	ScienceDirect	Technovation	E-Invoicing
56	13	2011	Lee et al. (2011)	EBSCOHost	Journal of Educational Technology and Society	E-Learning/Knowledge Management System For Employees
57	14	2011	Cheng (2011)	Wiley	Information Systems Journal.	E-Learning/Knowledge Management System For Employees
58	15	2011	Al-Maghrabi and Dennis (2011)	Emerald	Journal of Retail & Distribution Management	E-Shopping
59	16	2011	Al-Maghrabi at al. (2011)	Emerald	Journal of Enterprise Information Management	E-Shopping
60	17	2011	Rodon et al. (2011)	Wiley	Information Systems Journal.	Inter-organization Information System
61	18	2011	Li et al. (2011)	EBSCOHost	Journal of the Association for Information Systems	Online Direct Sales Channels (ODSC)
62	19	2010	Bock at al. (2010)	Taylor & Francis	Journal of Organizational Computing and E-Commerce	E-Knowledge Repositories (EKR)
63	20	2010	Zhai (2010)	IEEE	Proceedings	E-Marketplace (B2B)
64	21	2010	Wang and Lin (2010)	IEEE	Proceedings	E-Knowledge Groups (Professional Technology Temple)
65	22	2010	Lin and Bhattacherjee (2010)	Wiley	Information Systems Journal.	E-Video Games (OVGs)
66	23	2010	Park et al. (2010)	ScienceDirect	Electronic Commerce Research and Applications	Web Analytics Services

67	24	2009	Hu et al. (2009)	Wiley	J. of the American Society for Info. Science and Tech.	E-Government
68	25	2009	Qureshi et al. (2009)	Palgrave	European Journal of Information Systems	E-Shopping
69	26	2009	Chiu et al. (2009a)	Taylor & Francis	Behaviour and Information Technology	E-Shopping
70	27	2009	Chiu et al. (2009b)	Emerald	Online Information Review	E-Shopping
71	28	2009	Chou and Chen (2009)	ScienceDirect	International Journal of Human-Computer Studies	ERP Systems
72	29	2009	He et al. (2009)	ScienceDirect	Information and Management	Knowledge Management Systems For Employees
73	30	2009	Lu et al. (2009)	ScienceDirect	Logistics and Transportation Review	Self Check-in (Airline)
74	31	2008	Roca and Gagné (2008)	ScienceDirect	Computers in Human Behavior	E-Learning For Employees
75	32	2008	Jones et al. (2008)	EBSCOHost	Communications of the Association for IS	ERP Systems
76	33	2008	Lin and Huang (2008)	ScienceDirect	Information and Management	Knowledge Management Systems For Employees
77	34	2008	Vatanasombut et al. (2008)	ScienceDirect	Information and Management	Online Banking
78	35	2007	Frambach et al. (2007)	Wiley	Journal of Interactive Marketing	E-Financial Services (Mortgage)
79	36	2007	Khalifa and Liu (2007)	Palgrave	European Journal of Information Systems	E-Shopping
80	37	2007	Yao at al. (2007)	ScienceDirect	Decision Support Systems	Electronically-enabled Supply Chains (ESCs)
81	38	2007	Hsieh and Wang (2007)	Palgrave	European Journal of Information Systems	ERP Systems
82	39	2007	Eriksson and Nilsson (2007)	ScienceDirect	Technovation	Internet Banking
83	40	2006	Li et al. (2006)	Wiley	Decision Sciences	E-Commerce
84	41	2006	Roca et al. (2006)	ScienceDirect	International Journal of Human-Computer Studies	E-Learning System For Employees
85	42	2006	Hsu et al. (2006)	ScienceDirect	International Journal of Human-Computer Studies	E-Shopping (PChome Shopping Store)
86	43	2005	Zhu and Kraemer (2005)	INFORMS	Information Systems Research	E-Business
87	44	2004	Chu et al. (2004)	ScienceDirect	Government Information Quarterly	E-Government
88	45	2004	Hsu and Lu (2004)	ScienceDirect	Information and Management	Online Games
89	46	2004	Hsu and Chiu (2004)	Taylor & Francis	Behaviour and Information Technology	Web-based Tax Filing Service
90	47	2001	Bhattacherjee (2001)	ScienceDirect	Decision Support Systems	E-Commerce (Online Brokerage)

91	48	2001	Ang et al. (2001)	ScienceDirect	Journal of Strategic Information Systems	Total Quality Management
92	49	2000	Karahanna and Limayem (2000)	Taylor & Francis	Journal of Organizational Computing and E- Commerce	E-Mail/Voice Mail
				Domain3_ Continuous Usage of Social Information Systems (CUSIS)		
93	1	2014	Park (2014)	ScienceDirect	Information Processing and Management	Social Networking Sites (SNS)
94	2	2014	Lin et al. (2014)	ScienceDirect	Information and Management	SNS (Facebook)
95	3	2014	Huang et al. (2014)	ScienceDirect	Information and Management	SNS (Facebook)
96	4	2014	Zhou et al. (2014)	ScienceDirect	Decision Support Systems	Social Virtual World (SVW)
97	5	2013	Chang (2013)	ScienceDirect	Telematics and Informatics	Social Network Games (Facebook)
98	6	2013	Ko (2013)	ScienceDirect	Electronic Commerce Research and Applications	SNS (Bloggers)
99	7	2013	Kang et al. (2013)	ScienceDirect	International Journal of Information Management	SNS (Cyworld)
100	8	2013	Hsu et al. (2013)	Springer	Information Systems and e-Business Management	SNS (Facebook)
101	9	2013	Al-Debei et al. (2013)	ScienceDirect	Decision Support Systems	SNS (Facebook)
102	10	2013	Wu et al. (2013)	Springer	Information Systems and e-Business Management	SNS (Facebook)
103	11	2012	Chang and Zhu (2012)	ScienceDirect	Computers in Human Behavior	SNS
104	12	2012	Hsieh et al. (2012)	ScienceDirect	Computers in Human Behavior	SNS (Bloggers)
105	13	2012	Chen et al. (2012)	ScienceDirect	Computers in Human Behavior	SNS (Web 2.0)
106	14	2012	Verhagen et al. (2012)	ScienceDirect	Computers in Human Behavior	Social Virtual World (Second Life)
107	15	2012	Ham at al. (2012)	IEEE	Proceedings	Virtual Communities
108	16	2011	Shin and Shin (2011)	ScienceDirect	Computers in Human Behavior	Social Network Games (SNGs)
109	17	2011	Chang and Zhu (2011)	ScienceDirect	Computers in Human Behavior	SNS
110	18	2011	Lin and Lu (2011)	ScienceDirect	Computers in Human Behavior	SNS (Facebook)
111	19	2011	Sánchez-Franco et al. (2011)	ScienceDirect	Procedia-Social and Behavioral Sciences	SNS (Facebook)
112	20	2011	Mäntymäki and Salo (2011)	ScienceDirect	Computers in Human Behavior	Social Virtual World (Habbo)
113	21	2011	Jung (2011)	Wiley	Journal of Computer-Mediated Communication	Social Virtual World (Second Life)

114	22	2011	Barnes (2011)	ScienceDirect	Information and Management	Social Virtual World (Second Life)
115	23	2010	Jin et al. (2010)	Taylor & Francis	Behaviour and Information Technology	Online Communities (BBS-China)
116	24	2010	Kang and Lee (2010)	ScienceDirect	Computers in Human Behavior	SNS (Cyworld)
117	25	2010	Shi et al. (2010)	IEEE	Proceedings	SNS (Facebook)
118	26	2010	Park and Lee (2010)	Springer	U-and E-Service, Science and Technology	SNS (Twitter)
119	27	2010	Mantymaki and Merikivi (2010)	IEEE	Proceedings	Social Virtual World (Habbo)
120	28	2010	Fang and Chiu (2010)	ScienceDirect	Computers in Human Behavior	Virtual Communities of Practice (JavaWorld@TW)
121	29	2009	Kang et al. (2009)	ScienceDirect	Computers in Human Behavior	SNS (Cyworld)
122	30	2007	Chen (2007)	SAGE	Journal of Information Science	Professional Virtual Communities
123	31	2003	Van der Heijden (2003)	ScienceDirect	Information and Management	Website (Dutch Generic Portal)
Domain4_ Continuous Usage of Electronic Learning Information Systems (CUELIS)						
124	1	2014	Agudo-Peregrina et al. (2014)	ScienceDirect	Computers in Human Behavior	E-Learning System
125	2	2014	Najmul Islam (2014)	ScienceDirect	Computers in Human Behavior	Learning Management System (Moodle)
126	3	2013	Stone and Baker-Eveleth (2013)	ScienceDirect	Computers in Human Behavior	E-Textbooks (E-texts)
127	4	2012	Chang (2012)	Emerald	Library Management	E-Learning System for Students
128	5	2012	Lin (2012)	ScienceDirect	International Journal of Human-Computer Studies	Virtual Learning System for Students
129	6	2011	Lin (2011)	ScienceDirect	Computers and Education	E-Learning (Cyber University)
130	7	2011	Hung et al. (2011)	ScienceDirect	Computers and Education	E-Learning System (Wisdom Master)
131	8	2011	Limayem and Cheung (2011)	Taylor & Francis	Behaviour and Information Technology	Internet-based learning (Blackboard)
132	9	2011	Saeed and Abdinnour (2011)	Wiley	Information Systems Journal	Student Information System
133	10	2010	Ramayah et al. (2010)	ScienceDirect	Procedia-Social and Behavioral Sciences	E-Learning System
134	11	2010	Lee (2010)	ScienceDirect	Computers and Education	E-Learning System
135	12	2009	Tao et al. (2009)	ScienceDirect	Computers and Education	Business Simulation Games For Students
136	13	2009	Sørebø et al. (2009)	ScienceDirect	Computers and Education	E-Learning Technology

137	14	2009	Larsen et al. (2009)	ScienceDirect	Computers in Human Behavior	E-Learning Tool
138	15	2008	Premkumar and Bhattacherjee (2008)	ScienceDirect	Omega	Computer-Based Tutorial
139	16	2008	Hung and Cho (2008)	Wiley	International Journal of Training and Development	E-Learning Communication Tool (WebCT)
140	17	2008	Wei and Zhang (2008)	EBSCOHost	Information Research	Internet Knowledge and Use
141	18	2008	Limayem and Cheung (2008)	ScienceDirect	Information and Management	Internet-based Learning Technology (Blackboard)
142	19	2008	Chiu and Wang (2008)	ScienceDirect	Information and Management	Web-based Learning
143	20	2008	Saeed and Abdinnour-Helm (2008)	ScienceDirect	Information and Management	Web-based Student Information System
144	21	2007	Liao et al. (2007)	ScienceDirect	Computers in Human Behavior	Cyber University System (CUS)
145	22	2007	Park et al. (2007)	Wiley	Journal of Computer-Mediated Communication	E-Courseware
146	23	2007	Chiu et al. (2007a)	Wiley	Information Systems Journal.	Web-based Learning Program
147	24	2007	Chiu et al. (2007b)	ScienceDirect	Computers and Education	Web-based Learning Program
148	25	2005	Cheung and Huang (2005)	Wiley	British Journal of Educational Technology	E-Learning
149	26	2005	Chiu et al. (2005)	ScienceDirect	Computers and Education	E-Learning
150	27	2004	Bhattacherjee and Premkumar (2004)	JSTOR	MIS Quarterly	Computer based Training Software
151	28	2003	Yi and Hwang (2003)	ScienceDirect	International Journal of Human-Computer Studies	Web-based Class Management System (Blackboard)
152	29	2002	Zhu and He (2002)	SAGE	Communication Research	Internet Usage