

THE IMPACT OF THE CONTINUED USE OF AN ENTERPRISE SYSTEMS (ES) ON JOB SATISFACTION

By

Ugonna William Omeziri, BSc (IMSU, Owerri, Nigeria, 2011)

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Abstract

Organizations have invested heavily in implementing Information Systems (IS) such as enterprise systems (ES) but experienced significant challenges in realizing the potential benefits from these systems. Despite the maturity of research in ES, little research has examined the impact of continued use of ES on job satisfaction. With increased use and dependency on systems such as ES, recent research has shown that system use can impact employees' satisfaction especially during the earlier stages of the system implementation. This is because the implementation of this system is usually accompanied with drastic change in work duties and tasks in which employees might have to learn new skills to navigate the new system. This disruptive event can influence employees' attitudes about their jobs following ES implementation. However, past the initial stage of implementation not much is known about the impact of continued use of ES on employee job satisfaction. This research, by drawing on theoretical models on IT continued usage and IT adoption (e.g., Unified Theory of Acceptance and Use of Technology [UTAUT]), theorizes the impact of perceived usefulness (PU) on user satisfaction, IS continuance intention, and job satisfaction, and tests a model through a survey of 108 ES users at a manufacturing company in Canada. The results suggest that facilitating conditions are a salient predictor of perceived ease of use, perceived usefulness and user satisfaction. Additionally, the results support that user satisfaction has a positive and significant effect on continuance intention and employee job satisfaction.

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Dedication

This work is dedicated to my late father, Dr. Canice Omeziri. Continue to rest in peace.

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Chapter 1 Introduction

The evolution of the modern-day enterprise systems (ES), which is also known as enterprise resource planning (ERP) system began in the 1980s. The introduction of ES was welcomed as organizations struggled in the past to manage information flow from standalone systems. This struggle led to software companies in Germany, Holland and United States to embark on projects to develop software packages that could integrate fragmented information housed in legacy and standalone systems into a single database to enhance the speed, efficiency and effectiveness of business organizations (Markus & Tanis, 2000). Before the sweeping wave of ES implementation, both small and large-scale organizations' processes were run using standalone systems otherwise referred to as legacy systems. These systems were difficult to manage and were inefficient and ineffective (Davenport, 1998, 2000). One of the main problems with legacy systems is the inability to provide and process real time information needed to drive organizational activities. The introduction of ES has significantly changed the narrative for organizations seeking operational excellence following successful implementation. Since then, ES has become an essential tool used to run businesses and organizations of all kinds ranging from healthcare to educational institutions.

ES are complex systems which involve software, hardware, and, in most cases, business process reengineering (BPR) as the software requires organizations to realign their strategy with the implementation of ES (Davenport, 1998; Sykes & Venkatesh, 2017). Prior research has highlighted that the implementation of an ES is one of the most pervasive change events for organizations striving for the seamless flow of information across business units (Davenport, 2000; Morris & Venkatesh, 2010). A report by Gartner states that the global spending for information systems (IS) is forecasted to reach \$3.8 trillion in 2019, representing a 2.8 percent growth from 2018 (Gartner, 2018). The report further indicates that enterprise software accounted for the highest percent growth for information technology (IT) spending: 8.9 percent (\$355 billion), 9.5 percent (\$389 billion) and 8.4 percent (\$421 billion) growth for 2017, 2018

and 2019 respectively (Gartner, 2018). Organizations globally are looking to improve efficiency and effectiveness, and the implementation of ES is seen as a viable option to achieve these goals. However, for such benefits to be derived, employees of adopting organizations must use these systems (DeLone & McLean, 1992; Po-An Hsieh & Wang, 2007). Prior research in IS found that the significant changes caused by the implementation of ES might create issues that can impact employees (Maier, Laumer, Eckhardt, & Weitzel, 2013; Morris & Venkatesh, 2010). One reason for the implementation of ES is to make employees jobs' easier (Panorama Consulting Solutions, 2017). If the employees' work environment is not improved, they could abandon the system.

Extant Information Systems (IS) research has long treated system use as the ultimate dependent variable, which has resulted in remarkable achievement in understanding antecedents of system use (Davis, 1989; Venkatesh, Morris, Davis, & Davis, 2003). However, IS scholars point to the fact that technology adoption studies have reached a maturity stage, implying that the theoretical limit of predicting individual-level technology might be at its peak, and are now calling for researchers to explore issues beyond initial adoption by incorporating outcome-centric constructs such as job satisfaction (Sykes & Venkatesh, 2017; Venkatesh, Davis, & Morris, 2007). This current research responds to those calls echoed by IS scholars. Additionally, Venkatesh et al. (2007) indicate that while significant progress has been made in the individual-level technology adoption studies, little empirical work has incorporated non-techno-centric constructs as the main dependent variable, and as such have called on IS scholars to examine outcome-centric construct such as job satisfaction.

According to an industry report in 2017, 26 percent of ES implementations were deemed as failed projects as the desired benefits were not achieved (Panorama Consulting Solutions, 2017). System use has long been emphasized as one of the main ways of measuring IS success (DeLone & McLean, 1992, 2003) as it is assumed that employees use the system to complete work-related tasks and duties. Likewise, employees' inability to use the ES has been listed as one of the reasons for failed implementations (Sykes

& Venkatesh, 2017). The high rate of failure in ES implementation has attracted significant research in understanding how employees react to, and deal with, such changes (Botta-Genoulaz, Millet, & Grabot, 2005; Moon, 2007; Saxena & McDonagh, 2017)(M. G. Morris & Venkatesh, 2010; Sykes, 2015; Sykes, Venkatesh, & Johnson, 2014). More recently, Morris and Venkatesh (2010) and Sykes and Venkatesh (2017) found a link between the implementation of ES and job satisfaction. They found that the implementation of ES drastically changes work tasks and duties, especially in the shakedown phase, as this phase is a mission-critical stage after the implementation of ES, and is characterized by employees either accepting or completely abandoning the system (Markus & Tanis, 2000; Sykes, 2015). While these researches have provided new insights, they fail to highlight the effect of prolonged ES use on employees.

Job satisfaction as a job outcome is important as it has been linked to organizational commitment, turnover intention and job performance (Maier et al., 2013; Thatcher, Stepina, & Boyle, 2002). Job satisfaction is defined as the degree to which an employee is happy with his/her job (Morris & Venkatesh, 2010; Sykes, 2015). Job satisfaction is well-established in the organizational behavior literature (Aziri, 2011; Kalleberg, 1977; Venkatesh et al., 2007) and it has been established that the implementation of ES can potentially alter jobs, which may, in turn, lead to employees feeling uneasy with the new work environment (Morris & Venkatesh, 2010).

However, past the initial adoption phase, not much is known on how continued system use shape job satisfaction. Incorporating job satisfaction shifts the discussion of examining technological constructs as standalone constructs and gives room for examining IS beyond technology-centric dependent variables but rather as a multi-faceted construct. Studies jointly examining job satisfaction and ES use are scant in IS literature (Morris & Venkatesh, 2010; Sykes & Venkatesh, 2017). Hence, examining the relationship between system use, particularly continued use of ES, and job satisfaction provides the opportunity to dive deeper and create new knowledge that can aid better utilization of ES, and improve job performance.

Venkatesh et al. (2003) conceptualize facilitating conditions as influencing user behavior. Facilitating conditions are exemplified to be the scope and kind of support provided to individuals in work environments that can influence their use of a system (Lu, Yu, & Liu, 2005). It is believed that the availability of necessary support can influence favorable user behavior, and this perceived belief of resources can also influence job satisfaction (Sykes, 2015). This research also examines the influence of facilitating conditions on job satisfaction and other technology-related constructs from the unified theory of acceptance and use of technology (UTAUT), Technology Acceptance Model, and Expectation Confirmation Model (ECM).

This research intends to explore job satisfaction and ES from the post-implementation perspective as a plethora of previous research has examined the initial implementation phase of ES (Huang & Yasuda, 2016; Moon, 2007; Saxena & McDonagh, 2017). There is no doubt that significant attention from IS research has been given to ES as they are numerous systemic reviews on the topic (Addo-Tenkorang & Helo, 2012; Botta-Genoulaz et al., 2005; Dong, Neufeld, & Higgins, 2002; Moon, 2007). However, there is still a need to remain current with issues arising from the continued use of ES as there are still reports of failed implementations (BBC News, 2018; Panorama Consulting Solutions, 2015).

Understanding how employees and users interact with the system holds the key to uncovering user issues that can improve and ensure continued use of ES, which is one of the ultimate goals of implementing the system, and this serves as the motivation for this work. It is imperative that organizations have the knowledge and a good understanding of the technology before embarking on ES implementation projects. Extant literature shows that organizations have been impacted negatively for not carefully examining the entire process before embarking on the ES dream that promises streamlining of business processes (Davenport, 1998; Scott, 1999; Trunick, 1999).

A vast majority of research has explored issues from the standpoint of the enterprise system lifecycle (Botta-Genoulaz et al., 2005; Markus & Tanis, 2000; Saxena & McDonagh, 2017). For instance, Markus and Tanis (2000) outlined four phases in the ES Experience Cycle, namely: the project chartering phase, the project phase, the shakedown phase and finally the onward and upward phase. Prior research has shown that the shakedown phase, which typically lasts between 6 to 12 months, is understood to be a critical stage in the ES Experience Cycle. This typically involves an organization coming to terms with the ES or giving up on the implementation and completely abandoning the system (Markus & Tanis, 2000; Sykes & Venkatesh, 2017). While profound insights have been uncovered concerning understanding how to better harness the potential benefits of the ES, little is known on how employee satisfaction changes with continuous interaction with the technology (Sykes, 2015). It is well established that ES are high-risk projects which can significantly impact an organization's bottom line (Davenport, 1998, 2000). As history has shown, catastrophic failures in implementation which have sent established organizations into oblivion (Davenport, 1998; Kumar, Maheshwari, & Kumar, 2002a; Scott, 1999).

The current research aims to contribute to ES use research literature as it builds on prior research in the ES by incorporating job-related outcomes, i.e. job satisfaction (Morris & Venkatesh, 2010; Sykes, 2015; Sykes & Venkatesh, 2017) and extends well-established constructs from UTAUT, TAM, and ECM (Bhattacharjee, 2001; Davis, 1989; Davis, Bagozzi, & Warshaw, 1989; Venkatesh et al., 2003) to the ES context. Of note is the fact that ES literature lacks empirical work examining job satisfaction at the onward and upward phase. Therefore, the overarching goal of this research is to examine continued system use and job satisfaction in the onward and upward phase¹ (Markus & Tanis, 2000). Hence the main research questions this study seeks to answer are:

¹ Onward and Upward phase is identified as the fourth phase in the experience cycle proposed by Markus and Tanis (2000). This phase continues with normal operation with ES until the system is either upgraded or completely replaced.

1. What is the impact of continued use of an ES system on job satisfaction?
2. What is the impact of facilitating conditions on job satisfaction and other techno-centric constructs (e.g. Perceived Ease of Use, Continuance Intention, and User Satisfaction)?

The rest of this thesis is organized as follows: Chapter two discusses relevant literature. Chapter three describes the theoretical foundation for the study. After introducing the research model and the proposed hypotheses in Chapter four and research methodology in Chapter five, Chapter six presents the data analysis, and chapter seven presents the summary of the results and a discussion of the study's findings. Finally, in Chapter eight, I will discuss the research limitations, directions for future research, implications and conclusion of this research.

Chapter 2 Background and Literature review

2.1 Brief History of Enterprise Systems

The origin of ES can be traced back to the introduction and development of inventory control packages in the 1960s (Rashid, Hossain, & Patrick, 2002; Umble, Haft, & Umble, 2003). According to Gumaer (1996), businesses in the 1960s paid little attention to their inventory as production was ramped up without any consideration for exact demand. This created unnecessary levels of inventory and led to organizations gravitating toward implementing software packages designed to handle inventory. This represented a large shift in the management of inventory for a period of time as organizations sorted ways to manage large inventories efficiently (Umble et al., 2003). By 1970s, companies realized that they could no longer afford the luxury of maintaining excessive levels of inventory consignment (Umble et al., 2003).

Markus and Tanis (2000) point out that in the 1970s, the utilization of a single integrated information system “for the enterprise remained a mirage for the majority of computer-using organizations”(p. 174) up until the arrival of materials requirement planning (MRP) system. MRP was predominantly used in the manufacturing sector for managing production planning, scheduling and inventory control system (Ptak, Smith, & Orlicky, 2011). By the 1980s, organizations had come to realize that information technology could be utilized as a tool for competitive advantage (Porter, 1990; Porter & Millar, 1985).

MRP evolved into manufacturing resource planning (MRPII) with added functionality like shop floor, distribution management, project management, finance, human resource and engineering, master scheduling, rough-cut capacity planning (RCCP), sales and operations planning (S&OP) and capacity requirement planning (CRP) (Oliver Wight Inc, 1983; Rashid et al., 2002). MRPII unified financial accounting systems and finance management systems together with the manufacturing and materials

management systems (Umble et al., 2003). But the glory days of MRPII were short-lived as MRPII had limited capability, and this was the gateway that led to the arrival of ES (Chung & Synder, 1999).

By mid to late 1990s, organizations who were seeking operational excellence saw the need for a robust system capable to relay real-time information. This led to companies to seek a better system than what was currently available, and this need for a robust system saw the introduction of ES (Davenport, 1998, 2000). The Gartner Group was credited for coining the term ES in the 1990s (Heather, 2001). Some organizations relied on in-house IT experts to build integrated systems while others looked up to industry leaders in the USA, Germany and the Netherlands who were already creating robust systems like the ES (Markus & Tanis, 2000).

ES were introduced as a replacement system for outdated standalone systems (legacy systems) (Davenport, 1998; Markus & Tanis, 2000). This new system integrated fragmented systems to operate from a shared database and could provide real-time information to enable businesses and organizations to work efficiently and effectively. Since its introduction to the marketplace, researchers have devoted a significant amount of effort in uncovering underlying issues associated with the system. The case has been made that the implementation of ES is perceived as a competitive advantage strategy (V. Kumar, Maheshwari, & Kumar, 2002b; Vinod Kumar, Maheshwari, & Kumar, 2002).

ES integrates various functions and processes for adopting organizations and helps coordinate inventory and order management, customer relationship management (CRM), purchasing and production planning. This can help improve overall efficiency and effectiveness while aiding business dealings and responding to customers and partners in a timely manner. ES are powerful systems because of their capability to pull data from a single database that contains all information in an organization. Figure 1 shows the evolution of ES.



Figure 1 Evolution of ES (Rashid et al., 2002)

Similar to MRPII, ES were initially targeted at manufacturing organizations with substantial operations. After large wave of manufacturing companies acquiring and implementing the ES, ES vendors saw the arrival of other industries wanting to acquire and implement the system. The industries interested to acquire the system stretched from banking to retail businesses (Information and Communications Technology Council, 2014; V. Kumar et al., 2002a; Snider, da Silveira, & Balakrishnan, 2009), and as such, ES became widespread. This widespread implementation of ES cemented the relevance and importance of ES.

According to Davenport (1998), there is always a high risk associated with ES in general as the technology dictates the way an organization runs their business, and It is also known that the roll-out projects face huge uncertainty because of their disruptive nature (Kumar et al., 2002b; Vinod Kumar, Maheshwari, & Kumar, 2003). With huge uncertainties experienced in a substantial number of implementation projects, there is no shortage of stories about companies whose ES dreams turned into nightmares. Trunick (1999) stated that 40% of all ES projects realized partial project objectives, further stating that one in five of these ES projects was scrapped because of failed implementation. A recent industry report puts the figure at 21% with organizations classifying their ES project as a failure (Panorama Consulting Solutions, 2015). This figure does show that there have been improvements in the ES domain due to the proliferation of studies in the field which has provided valuable insights (Addo-Tenkorang &

Helo, 2012; Saxena & McDonagh, 2017). FoxMeyer Drug, Mobil Europe, Applied Materials and Dow Chemical are some of the most often mentioned organizations whose ES project failed (Davenport, 1998). According to Scott (1999), FoxMeyer Drug filed for bankruptcy in 1996 because of their failed attempt at implementing ES. At the peak of its operation, FoxMeyer Drug was worth US \$5 billion and was the fourth largest distributor of pharmaceutical products in the US before its ES chaos.

ES are expensive to acquire, and the decision to implement them must be well conceived. According to data gathered from a study by Apps Run the World (2018), the global ES software market continues to witness significant growth, and it is estimated that by 2021, the global revenue for ES will reach over US \$84 billion. The current estimates for 2018 point to global revenue at over US \$80 billion (Apps Run The World, 2018). These figures make it easy to understand why ES have gained tremendous prominence in the enterprise software market. Figure 2 shows the breakdown of the ES market revenue from 2015 to 2021.

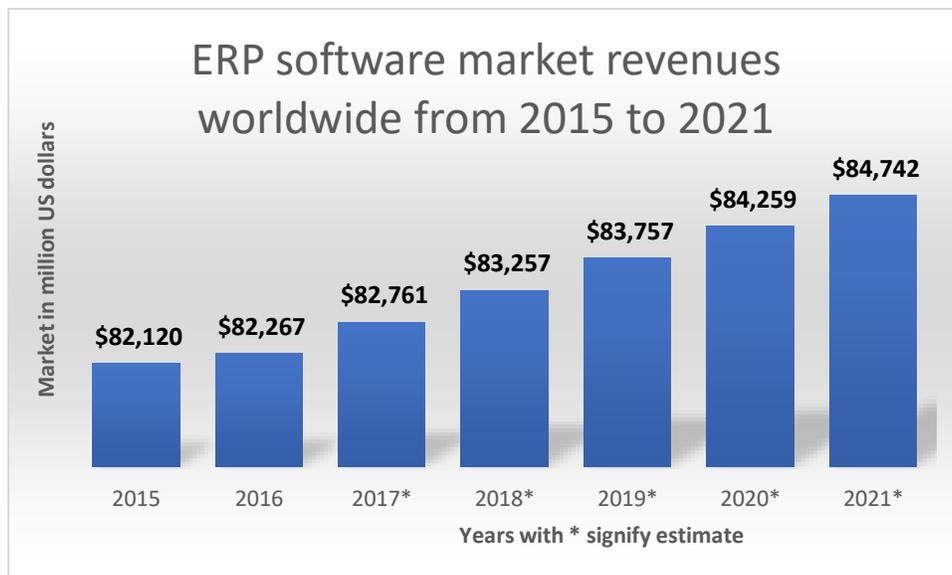


Figure 2 ES software market revenues worldwide from 2015 to 2021 (Apps Run The World, 2018)

2.1.1 Lifecycle of ES

Several variations of an ES lifecycle have been proposed by IS scholars over the years. The framework by Markus and Tanis (2000) called the ES Experience Cycle has been referenced extensively in ES research and is very instrumental in understanding ES implementation issues in general (Haddara & Hetlevik, 2016; Vinod Kumar et al., 2002).

2.1.2 Framework for ES lifecycle

ES Experience Cycle – Markus and Tanis (2000)

Markus and Tanis (2000) state that the adoption process with an ES can be characterized through several phases, and that the experience with an ES can be characterized by several key players and performance metrics (Markus & Tanis, 2000). It is expected that the ES experience cycle differs across different organizations and industries in terms of how the project is rolled out, the type of system chosen, individuals initiating the adoption of ES, which may be an IS specialist or business executives, the duration of the project, the size of the organization etc.

Markus and Tanis (2000) identified four phases in the ES experience cycle and noted that most organizations recycle through the experience cycle phases because of major system upgrades and/or complete replacement of the existing ES. The ES experience cycle identifies the chartering phase, the project phase, the shakedown phase and the onward and upward phase. See figure 3 for the phases in the ES experience cycle.

Markus and Tanis (2000) model were chosen for two reasons. The first reason was the model has been studied extensively, and secondly because more recent research has also addressed and incorporated some elements of the framework to their respective studies (Ivert & Jonsson, 2011; Peng, Sun, & Guo, 2018; Schneider, Wollersheim, Krcmar, & Sunyaev, 2018; Sykes & Venkatesh, 2017).

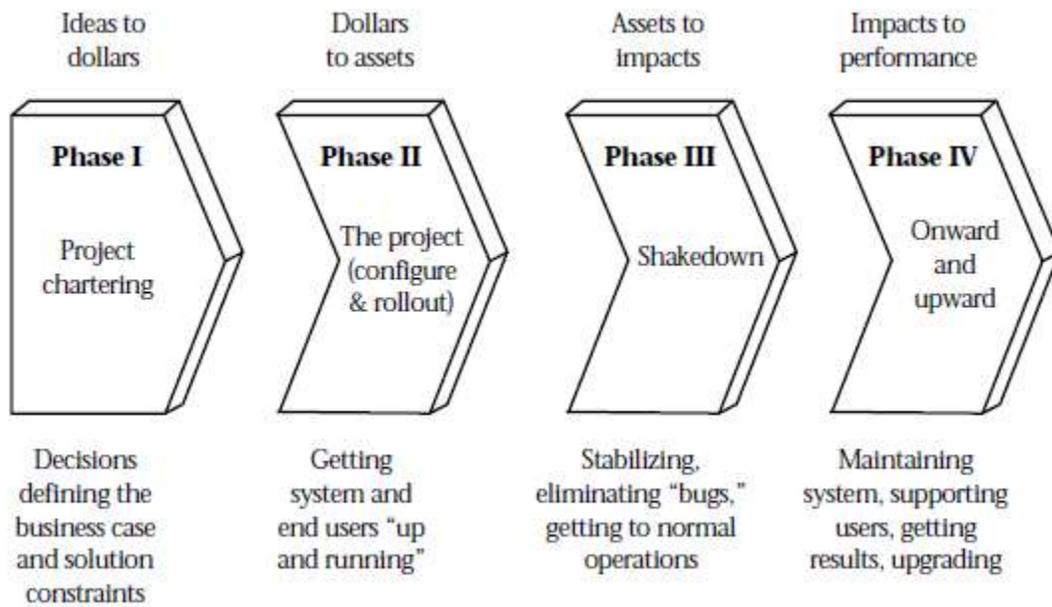


Figure 3 ES Experience Cycle (Markus & Tanis, 2000)

2.1.3 Studies in ES Lifecycle

The literature on ES is very extensive and, in most cases, has been studied from the perspective of the lifecycle (Huang & Yasuda, 2016; Moon, 2007; Saxena & McDonagh, 2017). The section aims to provide a broad spectrum of research covered in this field.

Since the 1980s, IS research community has carried significant number of studies in addressing and understanding the workings of ES. As a result of increased interest in this research stream, there exists a large body of work capturing diverse topics from implementation strategies to critical success factors (CSF) etc. (Kumar et al., 2002a; Vinod Kumar et al., 2003). Due to the substantial number of studies carried out in the field, it will be a daunting task to capture all the studies in this field, and for this reason, I will present some systematic reviews in the ES literature.

There have been no systematic reviews on ES from 1980 to 1999. This is not surprising as IS researchers had noted that theoretical and empirical work examining the phenomenon was lacking, and academically little was known about the technology during that period (Esteves & Pastor, 1999; Markus

& Tanis, 2000). Esteves and Pastor (1999) lifecycle framework was the first body of work characterizing studies in ES.

By the 2000-2009, IS scholars started to pick interest in ES as organizations globally trooped to the doors of the software vendors as earlier adopters of ES had witnessed increased efficiency in terms of managing inventory, financial reporting, human resource management (Davenport, 1998). Esteves and Pastor (2001) conducted an annotated bibliography of studies in ES research field from 1997–2000 from reputable IS journals and conferences. Using key search words such as ERP, enterprise-wide systems, ES or software packages, they were able to identify 189 articles of interest. Using a simplified version of ES lifecycle framework proposed by Esteves and Pastor (1999), they categorized the articles into eight categories, namely: general studies, adoption, acquisition, implementation, usage, evolution, retirement and education. Please see figure 5 for the graphical representation of the number of publications by category identified by Esteves and Pastor (2001). It appears that the implementation phase was the most studied phase in ES lifecycle as seen in figure 4.

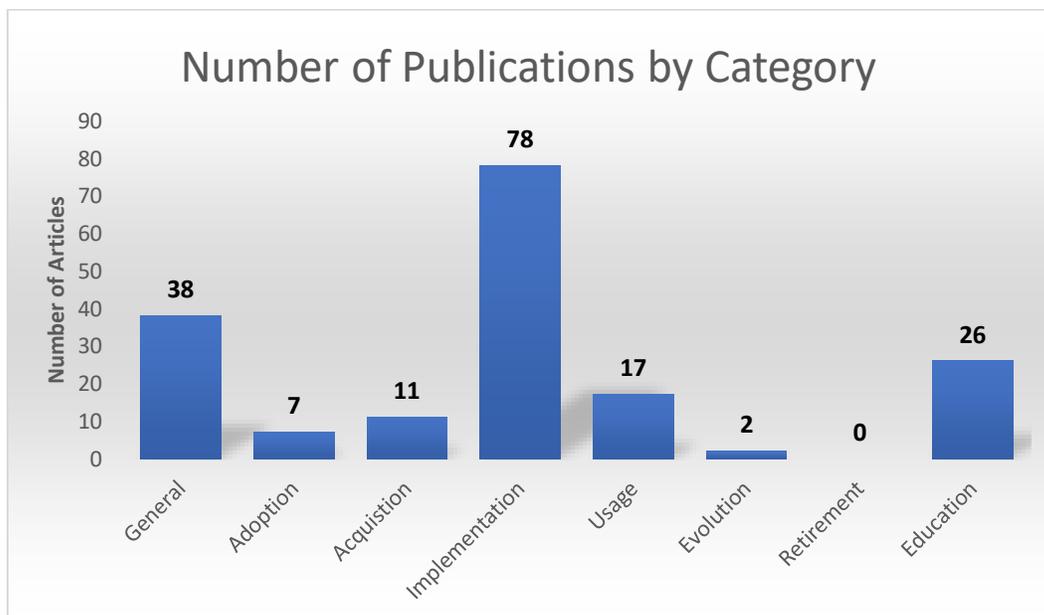


Figure 4 Number of Publications by Category (Esteves & Pastor, 2001)

Esteves and Bohorquez (2007) picked up from where Esteves and Pastor (1999) left off and provided an updated annotated bibliography of ES publications that were found in prominent IS conferences and journals for the period of 2001-2005. These articles were categorized using ES lifecycle framework developed by Esteves and Pastor (1999). According to Saxena and McDonagh (2017), Esteves and Bohorquez (2007) identified 374 phase-wise articles, and in line with Esteves and Pastor (1999), ES research was still heavily focused on the implementation phase. Figure 5 is a graphical representation of the phase-wise papers identified and shows that implementation of ES still received the highest level of research interest.

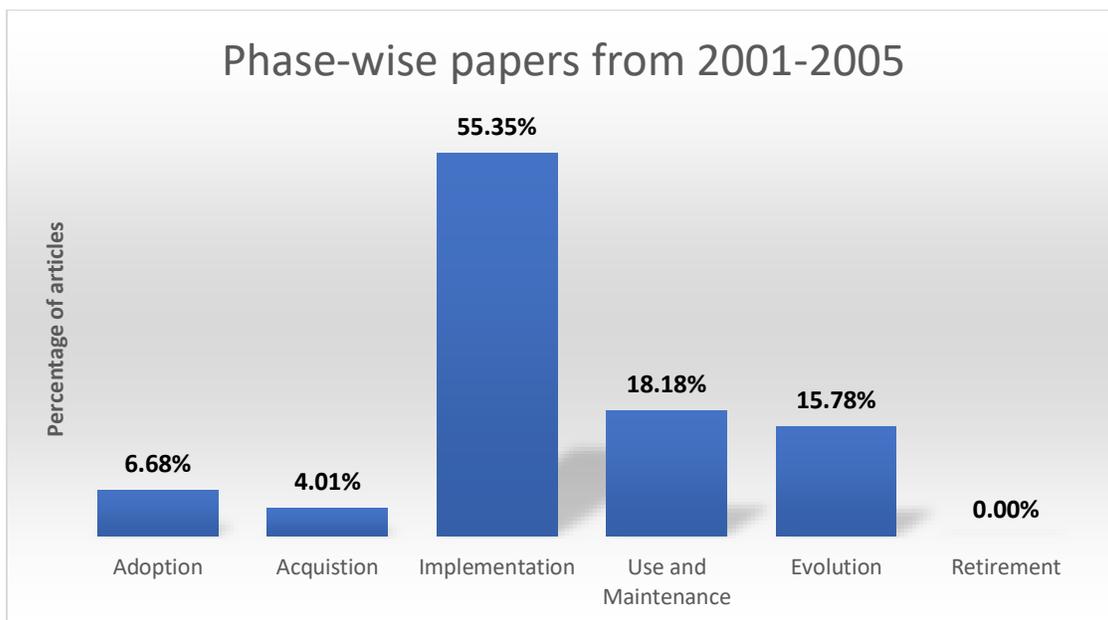


Figure 5 Phase-wise papers from 2001-2005 (Esteves & Bohorquez, 2007).

Moon (2007) carried out a review of literature on ES studies, and identified 79 journals from January 2000 to May 2006. Moon (2007) was able to identify 313 articles from the selected journals and categorized his findings to six major themes: implementation, use, extension, value, trends and perspectives, and lastly, education. Moon (2007) disclosed that studies in implementation received the most attention. He points to the fact that for most organizations, the implementation of ES is seen as the

biggest IS project embarked on by these organizations seeking for ways to increase the bottom line. Studies conducted within ES use theme address issues on ES utilization. Moon (2007) states that the value of ES is derived from the use of the system efficiently and effectively and not so much from the system alone. The extension theme addresses organizations who had gained increased efficiency and are shifting their attention to extending the capability of the original ES. Topics addressed under the value theme discuss issues such as the value of the ES to an organization. Articles that belong to the trends and perspectives theme provide introductions to ES, common issues coupled with ES, recent trends in the field of ES etc. Lastly, articles categorized under the education theme emphasize the natural role of ES and the incorporation of ES contents in curricula. Figure 6 is a representation of the major themes identified by Moon (2007).

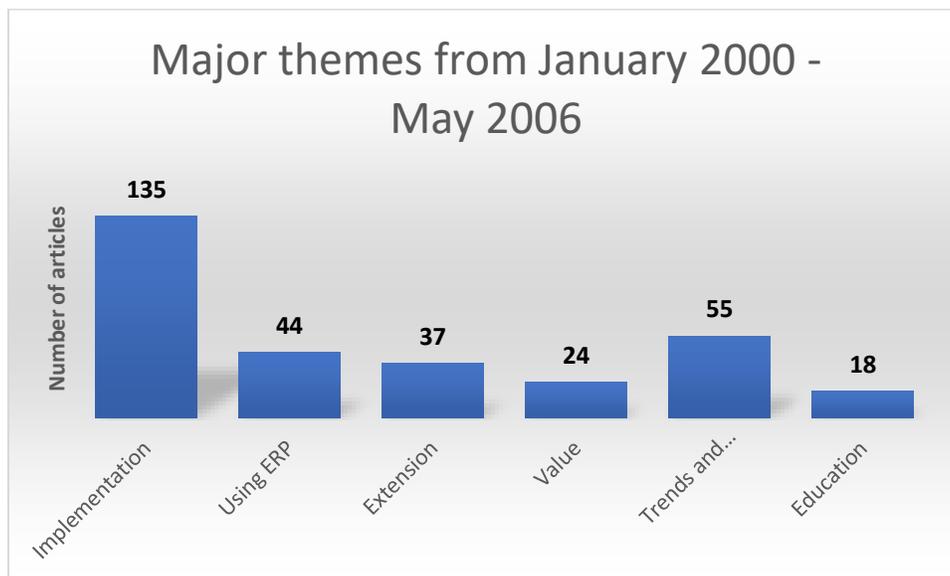


Figure 6 Major themes from period January 2000 – May 2006 (Moon, 2007)

From 2010–present, ES implementation is still a hot topic as organizations are continuously in the market for technology that can be leveraged to attain a competitive advantage. With increased investment and interest by organizations, IS scholars still have a fundamental part to play in bridging the gap between what is known, and the ambiguity usually associated with this technology. Grabski et al.

(2011) carried out a review of ES research from the accounting information systems perspective. They grouped studies in the field into three areas, namely, ES critical success factors (CSF), ES organization impact, and ES economic impact. ES CSF examined literature that identified factors critical for successful implementation outcomes and effective ongoing usage. Grabski et al. (2011) identified ES CSF as the most prolific area in early ES research and noted that research in this area had contributed significantly in identifying factors necessary for ES implementation. Studies in ES CSF covered topics in the implementation of CSF, business processes, change management, user education, user acceptance, and post-implementation and this in line with reviews by other scholars (Botta-Genoulaz et al., 2005; Esteves & Bohorquez, 2007; Esteves & Pastor, 2001; Moon, 2007). Grabski et al. (2011) echo a salient point about the seldom interest in ES in the post-implementation phase. Diverse topics such as organizational change, organizational control strategies, risk management and regulatory issues, and evolutionary changes in ES are covered in ES organizational impact literature, which examines the organizational-level impact of the system. Lastly, Grabski et al. (2011) studied the economic impact literature which looked at the price tag associated with ES implementation and reviewed the external and internal evaluation of firm benefits.

Still addressing the studies in ES field, Saxena and McDonagh (2017) carried out a review of ES studies from a phase-wise perspective for the period of 2000–2015 and noted the abundance of implementation studies. Figure 7 is the phase-wise paper identified by Saxena and McDonagh (2017). In comparing their study with three other reviews with similar content (Eden, Sedera, & Tan, 2012; Esteves & Bohorquez, 2007; Esteves & Pastor, 2001), Saxena and McDonagh (2017) noted that they were not able to find any research addressing the retirement phase of ES. One reason given for the lack of literature in the retirement phase of an ES can be that organizations have been more concerned about the adoption, acquisition and installation of new systems.

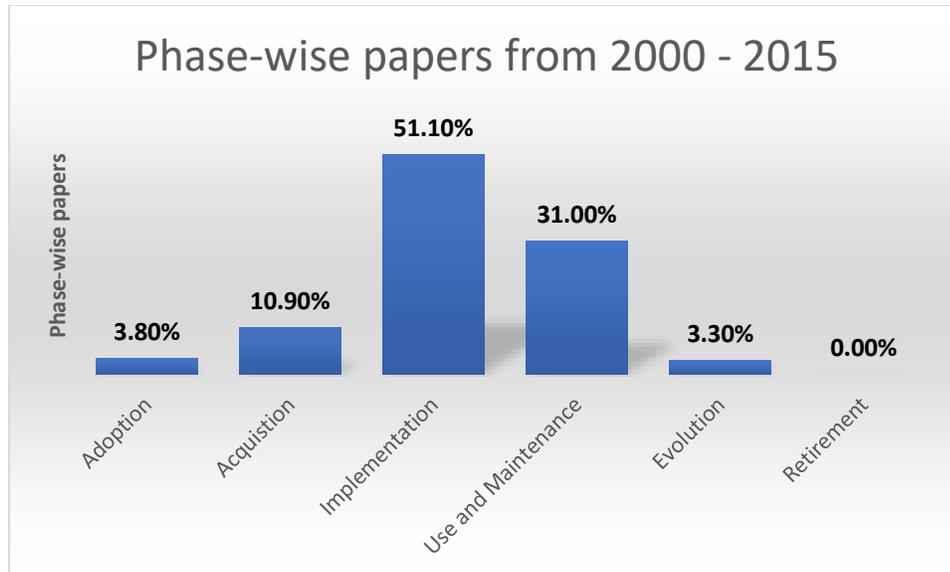


Figure 7 Phase-wise articles (Saxena & McDonagh, 2017)

Law et al. (2010) stated that often most organizations adopting ES have mainly focused on the earlier stages of the implementation, and have neglected post-implementation related factors, most especially the maintenance and support. They found that the organizations who fail to incorporate the post-implementation strategies with ES face severe consequences, which can be detrimental to the longevity of the system due to the shortened lifespan further pointing out that sound maintenance and support practices have the potential to extend ES lifespan (Law et al., 2010).

It should be no surprise why there continues to be more studies and discussions related to ES. The software is expensive and complicated, and if well implemented and managed, can spell organizational prosperity and success. Bad execution of an ES project can catastrophic for adopting organization.

2.2 Empirical research on ES and Job Satisfaction

Some studies have found that job satisfaction may diminish over time due to progressive wearing off of the honeymoon if initial promises are not met (Boswell, Boudreau, & Tichy, 2005; Vandenberghe, Panaccio, Bentein, Mignonac, & Roussel, 2011), and can lead employees feeling dissatisfied with their

work. However, the implementation of ES is seen as a strategic initiative for organizations to be competitive in the market, as other market players are placing a lot of weight on this technology to drive and deliver profitability, efficiency and effectiveness.

Factors such as excessive customization, dilemma of internal integration, poor understanding of business implications and requirements, lack of change management, poor data quality, misalignment of IT with business, hidden costs, limited training, lack of top management support, inexperienced implementation team, technical difficulties, and multi-site issues have been found to contribute to failed ES implementation (Momoh, Roy, & Shehab, 2010; Umble et al., 2003). However, extant research has tied job satisfaction of employees to ES usage (Morris & Venkatesh, 2010; Sykes, 2015). Researchers have found that for ES to add value to an organization, employees must use the system to carry out job-related tasks and duties (DeLone & McLean, 2003; Sykes & Venkatesh, 2017). Prior studies have found a huge chunk of the challenge facing the implementation of ES originates from the inability of employees to realign job task and duties to the redefined way of processing business transactions (Morris & Venkatesh, 2010; Sykes & Venkatesh, 2017). The early stages after the implementation of ES system is critical as employees' abilities to deal with change can also determine the success of the implementation, especially during the shakedown phase which typically last about 6-12 months after the rollout (Markus & Tanis, 2000; Morris & Venkatesh, 2010; Sykes et al., 2014). The successful realignment of employees with the new system to carry out job-related tasks and duties can translate into desired benefits for the adopting organization. Most of the research examining the effects of ES system on job satisfaction have observed the impact of ES at the shakedown phase (Markus & Tanis, 2000; Sykes & Venkatesh, 2017).

The main aim of the current research is to examine the impact of prolonged use of ES on job satisfaction. This research also moves away from conventional IS research which examines system use as the ultimate dependent variable (Morris & Venkatesh, 2010; Venkatesh, 2006). Venkatesh et al. (2007) described individual-level technology adoption as one the most mature streams of IS research for over

two decades and encouraged the shift into research examining “contingencies, and alternative theoretical perspectives to the largely social psychology - based technology adoption research” (p. 267). Technology has now become part and parcel for companies pursuing competitive advantage, and, in some cases, stipulate changes in business processes and job-related tasks and duties of employees. It has been suggested by some researchers in ES domain that the failure or success of ES implementation is seldom tied to the features of the technology itself, but rather, it is associated with the job duties coupled with the BPR that typically accompany the implementation of ES (Davenport, 2000; Morris & Venkatesh, 2010; Peppard & Ward, 2005). This research hopes to arouse awareness of the benefits that can be derived if organizations examine the impact of the continued use of ES on job satisfaction.

Morris and Venkatesh (2010) suggest that ES can dictate jobs and business processes compared to other systems. This implies that organizations are likely to experience some degree of shock throughout the entire implementation process and the shock will vary across the life cycle of the system. As previously pointed out, the biggest shock is usually experienced at the shakedown phase (Markus & Tanis, 2000; Sykes & Venkatesh, 2017). Markus and Tanis (2000) suggest that in most cases, organizations fail to examine the effect of ES system past the earlier stages after the implementation phase. They further stated that the negligence of some organizations in examining ES system pass the shakedown phase can lead to several possible outcomes such as “unwillingness or inability to improve business performance and/or migrate technically (e.g., extreme dissatisfaction with implementation process or outcomes, loss of technical or end-user competence)” (Markus & Tanis, 2000, p. 194). The findings by Markus and Tanis (2000) are also consistent with findings by Alvarez (2008), who conducted a longitudinal study of ES implementation, and found that users showed strong support during the earlier stages of the implementation phase as the technology was envisioned as an imaginary phenomenon. Alvarez (2008) further stated that over time as the system was used, user support was not consistent, as the continued use of ES challenged professional identities and roles (Alvarez, 2008). The lack of user support has the

potential to drive users away from using the system, and this creates situations that inhibit users' ability to carry out work tasks and duties efficiently and effectively. While this study points and differentiates users' attitude during the early stages of implementation compared with the later phase, it does not explicitly characterize the differences experienced in various later stages.

Research examining the implication and interaction of technology adoption of complex systems like ES and job satisfaction is still emerging as only a handful of studies have examined the relationship. While technology adoption research might have attained maturity in terms of its theoretical ability to predict acceptance and use of systems, research that incorporates outcome-centric constructs like job satisfaction can help further IS literature and provide richer theoretical and practical knowledge that can benefit IS researchers, IT managers and practitioners.

In what could be classified as one of the first research studies in IS literature examining the impact of the implementation of ES on job satisfaction, Morris and Venkatesh (2010) carried out a longitudinal study examining the effect of job characteristics on job satisfaction at a firm undergoing the implementation of ES. This research draws from the job characteristic model (Hackman & Oldman, 1976) and identifies task significance, task identity, skill variety, autonomy, and feedback as constructs that influence job satisfaction. The implementation of ES moderated the effects of the constructs. The empirical results showed support for skill variety², autonomy³, and feedback⁴ as having a positive and negative impact on job satisfaction before implementation and after the implementation of ES system respectively.

² Skill variety is defined "as the extent to which a job requires the use of different talents" (Morris & Venkatesh, 2010, pg. 145).

³ Autonomy is defined "as the extent to which a job provides the employee with discretion to choose how the work is done and to set the schedule for completing the work activities" (Morris & Venkatesh, 2010, pg. 145).

⁴ Feedback is defined "as the extent to which carrying out the work activities provides the employee with clear information about his or her performance" (Morris & Venkatesh, 2010, pg. 145).

Similar to Morris and Venkatesh (2010), Sykes (2015) carried out a longitudinal study to examine the impact of support structure on employee outcomes in the context of ES implementation. Job satisfaction is identified as one of the key employee outcomes of interest. She identified and differentiated between two categories of support structure, namely: traditional support structures and peer advice ties. Training, help desk support, online support and change management support were identified as the outdated traditional support, and get-advice network centrality was identified as peer advice ties (Sykes, 2015). The author argues that traditional support structures have become outdated and too expensive to maintain and identified the need to promote peer advice ties as a more suitable resource for improving job satisfaction for users of ES. The results showed that get-advice network centrality was the strongest predictor of job satisfaction in the shakedown phase of ES implementation compared with the other traditional support structures which show that change management support also predicts job satisfaction of employees (Sykes, 2015).

In a longitudinal study over six month with four waves of data collection each at two organizations implementing different IS, which investigated the impact of IT implementation on job outcomes, Bala and Venkatesh (2015) found that implementation characteristics, cognitive appraisals, and technology adaptation influence job satisfaction directly and indirectly. Technology adaptation had a direct positive effect on job satisfaction through exploration-to-innovate⁵, exploitation⁶, exploitation-to-revert⁷, and avoidance⁸ (Bala & Venkatesh, 2015).

⁵ Exploration-to-innovate is defined as the degree to which an employee tries to find, extend, and/or change features of an IT to accomplish his or her tasks in novel ways.

⁶ Exploitation is defined as the degree to which an employee uses a recommended set of features of an IT to perform his or her portfolio of tasks.

⁷ Exploration-to-revert occurs when an employee tries to find, extend, and/or change features of an IT to fit with his or her pre-implementation work processes and/or habits

⁸ Avoidance is defined as the degree to which an employee tries not to use an IT when accomplishing his or her tasks.

In another study of sourcing professionals at consumer product firms across North America, Rai and Hornyak (2013) hypothesized that at lower/higher levels of work process interdependence, sourcing professionals' SES use for selection will have a positive/negative relationship with job satisfaction. Furthermore, at lower/higher levels of work process interdependence, sourcing professionals' SES use for governance would have a positive/negative relationship with their job satisfaction. The authors found support for both hypotheses. The findings of their study suggest that the relationship between SES use and job satisfaction spreads beyond the technology itself to the work process context (Rai & Hornyak, 2013).

In another study examining the impact of support structure on several job outcomes, Haddara and Hetlevik (2016) examined IS literature to understand the effectiveness of traditional support structures and self-organizing entities within the shakedown phase of ES implementation, on user and job satisfaction. Their findings suggest that job satisfaction can be impacted significantly by the up-and-running of ES during the shakedown phase. Similar to Markus and Tanis (2000), Haddara and Hetlevik (2016) point out that the shakedown phase is often associated with significant disruptions to the adopting organization. They further state that the arguments in IS was that ES implementation may cause decreased job satisfaction, which in turn will lead to the decreased likelihood of system adoption, which ultimately leads to the demise or decreased tendency of ES success (Haddara & Hetlevik, 2016). Psoinos and Smithson (2002) stated that some employees take computer-based IS as a significant constraint to employment, and can probably impact job satisfaction of employees.

Given that most adopting organizations mandate the use of ES system to carry out work-related duties and tasks, studies examining job satisfaction beyond the shakedown phase will go a long way in presenting findings that ensure the continued use of the system. It will also provide evidence for organizations to enact procedures in place to have a better process for rolling-out ES projects.

Chapter 3 Theoretical background

Technology adoption research provides a wide range of well-established theories and models that help explain individual adoption of IS (see Venkatesh, Morris, Davis, & Davis, 2003 for an overview) for understanding the consequences of using IS such as ES. Over the years, IS scholars have carried out extensive research and have developed theories and models that have been used in the field. TAM, ECM, and UTAUT are some of the most used and referenced (Hossain & Quaddus, 2012; Khechine, Lakhal, & Ndjambou, 2016; Younghwa Lee, Kozar, & Larsen, 2003).

For this study, I use and integrate constructs from TAM, ECM, UTAUT (Bhattacharjee, 2001; Davis, 1989; Venkatesh et al., 2003). Perceived ease of use (PEOU) and Perceived Usefulness (PU) are adopted from TAM, user satisfaction is from ECM and facilitating conditions is from UTAUT. This theory and models have been used extensively in understanding individual beliefs about IS use and attitude towards using a system (Davis, 1989; Maier et al., 2013). A major tenet stated by Davis (1989) is that users' attitude toward using a system is a key factor for predicting usage behaviors. However, he claimed that this tenet does not hold in predicting employees' usage behavior in situations where system usage is mandated (Brown, Massey, Montoya-Weiss, & Burkman, 2002). Organizations are heavily investing in IS such as ES, and the expectation is that employees must use these systems to carry out redesigned work task and duties. As a result, employees may form negative beliefs and attitudes about using the system if the system does not improve efficiency and effectiveness for the users. Discussions examining system use and job outcomes are in its early stage as only a handful of studies have provided empirical evidence supporting the influence of system use on employees' job satisfaction (Maier et al., 2013; Morris & Venkatesh, 2010). Brown et al. (2002) also suggest that "attitudes can have a significant influence on an individual's perception of the work environment and organization" (p. 291).

This research postulates that there is a relationship between attitudes about continuous use of ES and job-related outcomes such as Job satisfaction. IS usage continues to intrigue IS scholars as recent studies show that users may resist a mandatory system through discontinued use or even sabotage (Liang, Xue, & Wu, 2013; Rezvani, Dong, & Khosravi, 2017). Rezvani et al. (2017) state that research on continued IS usage shows that research at the individual user level has been primarily informed by technology adoption models, and these models examine psychological motives behind IS continuance usage.

3.1 Expectation Confirmation Model (ECM)

ECM also referred to as IS continuance model (Bhattacharjee, 2001) has been extensively used in research focused on understanding factors that influence users continuance intention of IS. According to Rezvani et al. (2017), a significant number of studies have relied on IS continuance model to examine psychological motivations driving the continued use of IT. ECM stipulates that perceived usefulness, confirmation of expectations, and user satisfaction are salient antecedents of continuance intention. For this current study, user satisfaction and continuance intention are adapted to the research model. According to Bhattacharjee (2001), user satisfaction is influenced by confirmation resulting from prior use of a system and perceived usefulness. In the context of the current study, it is assumed that confirmation has already taken place for users of ES, and as such, confirmation is not of interest whereas TAM captures perceived usefulness. Figure 8 represents the ECM.



Figure 8 Expectation confirmation model (ECM) (IS continuance model) (Bhattacharjee, 2001)

Research on continued IS use reveals that studies undertaken at the individual user level is primarily informed by the ECM to investigate the psychological motivations driving continued IS use (Rezvani, Khosravi, et al., 2017).

As IS researchers continually examine IT usage behavior beyond initial adoption and move towards understanding factors that influence continued usage of IT. It is vital for IS researchers to explore the organizational environment as this has the potential to affect users' perception and use of IS.

Rezvani et al. (2017) stated that prior studies had found evidence that leadership behavior has a significant influence for motivating the use of a system by end users of ES. Their research model identified two types of leadership styles: transformational leadership and transactional leadership. They also identified three forms of intrinsic motivations and one form of extrinsic motivation: perceived autonomy, perceived competence, and perceived relatedness and perceived external regulation, respectively. They postulated that leadership styles influenced ES use motivation and the motivations influence IS continuance constructs: perceived usefulness, user satisfaction, and continuous intention. Most of their hypotheses were supported except the relationship between perceived autonomy and perceived relatedness on user satisfaction and perceived external regulation on perceived usefulness.

In another study examining the influence of individual differences on continuance intention, Chou and Chen (2009) integrated IS continuance model with computer anxiety and computer self-efficacy as dynamic individual differences among ES users and personal innovativeness in IT as stable individual intention. They also examined the relationship between user satisfaction and continuance intention. Cross-sectional data were collected from 305 ES users across multiple industries and organizations through a survey instrument. Chou and Chen (2009) results reveal that user satisfaction had the strongest influence on continuance intention followed by computer anxiety while personal innovativeness in IT and computer self-efficacy had no impact on continuance intention.

Hsieh and Wang (2007) examined employees' extended use of complex IS at large manufacturing firm and employed the original IS continuance model in a field survey involving 200 employee ES users across different departments in an organization. Hsieh and Wang (2007) found out that confirmation of expectations has a direct influence on perceived usefulness and user satisfaction, and also found out that perceived usefulness and user satisfaction have a direct impact on continuance intention.

Rezvani et al. (2017) examined the role of a supervisor in promoting continued usage of strategic IS such as ES. Rezvani et al. (2017) argued that extant IS literature has focused primarily on the role and influence of top management on continued IS usage and IS literature lacked empirical work examining the role of supervisors, who are seen as having more direct interaction with end users of ES. Drawing upon IS continuance model which integrates transformational leadership theory, the researchers carried out a cross-sectional field study that involved 192 users of ES among nine small-medium sized enterprises (SMEs). They postulated that transformational leadership has a different influence on perceived usefulness and user satisfaction, while also identifying that transactional leadership moderates a positive effect of perceived usefulness and user satisfaction on ES continuance intention. Rezvani et al. (2017) result revealed that transactional leadership indeed had a positive moderating effect on perceived usefulness and user satisfaction and a direct positive impact on ES continuance intention with the effect stronger on perceived usefulness. The impact of transformational leadership on ES continuance intention was the only non-significant relationship.

3.2 Technology Acceptance Model (TAM)

Understanding the reasons why users accept, use or even reject a technology have been of great interest in IS research stream (Shin, 2009; Venkatesh et al., 2003). TAM remains one the most widely used IS models by IS researchers because of its parsimony, and the wealth of recent empirical studies also highlights its relevance (Ooi & Tan, 2016; Peng et al., 2018; Wu & Chen, 2017). TAM posits that IT usage

is dependent on perceived usefulness and perceived ease of use. The model also stipulates that perceived usefulness and perceived ease of use influence behavioral intention.

For this study, perceived usefulness and perceived ease of use were used as prior research validates their relevance beyond initial adoption of technology (Bhattacharjee, 2001; Roca & Gagné, 2007; Sjørebø & Eikebrokk, 2008). Perceived Usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320), while perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). Figure 9 is the model of TAM used widely.

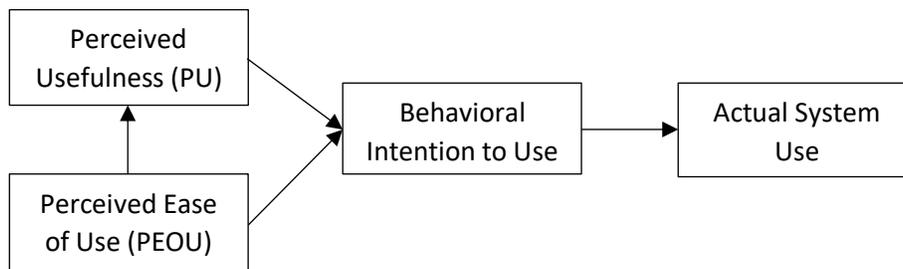


Figure 9 Parsimonious TAM (Davis, 1989)

TAM has been used extensively by scholars from diverse disciplines and remains one of the most robust models in predicting user acceptance and adoption of technology (Lee et al., 2003; Marangunić & Granić, 2015). Some studies that have used TAM are discussed subsequently.

Amoako-Gyampah & Salam (2004) examined behavioral intention of using ES and carried out a cross-sectional study at a health care product organization with over 20,000 employees, which had just implemented a new ES. Four-hundred and nine employees who had completed training on ES, completed a survey, with the researchers postulating that perceived ease of use will have a direct effect on perceived usefulness. They also proposed that perceived usefulness will have a direct effect on behavioral intention to using ES. Their models showed support for perceived ease of use as having a direct effect on perceived

usefulness, but no support was found for the effect of perceived usefulness on behavioral intention to use ES.

In another study by Hwang (2005) investigating ES adoption in the context of informal control tools, uncertainty avoidance and intrinsic motivation are used as informal controls in ES implementation and the researcher incorporated perceived usefulness, perceived ease of use, and behavioral intention. Survey responses were received from 101 respondents from an online group of ES users across various organizations. Hwang (2005) hypothesized that perceived ease of use has a direct impact on perceived usefulness while also proposing that perceived usefulness and perceived ease of use has a direct effect on behavioral intention. Using cross-sectional data gathered from the field, Hwang (2005) found support for the effect of perceived usefulness and perceived ease of use on behavioral intention but no support was found for the effect of perceived ease of use on perceived usefulness. The results are consistent with that of Yi and Hwang (2003) who noted that contrary to their expectations, the effect perceived ease of use on perceived usefulness was not significant in presence of intrinsic motivation. They further stated that prior research which incorporated intrinsic motivation such as perceived enjoyment found out that in the presence of perceived enjoyment, perceived ease of use was not significant as this result point to the fact that enjoyment might play a more significant role than perceived ease of use in determining perceived usefulness in ES environment (Hwang, 2005).

In an exploratory extension of TAM, Calisir et al. (2009) carried out research predicting the behavioral intention to use an ES. Cross-sectional data was gathered data from 75 potential end-users of ES using survey methodology. Calisir et al. (2009) hypothesized that perceived usefulness will have a positive effect on attitude toward use and behavioral intention to use while perceived ease of use will have a positive effect on perceived usefulness and attitude toward use. Their findings showed that perceived usefulness was a good predictor of attitude toward use while perceived ease of use was a strong predictor of perceived usefulness.

In another study, Hsieh and Wang (2007) examined employees' extended use of complex IS. ES was used as the IS context of choice as the researchers' state that most organizations seldom use complex IS (e.g. ES) to its fullest extent to improve overall performance, which leads to underutilization of the IS investment. They set out to explain employees' extended use of ES and incorporated IS continuance model and TAM as the theoretical underpinning of their study. On the TAM side of their research, Hsieh and Wang (2007) postulated that perceived ease of use would have a positive effect on perceived usefulness and use of the system as well as perceived usefulness having a direct effect on use and on the IS continuance model side, they postulated that perceived usefulness will direct effect on continuance intention and satisfaction. Hsieh and Wang (2007) found support for all the relationships hypothesized.

3.3 Unified Theory of Acceptance and Usage of Technology (UTAUT)

UTAUT (Venkatesh et al., 2003) incorporates and synthesizes eight existing models/theories of user acceptance of new technologies namely: TRA, TAM, motivational model (Davis, Bagozzi, & Warshaw, 1992), TPB, Combined TAM and TPB (C-TAM-TPB) (Taylor & Todd, 1995), Model of PC Utilization (MPCU) (Thompson, Higgins, & Howell, 1991), Innovation Diffusion Theory (Moore & Benbasat, 1991) and Social Cognitive Theory (SCT) (Compeau & Higgins, 1995).

Venkatesh et al. (2003) identified performance expectancy, effort expectancy, social influence, and facilitating conditions as direct determinants of user acceptance and usage behavior. UTAUT also suggest that age, gender, experience, and voluntariness of use moderate the effect of the performance expectancy, effort expectancy, social influence, and facilitating conditions. Generally speaking, UTAUT has found wide spread application across several research disciplines such as marketing, management, and social psychology (Khechine et al., 2016; Williams, Rana, Dwivedi, & Lal, 2011; Williams, Rana, & Dwivedi, 2015). The wide adaption of UTAUT speaks highly of the explanatory power of this theory in understanding use behavior.

For this study, facilitating conditions was used while performance expectancy, effort expectancy, and social influence were dropped from the proposed model for the following reasons. First, performance expectancy and effort expectancy are captured by perceived usefulness and perceived ease of use. Social influence was dropped off because the construct is not relevant in the current context due to mandatory use of ES, and as such, examining social influence will not provide new insight. Facilitating conditions is defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003, p. 453). The argument is that facilitating conditions will have a direct effect on the ultimate dependent variable (job satisfaction) of the current research, as facilitating conditions is known to influence attitude (Venkatesh et al., 2003). Figure 10 is the original model empirically validated by Venkatesh et al. (2003). A review of some studies which have used UTAUT are addressed subsequently

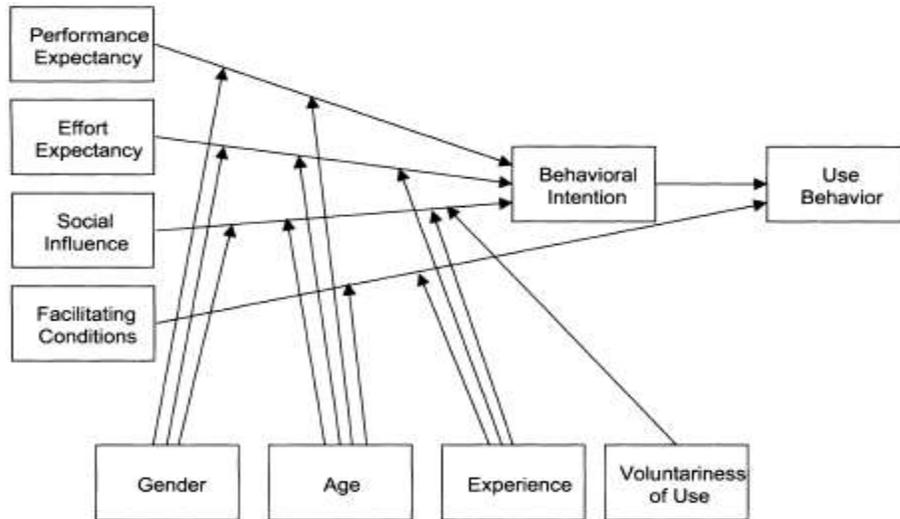


Figure 10 UTAUT (Venkatesh et al., 2003)

Fillion, Braham, and Ekionea (2011) who set out to test UTAUT on the use of ES by middle managers and end-users at medium-to-large Canadian enterprises, postulated that of performance expectancy, effort expectancy, and social influence will influence behavioral intention as a result of the

moderating effects of age, gender, experience and voluntariness of use. They further stated that gender and age would moderate the effect of performance expectancy on behavioral intention while gender, age, and experience will moderate the effect of effort expectancy on behavioral intention. Furthermore, they stated that gender, age, experience, and voluntariness of use would moderate the effect of social influence on behavioral intention and the influence of facilitating conditions on usage will be moderated by age and experience. Data gathered showed no support for their hypotheses and is not consistent with findings from the original UTAUT.

In another study which investigates end-user acceptance of ES, Seymour et al. (2007) carried out empirical research at a university in South Africa which just implemented a new ES. In a survey involving 120 staff members, performance expectancy, effort expectancy, social influence, and facilitating conditions were hypothesized to have a direct influence on the symbolic adoption ES, with the researchers identifying three factors that makeup facilitating conditions such as training, project communication, and shared factors belief (Seymour et al., 2007). Age and gender were included in the research model as moderating variables, but only age was analyzed since the proportion of female to male was spread apart. The correlation testing revealed all variables to be correlated at the 95% level of significance besides social influence with project communication and symbolic adoption. Further correlation analysis showed that age appears to have a moderating effect on the relationships between the variables in the model, and subsequently, social influence was removed from the model.

In another study that incorporates UTAUT, Sun and Bhattacharjee (2011) examined the influence of organizational-level variables such as user training, top management support, and technical support as the antecedent of UTAUT constructs which in turn influences behavioral intention and organizational IT usage in an ES context. Performance expectancy, effort expectancy, social influence, and facilitating conditions were captured as perceived usefulness, perceived ease of use, subjective norm, and perceived behavioral control respectively. They stated that user training is an antecedent of perceived usefulness

and perceived ease of use while top management support is an antecedent of subjective norm, and technical support is an antecedent of perceived behavioral control. Using multilevel data and multi-level structural equation modelling, they found support for all proposed relationships.

Pai and Tu (2011) investigated the acceptance and use of customer relationship management (CRM) system in a service industry in Taiwan. CRM system is also classed as a type of ES and according to the researchers “CRM systems can help organizations to gain potential new customers, promote the existing customers’ purchase, maintain good relationship with customers as well as to enhance the customer value, thus can improve the enterprise images” (Pai & Tu, 2011, p. 579). The research model used for the study incorporated the original UTAUT constructs, performance expectancy, effort expectancy, social influence, and facilitating conditions, it also incorporated task characteristics, technology characteristics, and task-technology fit from Goodhue and Thompson (1995). Pai and Tu (2011) results were identical to the earlier relationship established in UTAUT, except for performance expectancy which exhibited no significant effect on behavioral intention and in additional task-technology fit has a positive relationship on behavioral intention.

In conclusion, TAM, UTAUT and IS continuance model have found widespread use in IS research as their ability to empirically predict user acceptance and continued use of IS such as ES is established in the literature. The integration of the models presented in this research has the potential to provide a richer understanding that relate to IS usage and behavior (Venkatesh, Thong, Chan, Hu, & Brown, 2011). Venkatesh et al. (2011) stated that extension of UTAUT and IS continuance model “can provide a more complete understanding of the changes in relative importance of various key beliefs at different stages of usage experience” (2011, p. 530). This extension proposed also heeds to calls in IS literature for the incorporation of relevant constructs applicable to the ever-changing nature of technologies, which can aid the design of interventions (Venkatesh et al., 2007, 2011). Collectively, the application of this theory and models can most certainly contribute to IS literature in terms of amalgamating key theoretical

viewpoints in IS and demonstrates the role of context that has shown to be important to the progression of scientific discovery (Greenwood, 1974; Johns, 2006; Venkatesh et al., 2011).

Chapter 4 Research Model and hypotheses

4.1 Hypotheses Development

The proposed research model, which aims to examine the impact of continued use of ES on job satisfaction, is depicted in Figure 11. Perceived Usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). Seddon (1997) defines user satisfaction as "a subjective evaluation of the various consequences evaluated on a pleasant–unpleasant continuum" (1997, p. 246) and job satisfaction is defined "as the extent of positive emotional response to the job resulting from an employee's appraisal of the job as fulfilling or congruent with the individual's values" (Morris & Venkatesh, 2010, p. 145). In the context of the current study, user satisfaction measures IS satisfaction and job satisfaction measures employee satisfaction with work. The argument is that user satisfaction and job satisfaction are distinct forms of satisfaction and they capture aspects of cumulative satisfaction (overall satisfaction) (Garbarino & Johnson, 1999).

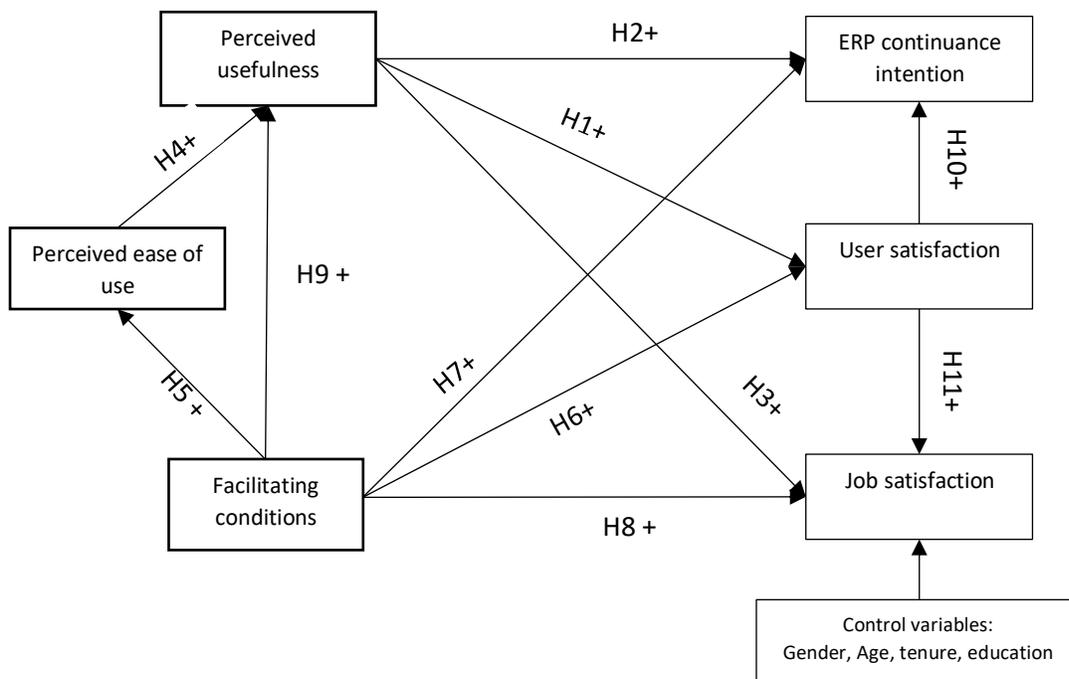


Figure 10 Proposed research model

4.1.1 Job Satisfaction (JB)

According to Aziri (2011), job satisfaction is a widely studied topic and construct in organizational behavior studies. Examining technology adoption research and job satisfaction provides an outcome-centric comparison which offers IS researchers the opportunity “to examine the nomological network and evolution of research around a critical outcome—adoption/use vs. job satisfaction” (Venkatesh et al., 2007, p. 272). A handful of studies examined technology-related constructs with job satisfaction (M. G. Morris & Venkatesh, 2010; Venkatesh et al., 2007). The job satisfaction construct allows for the examination of how employees overall goal orientation on the job matches with job expectations over time because of the continued use of ES. The job satisfaction constructs were adopted from Morris and Venkatesh (2010) research on job characteristics and job satisfaction.

Vandenberghe et al. (2011) stated that over time employee job satisfaction declines as a result of progressive wearing off the honeymoon as earlier job expectations are not met especially for new employees, and this has the potential to impact employees’ commitment to the organization. The expectation is that employees continued use of ES is bound to change the working conditions, which might in turn impact job satisfaction. Examining job satisfaction creates the opportunity to observe how the use of a system can impact how an employee feels about their job in organizations where system use is mandatory.

4.1.2 Perceived Usefulness (PU)

It is known that a users’ intention to use a system is based on their satisfaction derived from prior exposure to the system in question or similar system and the system perceived usefulness (Bhattacharjee, 2001). Perceived usefulness relates to the performance aspect of using ES to carry out work duties. This rationale should also be applicable in ES context, as user performance is improved as a result of using ES, this should in turn influence user satisfaction, continuance intention to using ES, and job satisfaction. The relationship between perceived usefulness and user satisfaction has been empirically supported in IS

literature (Bhattacharjee, 2001; Oghuma, Libaque-Saenz, Wong, & Chang, 2016). Bhattacharjee (2001) found that perceived usefulness has a positive influence on satisfaction experienced by users. Oghuma et al. (2016) research on continuance intention to use mobile instant messaging found support for perceived usefulness influencing user satisfaction positively. Lee (2010) extended ECM in examining e-learning, and also found support for perceived usefulness influencing user satisfaction. Lee (2010) and Chen et al. (2012) research also supports the influence of perceived usefulness on continuance intention. And lastly, prior research suggests that satisfaction is multidimensional and distinct, examined together results to a cumulative satisfaction (Garbarino & Johnson, 1999). In sum, I hypothesize:

H1: Perceived usefulness has a positive influence on user satisfaction.

H2: Perceived usefulness has a positive influence on ES continuance intention.

H3: Perceived usefulness has a positive influence on job satisfaction.

4.1.3 Perceived Ease of Use (PEOU)

Ease of use is thought to impact usefulness of a system. It is expected that if a user perceives a system to be free of effort, the more the user perceive the system as useful for enhancing users' performance. This also follows the assumption that, improvements in ease of use may lead to less effort and hence enable employees to perform more in less time. The original technology acceptance model empirically showed that perceived ease of use influences perceived usefulness (Davis, 1989). Several IS studies have validated this relationship between perceived usefulness and perceived ease of use (Maier et al., 2013; Sjørebø & Eikebrokk, 2008). Amoako-Gyampah and Salam (2004) found support for the influence of perceived ease of use on perceived usefulness in an ES environment. Likewise, Gefen (2004) research also supports the influence of perceived ease of use on perceived usefulness. Amoako-Gyampah (2007) found support for perceived ease of use influencing perceived usefulness in an ES implementation environment. Hence:

H4: Perceived ease of use has a positive influence on perceived usefulness.

4.1.4 Facilitating Conditions (FC)

Facilitating conditions can act as enablers in most IS environments and make it easy for users of a system to engage in anticipated behavior to attain desired outcomes. Skills training, information or available materials and administrative support have all been identified as facilitating conditions (Teo, 2010). It is expected that the availability of technical and organizational support will influence user attitudes towards ES. The availability of a support system is expected to impact perceived ease of use, user satisfaction, continuance intention, job satisfaction, and perceived usefulness.

Gu et al. (2009) found support for facilitating conditions influencing perceived ease of use. It is expected that if organizations provide technical infrastructure to support the use of a system, users will be more inclined to perceive the technology as requiring less effort to use. Venkatesh and Bala (2008) found support for the influence of facilitating conditions on perceived ease of use in the development of Technology Acceptance Model 3 (TAM3). Karaali et al. (2011) research also found support for facilitating conditions influence on perceived ease of use. Venkatesh et al. (2011) stated that as users get greater access to resource and assistance than they had expected in the usage phase, this experience will lead users to form positive disconfirmation of facilitating conditions and in turn leads to higher user satisfaction experience with using a system. They further stated that based on the assumptions from ECM, user satisfaction and positive disconfirmation of facilitating conditions are positively related. It is expected that when users are given adequate resources in the form of online help desks and hotline (facilitating conditions), these enabling properties will lead users to form positive attitudes. Hence it is expected that facilitating conditions will lead to higher user satisfaction, job satisfaction, and continuance intention across the board for IS users. Chan et al. (2010) examined the mandatory adoption of a technological artifact and found support for facilitating conditions positively influencing satisfaction. User satisfaction pertains to the satisfaction derived from prior use of a system, and job satisfaction relates to feelings users

develop about their jobs, as tasks and duties are tied to the utilization of ES. Furthermore, Chang and Cheung (2001), and Hong et al. (2011) support the relationship between facilitating conditions and continuance intention. Bhattacharjee and Hikmet (2008) and Lee D. et al. (2010) also supports the influence of organizational support on perceived ease of use and perceived usefulness. Additionally, the empirical testing of facilitating conditions and job satisfaction relationship serves as one of the main contributions of this study. I hypothesize:

H5: Facilitating conditions have a positive influence on perceived ease of use.

H6: Facilitating conditions have a positive influence on user satisfaction.

H7: Facilitating conditions have a positive influence on continuance intention.

H8: Facilitating conditions have a positive influence on job satisfaction.

H9: Facilitating conditions have a positive influence on perceived usefulness.

4.1.5 User Satisfaction (US)

It is believed that perceived satisfaction with a system can lead to desired attitudes such as continuance intention and job satisfaction. According to Ajzen and Fishbein's theory (1980), satisfaction indicates a positive attitude, and this positive attitude can increase behavior. According to Oliver (1997), satisfied customers were found to be more apt to remain dedicated to a product/service. In line with Oliver (1997) findings, I expect that users who are satisfied with the IS are more likely to continue the use of ES. Extant IS literature suggest that user satisfaction is a key factor for measuring IS success (Al-Khaldi & Olusegun Wallace, 1999; DeLone & McLean, 2003; Szajna & Scamell, 1993). The implementation of ES has been established as one of the most expensive IT projects undertaken by most organizations (M. G. Morris & Venkatesh, 2010; Sykes & Venkatesh, 2017), and as such, it is expected that over time, the continued use of the system will impact user satisfaction and will in turn impact IS continuance intention.

Research has pointed out that most times, organizations do not bother to measure user satisfaction with ES after implementation especially in the onward and upward phase (Markus & Tanis, 2000; Sykes & Venkatesh, 2017). DeLone and McLean (1992) posited that user satisfaction is a measure of IS success. They further stated that user satisfaction is considered as the most widely used measure for accessing IS success because satisfaction capture appealing degree of face validity and “most of the other measures are so poor; they are either conceptually weak or empirically difficult to obtain” (DeLone & McLean, 1992, p. 69). Several empirical studies have established that user satisfaction has a direct and positive effect on IS continuance intention (Chou & Chen, 2009; C. S. Lin, Wu, & Tsai, 2004; Rezvani, Khosravi, et al., 2017).

Based on ECM, satisfaction implies a positive attitude can influence continuance intention. Additionally, Ang and Slaughter (2000) research empirically support the fact that changes in a person’s job is likely to affect his/her job attitude such as job satisfaction, and using ES represents a significant change in a person’s job as users are expected to come to terms with ES and carry out work duties. The implementation and continued use of ES may represent a significant change in job activities, in which case users may have to adjust tasks and job responsibility to cope with the new system. This also relates to the task-fit component of such a system (Goodhue & Thompson, 1995). Morris and Venkatesh (2010) state that ES implementation is known to change jobs considerably and this change is expected to alter users’ duties. They further argue that employees’ job satisfaction will be influenced with user interaction with ES, and this interaction could be either positive or negative. Similarly, Jarvenpaa and Stoddard (1998) also stated that the introduction of new technology represents a significant change event in an organization and as such, it is expected that over time, users may form positive or negative perceptions related to the system, and the experience with the system may impact job satisfaction. With little to no research examining the impact of user satisfaction on job satisfaction in an environment that mandates the continued use of ES to carry out work tasks and duties. In sum, I hypothesize:

H10: User satisfaction has a positive influence on ES continuance intention

H11: User satisfaction has a positive influence on job satisfaction.

Chapter 5 Research Methodology

The study adopts well-established constructs from individual technology adoption literature (Bhattacharjee, 2001; Davis, 1985; Venkatesh et al., 2003) to understand and empirically test how continued system use impacts employees satisfaction with their jobs.

I adopted scale items from several theories and models in IS research (see Table 1 for reference). Perceived usefulness, perceived ease of use, facilitating conditions, user satisfaction, continuance intention and job satisfaction were measured using seven-point Likert scales anchored from “strongly disagree” to “strongly agree”.

An online survey was used to gather responses. The questionnaire also included demographic questions, such as age, gender, level of education, and tenure. The demographical measures were treated as categorical variables. These additional variables are collected as control variables given their impact on several key constructs related to technology use and job outcomes (Sykes, 2015; Venkatesh & Morris, 2000; Venkatesh et al., 2003).

5.1 Data Collection

Data was collected from manufacturing company that rolled out a new ES, known as known as Microsoft Dynamics AX in 2015. From conversations with the operations manager and business analyst at the organization of interest, no formal evaluation has been carried out to determine the impact of ES on job satisfaction. The company was founded in 1995 and has over 200 shops servicing the North America market, and it has manufacturing and distribution facilities in Toronto and Vancouver with over 5,000 employees across its operations. The organization manufactures and distributes beauty and shower products such as bath bombs, cream, make-up, soap etc.

First, a field test was conducted to refine the questions and structure the questionnaire in Qualtrics. Feedback from 10 respondents resulted in minor changes to the phrasing of items for measuring

user satisfaction. The data from the field test was not included as part of the data for analysis. Once the field test was completed, I submitted the survey and consent form for review to the research ethics board (REB). Data collection lasted three weeks. The online survey was administered through Qualtrics⁹ to several employees, and invitations to participate were sent via email.

The new ES, Microsoft Dynamics AX, was implemented as a replacement for a previous system that was no longer supported by the software vendor. Microsoft Dynamics AX came pre-installed with twenty-two modules namely: Inventory Management, Accounts payable, Accounts receivable, General ledger, Travel expense, Human resources, Payroll, Procurement and sourcing, Product information management, Master planning, Production control, Sales and marketing, Call center, Retail, Project management and accounting, Organization administration, System administration, RF-SMART, Cash and bank management, Service management, Data import export framework, and MediusFlow. According to data gathered, inventory management module was the most utilized module.

Over 600 non-users of ES and users of ES received an email from the Operations Manager about the purpose of the survey, and weekly email reminders were sent. The original email included a brief explanation of the study and a link to the survey. Respondents were asked to read through consent and agree to participate or disagree to end the survey. Those who agreed could start filling out the survey, and those who disagreed were not permitted to continue the survey, and as such were greeted with an exclusion message. At the end of the data collection period, 145 respondents completed the survey with 31 respondents identifying as non-users of ES. Additionally, after the elimination of non-users' responses and questionable responses, I was left with 108 usable responses from users who indicated the use of ES and this was used for testing the research model.

⁹ Qualtrics is an online platform that is used to host online surveys.

Table 1 Scale item

Table of Construct			
Construct	Description	Item (Seven-point Likert scale)	Support for construct
Perceived Usefulness	The degree to which a person believes that using a system would enhance his or her job performance.	i. Using ES system improves my job performance ii. Using ES system increases my job productivity iii. Using ES system enhances my job effectiveness iv. I find ES system to be useful in my job	Davis 1989; Adams 1992; Peng, Sun and Guo 2018
Perceived Ease of Use	The degree to which a person believes that using a system would be free of effort	i. My interaction with ES system is clear and understandable ii. Interacting with ES does not require a lot of mental effort iii. I find ES easy to use iv. I find it easy to get ES system to do what I want it to do	Davis 1989; Adams 1992; Peng, Sun and Guo 2018
Facilitating conditions	Facilitating Conditions is defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system	i. I have the resources necessary to use ES system ii. I have the knowledge necessary to use ES system iii. ES system is not compatible with the other systems I use (reversed coded) iv. A specific person (or group) is available for assistance with ES system difficulties	Sykes and Venkatesh 2017; Sykes et al. 2009
User satisfaction	Overall satisfaction with ES system	i. I am very satisfied with my interaction with ES system ii. I am very satisfied with my experience with using ES system iii. Overall, I am very satisfied with ES system	Self-developed
IS Continuance intention	Users' intention to continue using the ES	i. I intend to continue using the current ES rather than discontinue its use ii. My intention is to continue using the current ES than use any alternative means (reversed coded) iii. If I could, I would like to discontinue my use of the current ES (reversed coded)	Bhattacharjee, 2001; Rezvani, Khosravi, & Dong, 2017
Job Satisfaction	The extent of positive emotional response to the job resulting from an employee's appraisal of the job as fulfilling	i. Overall, I am satisfied with my job ii. I would prefer another, more ideal job (reversed coded) iii. I am satisfied with the	Sykes 2015; Morris and Venkatesh 2010

Table of Construct			
Construct	Description	Item (Seven-point Likert scale)	Support for construct
	or congruent with the individual's values	most important aspects of my job	

The data was collected across several departments in the organization. For a detailed breakdown, please refer to Table 2 for the sample characteristics.

The chosen survey methodology has the potential to create problems with common method bias, and in order to combat this several actions were taken, such as methodological separation of measurement, minimization of evaluation apprehension by informing the respondents that the survey response is voluntary, and there is no right or wrong answers and anonymity of the respondent.

Chapter 6 Data Analysis

Partial least square (PLS) was used to test the hypotheses in the model. PLS was chosen because it does not place much emphasis on sample size requirements and does not make assumptions about the distributional properties of the data (Ringle, Sarstedt, & Straub, 2012; Sykes, 2015). PLS is also well-suited for testing complex models and relationships (Ringle et al., 2012). SmartPLS 3.2.7 was the chosen software used to analyze the data (Ringle, Wende, & Becker, 2015).

As described earlier, while 145 responses were collected, the final sample consisted of 108 responses that used to evaluate the proposed research model. The subsequent subsections detail the characteristics of the sample, assess the measurement model and evaluate the structural model.

6.1 Descriptive Analysis

Table 2 is an analysis of the demographic characteristics of respondents. Female respondents represent 54.6% of the target population, followed by male respondents with 36.1%, LGBTQ2+ respondents represented 2.8% of total respondents, and seven respondents opted out identifying their chosen gender.

Table 2 Sample Characteristics

Attributes	Categories	#	%
Age	18-25	10	9.3%
	26-35	63	58.3%
	36-50	27	25.0%
	51-65	7	6.58%
	Blank	1	0.9%
Total		108	100%
Gender	Male	39	36.1%
	Female	59	54.6%
	I'd rather not say	7	6.5%
	LGBTQ2+	3	2.8%
Total		108	100%
Business Unit	Distribution	23	21.3%

Attributes	Categories	#	%
	Manufacturing	59	54.6%
	Other	1	0.9%
	Retail	3	2.8%
	Support	22	20.4%
Total		108	100%
Higher education	(blank)	1	0.9%
	Some high school	2	1.9%
	High school Degree/GED	8	7.4%
	Some College	35	32.4%
	Associate Degree	12	11.1%
	Bachelor's Degree	42	38.9%
	Masters or Doctoral Degree (MA, MS, MEng, MBA, PhD)	8	7.4%
Total		108	100%
Tenure	Less than a year	4	3.7%
	1 to less than 4 years	41	38.0%
	4 to less than 7 years	39	36.1%
	7 years or longer	24	22.2%
Total		108	100%

6.2 Evaluation of the research model

The evaluation of the research model was performed in two phases as recommended by Hair et al. (2017). The first phase is the evaluation of the measurement model followed by the assessment of the structural equation model. The analysis within each phase is outlined below:

1. Evaluation of Measurement Model (Hair et al., 2017, pp. 106–107)

- Determine internal consistency through the evaluation of Cronbach's alpha and composite reliability.
- Determine convergent validity through the evaluation of indicator reliability and average variance extraction (AVE).
- Determine discriminant validity, evaluating the cross-loadings, the Fornell-Larcker criterion and the heterotrait-monotrait ratio (HTMT) statistic.

2. Evaluation of the Structural Model (Hair et al., 2017, pp. 106–107)

- Assess the structural model for collinearity issues.
- Calculate coefficients of determination (R^2).
- Examine the size and significance of the path coefficients.
- Examine the effect size (f^2).

6.3 Measurement model

6.3.1 Internal consistency

To measure construct reliability, the measurement and evaluation of Cronbach alpha (CA), composite reliability (CR) and average variance extracted (AVE) are known to determine quality at the construct level. These measures reflect the internal consistency of the scale elements that measures a particular factor (Fornell & Larcker, 1981). CA and CR should be higher than 0.7 and AVE higher than 0.5 (Fornell & Larcker, 1981). Convergent validity was evaluated by calculating the average variance (AVE) that was derived for all measures. Assessing the path model indicates that all the outer loadings (indicator reliability) are above the minimum threshold of 0.70 as recommended by Hair et al., 2017, except for item 3 for facilitating conditions and item 2 for job satisfaction which were below the threshold. The low loading items were removed from the research model. The CA scores, CR and AVE, are reported in Table 3, and they are above the recommended threshold.

Table 3 Assessment of internal consistency and convergent validity

Variables	Number of items	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)
FC (Facilitating conditions)	3	0.761	0.860	0.675
INT (Continuance intention)	3	0.803	0.884	0.717
JB (Job satisfaction)	2	0.751	0.889	0.800
PEOU (Perceived ease of use)	4	0.881	0.918	0.740
PU (Perceived usefulness)	4	0.936	0.955	0.841
US (user Satisfaction)	3	0.961	0.975	0.928

Table 4 shows the outer loadings, and they are all above threshold value of 0.70 expect for item 3 for facilitating conditions and item 2 for job satisfaction which were below the threshold. The low loading items were eliminated from the table (Hair et al., 2017).

Table 4 Outer loadings of reflective constructs

	FC	IS C	JB	PEOU	PU	US
FC1_1	0.886					
FC1_2	0.861					
FC1_4	0.705					
INT_1		0.889				
INT_2		0.863				
INT_3		0.787				
JB_1			0.905			
JB_3			0.884			
PEOU_1				0.906		
PEOU_2				0.707		
PEOU_3				0.943		
PEOU_4				0.865		
PU_1					0.927	
PU_2					0.941	
PU_3					0.952	
PU_4					0.844	
US_1						0.957
US_2						0.967
US_3						0.966

6.3.2 Discriminant and Criterion Validity

Discriminant validity was evaluated by using two approaches suggested by Chin (1998) and Fornell and Larcker (1981): evaluating cross factor loadings and Fornell-Larcker criterion. Hair et al. (2017) outline that cross-loadings are the first approach to assessing discriminant validity, followed by the Fornell-Larcker criterion. The evaluation of heterotrait-monotrait ratio (HTMT) statistic is a new technique used for further testing of discriminant validity (Henseler, Ringle, & Sarstedt, 2015). To establish discriminant validity, the assessment of the cross-loadings should show an “indicator’s outer-loading on the associated construct should be greater than any of its cross-loadings (i.e. its correlation) on other constructs” (Hair et al., 2017, p. 115). Assessment of the Fornell-Larcker is the next approach to establish discriminant validity. This criterion “compares the square root of the AVE values with the latent variable and its correlations. Specifically, the square root of each construct’s AVE should be greater than its highest correlation with any other construct” (Hair et al., 2017, pp. 115–116).

In evaluating the crossing-loadings and Fornell-Larcker criterion, discriminant validity has been reached as the cross-loadings, and the AVE for each construct are higher than any other construct. Tables 5, 6, and 7 display crossing loading, Fornell-Larcker Criterion and HTMT respectively.

Table 5 Cross-loadings

	FC	INT	JB	PEOU	PU	US
FC1_1	0.886	0.367	0.219	0.564	0.497	0.640
FC1_2	0.861	0.358	0.186	0.495	0.440	0.583
FC1_4	0.705	0.319	0.205	0.236	0.306	0.356
INT_1	0.342	0.889	0.259	0.292	0.585	0.488
INT_2	0.294	0.863	0.258	0.205	0.394	0.423
INT_3	0.418	0.787	0.350	0.393	0.447	0.606
JB_1	0.176	0.272	0.905	0.211	0.119	0.315
JB_3	0.266	0.350	0.884	0.237	0.241	0.314
PEOU_1	0.555	0.319	0.281	0.906	0.525	0.675
PEOU_2	0.357	0.129	0.097	0.707	0.216	0.460
PEOU_3	0.511	0.421	0.215	0.943	0.493	0.737
PEOU_4	0.449	0.311	0.224	0.865	0.485	0.655

	FC	INT	JB	PEOU	PU	US
PU_1	0.494	0.521	0.145	0.495	0.927	0.644
PU_2	0.476	0.456	0.209	0.455	0.941	0.616
PU_3	0.432	0.470	0.169	0.421	0.952	0.591
PU_4	0.483	0.624	0.201	0.530	0.844	0.594
US_1	0.634	0.628	0.362	0.745	0.656	0.957
US_2	0.627	0.560	0.346	0.701	0.633	0.967
US_3	0.651	0.565	0.307	0.709	0.642	0.966

Table 6 Fornell-Larcker Criterion

	FC	INT	JB	PEOU	PU	US
FC	0.821					
INT	0.422	0.847				
JB	0.244	0.345	0.895			
PEOU	0.553	0.361	0.250	0.860		
PU	0.517	0.570	0.198	0.522	0.917	
US	0.662	0.608	0.352	0.747	0.669	0.963

HTMT has been introduced as a new measure for further establishing discriminant validity according to Hair et al. (2017). HTMT is defined as “the mean of all correlations of indicators across constructs measuring different constructs relative to the (geometric) mean of the average correlations of indicators measuring the same construct” (Hair et al., 2017, p. 118). Hair et al. (2017) suggest that the HTMT value should be less than 0.90 and anything above 0.90 indicates a lack of discriminant validity and questions results of cross-loadings and Fornell-Larcker criterion if they discriminant validity has been reached.

Table 7 Heterotrait-Monotrait ratio

	FC	INT	JB	PEOU	PU	US
FC						
INT	0.533					
JB	0.331	0.442				
PEOU	0.631	0.396	0.293			
PU	0.594	0.641	0.239	0.548		
US	0.748	0.678	0.414	0.799	0.703	

The evaluation of cross-loadings, Fornell-Larcker criterion, and heterotrait-monotrait ratio show strong discriminant validity.

6.4 Structural Equation Model (SEM)

6.4.1 Collinearity Assessment

To examine the collinearity of the SEM, the inner variance inflation factor (VIF) was assessed for the reflective indicators, and Table 8 shows the collinearity statistic. Hair et al. (2017) suggest that VIF values above 5 in the predictor constructs would signify critical values of collinearity. And according to the values derived from the evaluation of VIF in this present research, VIF values are below 5 and as such indicates that collinearity is not a significant issue.

Table 8 Collinearity Statistic – VIF Values

	INT	JB	PEOU	PU	US
FC	1.811	1.933	1.000	1.441	1.365
PEOU				1.441	
PU	1.843	2.253			1.365
US	2.402	2.437			

6.4.2 Significance of Structural Model Coefficients

The structural model was evaluated to test the proposed hypotheses. The R² generated shows the explanatory power or variance explained by the latent endogenous variable. As suggested by Chin (1998), bootstrapping with 500 sub-samples was carried out to test the statistical significance of each path coefficient, and it incorporates t-test. The t-test assesses the statistical significance for the path estimate.

The PLS path analysis results showed that hypotheses 1 and 2, which tested the relationship between PU and US ($\beta=0.45$, $t=5.46$), INT ($\beta=0.29$, $t=2.72$) are supported; however, the relationship between PU and JB (hypothesis 3) was not supported ($\beta=-0.07$, $t=0.6$). Hypothesis 4 which proposed a positive relationship between PEOU and PU ($\beta=0.52$, $t=6.07$) was also supported.

Hypotheses 5, 6, 7, 8 and 9 examined the relationship between FC with PEOU, US, INT, JB, and PU. The relationships between FC and PEOU ($\beta=0.55$, $t=6.90$), FC and US ($\beta=0.43$, $t=5.11$), FC and PU ($\beta=0.033$, $t=3.77$) were supported; however, the relationship between FC and INT ($\beta=-0.00$, $t=0.03$) and JB ($\beta=0.04$, $t=0.24$) was not supported.

Hypothesis 10, which tested the relationship between US and INT ($\beta=0.41$, $t=3.63$) was supported. Hypothesis 11 proposes a positive relationship between US and JB ($\beta=0.40$, $t=2.22$) and this relationship was supported.

Table 9 shows the values of the path coefficients, t values, p values and the significance level. Additionally, I tested for age, gender, tenure and education as control variables; however, no significant differences were observed except for gender ($\beta=-0.18$, $t=1.68$).

Table 9 Results of the Structural Model Path Coefficients

Hypotheses	Relationships	Path coefficient	T-value	P Values	Significance level	Support
CV1	Age -> JB	0.182	1.590	0.056	NS	No
CV2	Gender -> JB	-0.176	1.679	0.047	p<0.05	Yes
CV3	HE -> JB	0.026	0.264	0.396	NS	No
CV4	Tenure -> JB	-0.097	0.954	0.170	NS	No
H1	PU -> US	0.446	5.817	0.000	p<0.001	Yes
H2	PU -> INT	0.296	2.832	0.002	p<0.01	Yes
H3	PU -> JB	-0.106	0.631	0.264	NS	No
H4	PEOU -> PU	0.341	3.425	0.000	p<0.01	Yes
H5	FC -> PEOU	0.553	7.102	0.000	p<0.001	Yes
H6	FC -> US	0.431	5.651	0.000	p<0.001	Yes
H7	FC -> INT	-0.003	0.030	0.488	NS	No
H8	FC -> JB	0.037	0.238	0.406	NS	No
H9	FC -> PU	0.328	3.604	0.000	p<0.001	Yes
H10	US -> INT	0.411	3.595	0.000	p<0.001	Yes
H11	US -> JB	0.399	2.280	0.012	p<0.05	Yes

NS-not significant, *p < .05, **p < .01, ***p < 0.001

6.4.3 Coefficient of Determination (R^2) and Effect Size (f^2)

R^2 values ranges are generally described as substantial (0.67-0.75), moderate (0.35-0.5), or weak (0.18-0.25). Table 10 shows the results of explained variance.

Table 10 Results of Coefficient of Determination (R^2)

Endogenous variables	R^2
INT	0.418
JB	0.182
PEOU	0.306
PU	0.348
US	0.584

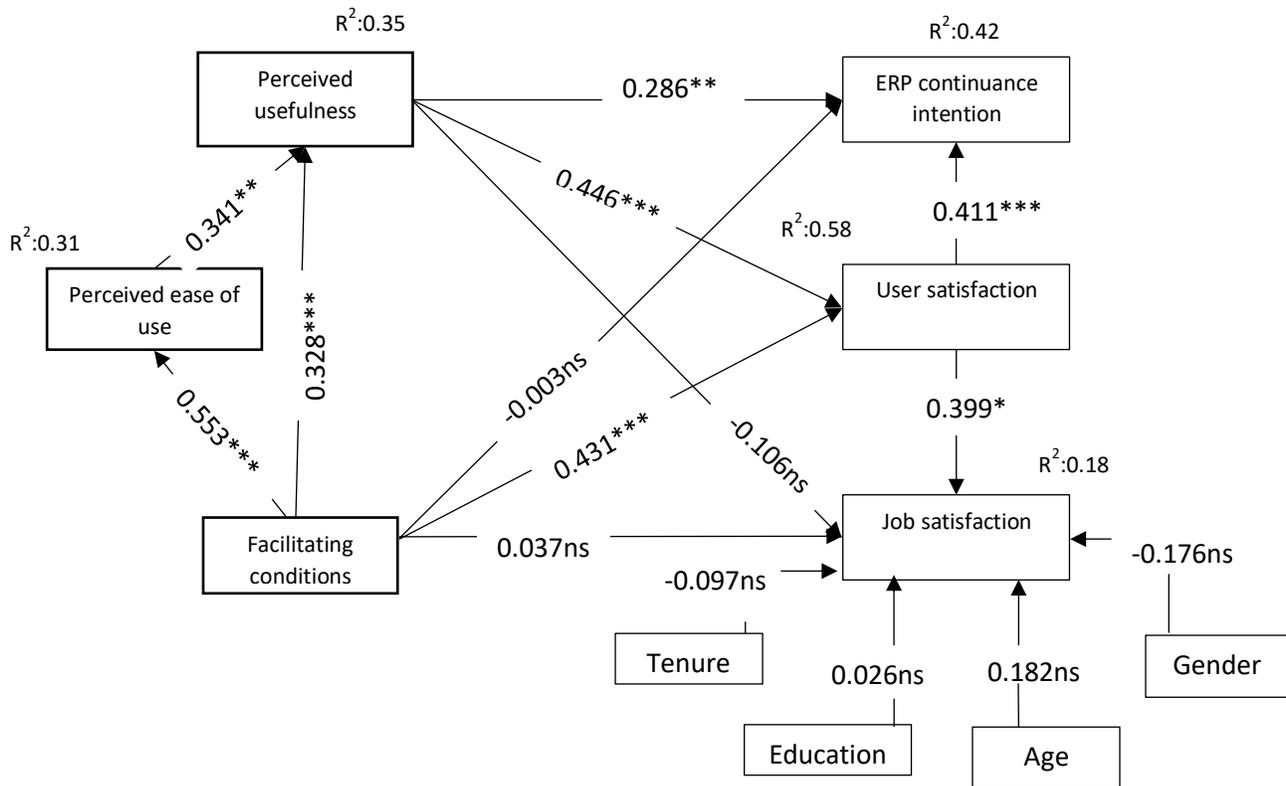
In addition to evaluating the R^2 , Hair et al. (2017) suggest the evaluation of effect size f^2 . The assessment of f^2 measures the change in the R^2 value when a specified exogenous variable is omitted from the model, and this measure can be used to evaluate whether the omitted construct has a substantive impact of the endogenous variables. And according to Hair et al. (2017), f^2 values of 0.02 are classified as a small effect, 0.15 are classified as a medium effect, 0.35 are classified as a large effect and lastly effect sizes below 0.02 shows there is no effect of the exogenous latent variable. Table 11 shows the effect size which ranges from no effect to a large effect.

Table 11 Results of the Effect Size (f^2)

Relationship	f^2	Effect size
FC -> PEOU	0.441	Large
FC -> US	0.327	Medium
FC -> INT	0.000	No effect
FC -> JB	0.001	No effect
FC -> PU	0.115	Small
PEOU-> PU	0.124	Small
PU-> INT	0.082	Small
PU-> JB	0.006	No effect
PU->US	0.351	Large
US -> INT	0.121	Small
US -> JB	0.080	Small

6.5 Summary of results

The data analysis was carried by examining and analyzing the measurement model followed by the assessment of the structural model. Figure 12 is the structural model and shows the level of significance and path coefficients of the hypothesized relationships.



ns - not significant, * $p < .05$, ** $p < .01$, *** $p < 0.001$

Figure 11 Structural model and hypotheses tests

Chapter 7 Results and discussion

7.1 Summary of results

The analysis of the data revealed significant findings that are scant in IS literature. Out of the eleven hypothesized relationships, eight of them were supported. Additionally, the control variables did not affect the main endogenous variable, i.e. job satisfaction.

Following works from prior studies examining the influence of PU on US (Bhattacharjee, 2001; Chen et al., 2012; Rezvani, Khosravi, et al., 2017), H1 stated that PU would have a positive influence on US. Results from my analysis upheld and support this relationship. The path coefficient (0.45) for this hypothesized relationship was found to be significant at the 0.001 level.

Hypothesis 2 was supported and aligns with prior work of Bhattacharjee (2001), Chen et al. (2012), and Rezvani et al. (2017). The path coefficient (0.29) for this relationship was also found to be significant at the 0.01 level.

Hypothesis 3 was not supported. This relationship was hypothesized because prior studies had shown that perceived usefulness influence employee attitudes and the assumption was that perceived usefulness would also influence job satisfaction. As both user satisfaction and job satisfaction captures the degree of behavioral attitude (Bhattacharjee, 2001; L. W. Porter, Steers, & Boulian, 1973). User satisfaction captures users affect with feelings about prior use of a particular system (Bhattacharjee, 2001) while job satisfaction captures attitude toward one's particular job (L. W. Porter et al., 1973).

Hypothesis 4 was supported and was found significant at the 0.001 level. The significance of this relationship dates back to the seminal work of Davis (1989). Adams et al. (1992), Amoako-Gyampah (2007), and Hsieh and Wang, 2007 empirical work also supported this relationship.

Hypothesis 5 relationship was supported. Furthermore, this relationship was also supported by prior study by Aggelidis and Chatzoglou (2009) in acceptance of technology in hospitals and Gu et al. (2009) in the determinants of behavioral intention to mobile banking. This finding was in contrast to a study by Lu et al. (2008) who found no support for this relationship. Lu et al. (2008) stated that respondents did not regard FC as an important construct for forming a perception about the PEOU of wireless mobile data services (WMDS). Support for this relationship might be contextual given the significance of this relationship, which assumes that organizational support predicts PEOU and aids user's interaction with the system.

Hypothesis 6 was supported. This result was similar to findings by Chan et al. (2010) who examined the adoption of E-Government technology. Similarly, Rouibah et al. (2009) found partial support for the effect of training, organizational support (considered as FC) on US, as this was mediated through PEOU, PU and system usage.

Hypothesis 7 is not supported, this is similar to the findings by Chiu and Wang (2008). In contrast, results by Chang and Cheung (2001), and Hong et al. (2011) supports this relationship. One reason for the lack of support for this relationship might be that in irrespective of the availability of perceived organizational support, INT is not influenced by FC in the current environment.

Hypothesis 8 is not supported, as it was non-significant. This relationship was proposed under the assumption that FC would create positive feelings about job duties and tasks because of the availability of resources to aid continued system use.

Hypothesis 9 supports that FC has a positive influence on PU. This is similar to findings by Bhattacharjee & Hikmet (2008), Ng et al. (2007), who found out that facilitating conditions in the form of technical support influences user's perception about the usefulness of a system improving users performance.

Hypothesis 10 supports that US has a positive influence on INT. This link is well grounded in the literature following the seminal work of Bhattacharjee (2001). This result corroborate prior studies by Lin and Wang (2012), Lee and Kwon (2011), and Stone and Baker-Eveleth (2013) and Mouakket (2015).

Hypothesis 11 was supported. To the best of my knowledge, this is the first paper that has empirically tested this relationship. With a path coefficient of 0.39, this relationship shows significance at 0.05 level. Although this result is significant, caution should be applied to the interpretation of this finding.

And lastly, the control variables; age, gender, high education and tenure; only gender showed a significant effect on job satisfaction.

7.2 Discussion

It was interesting to see that in the current context, facilitating conditions had no direct effect on job satisfaction. The non-significance of this relationship might imply that user perception about resources provided by the organization to aid system usage is irrelevant in the current job context. Another reason for this observation might be tied to the timing of the research, as users of ES might have formed a perception about the resources in the workplace. However, in the given context, facilitating conditions predict perceived ease of use, perceived usefulness, and user satisfaction. It was expected that in the current environmental context, organizational support provided for the employees would predict job attitude. There could be several reasons attributed to the non-significance impact of facilitating conditions on job satisfaction. The support provided for using the system in the form of helpdesk and online support might be more related to the technological attitudes rather than job attitudes. Additionally, one could argue that the effect of facilitating conditions is mediated through user satisfaction as the relationship between user satisfaction and job satisfaction was significant and, as such, I can say that there is an indirect influence of facilitating conditions on job satisfaction.

From the summary of results presented above, perceived usefulness is linked to user satisfaction, continuance intention, and job satisfaction. The relationship between perceived usefulness and user satisfaction dates back to the seminal work of Bhattacherjee (2001) and as such, numerous studies support this relationship (Chen et al., 2012; Rezvani, Dong, et al., 2017), and the findings from this research does not deviate as the expected outcome were observed. According to Bhattacherjee (2001), perceived usefulness is defined as the users' perception of the expected benefits of using a particular system. The relationship between perceived usefulness and user satisfaction shows significance at the 0.001 level. Perceived usefulness was the strongest predictor of user satisfaction, but as the relationship between perceived usefulness and continuance intention, and user satisfaction and continuance intention, user satisfaction was the strongest predictor of continuance intention in comparison to perceived usefulness. This is not surprising as one would expect that satisfaction derived from using ES would supersede the effect of perceived usefulness, as users are more interested to continue the use of ES that due to prior use of the system and may ignore the systems' usefulness. As for the relationship between perceived usefulness and job satisfaction, this relationship was not supported. There could be several reasons attributed to the non-significant impact of perceived usefulness on job satisfaction. I can argue that the effect of perceived usefulness is mediated through user satisfaction as the relationship between user satisfaction and job satisfaction was significant, and as such, I can say that there is an indirect influence of perceived usefulness on job satisfaction.

Extant literature supports the direct and significant relationship of perceived ease of use on perceived usefulness, and as expected this relationship was supported. This relationship of perceived ease of use and perceived usefulness has previously been validated in technology acceptance research (Aggelidis & Chatzoglou, 2009; Amoako-Gyampah & Salam, 2004; Davis, 1989). This finding in ES context further strengthens the robustness of the relationship in understanding acceptance and continued use of ES.

Facilitating conditions have been a significant predictor of usage behavior and behavior intention (Aggelidis & Chatzoglou, 2009; Jong & Wang, 2009; Tibenderana, Ogao, Ikoja-Odongo, & Wokadala, 2010), and as such, I postulated that facilitating conditions will impact perceived ease of use, perceived usefulness, user satisfaction, continuance intention, and job satisfaction. It has often been theorized that facilitating conditions have a direct impact on intention and system usage (Taylor & Todd, 1995; Venkatesh et al., 2003). According to dissonance theory (Festinger, 1957), in usage environment where facilitating conditions act as an inhibitor, negative behaviors might develop as users adjust their attitudes to be consistent with the environment they find themselves in. However, in this current context, it is perceived that users are given adequate resources as the results support the influence of facilitating conditions on user satisfaction, and this is consistent with the findings of Chan et al. (2010). Furthermore, the relationship between facilitating conditions perceived ease of use, and perceived usefulness was consistent with the findings of Gu et al. (2009), Bhattacharjee and Hikmet (2008), and Aggelidis and Chatzoglou (2009). The relationship between facilitating conditions with continuance intention and job satisfaction lacked support. It was expected that facilitating conditions would impact continuance intention, as prior studies support this relationship (Chang & Cheung, 2001; Hong et al., 2011). The findings suggest that facilitating conditions is not a relevant predictor of continuance intention and job satisfaction in the current context. Additionally, the fact that facilitating conditions do not predict certain attitudes such as continuance intention and job satisfaction, by no means implies that facilitating conditions are not essential to continued use of the system, but it is mediated through user satisfaction.

Consistent with prior studies, user satisfaction was identified as a salient predictor of continuance intention (Bhattacharjee, 2001; M. C. Lee, 2010; Rezvani, Dong, et al., 2017). The results of the analysis also support this relationship. This result highlights the pivotal role user satisfaction plays in ensuring user continuance intention. As end-users of the ES are inclined to use the system continually to carry out work-related tasks and duties.

Lastly, user satisfaction is a salient predictor of job satisfaction. The result is similar to findings by Lucas and Baroudi (1994), Ang and Sol (1997) and Morris A. et al. (2002). It has been established that the implementation of ES drastically changes work tasks and duties of employees (M. G. Morris & Venkatesh, 2010). This change can cause employees to rely heavily on the IS, as the system is required to carry out work-related duties. Hence, the degree to which the system meets the users IS needs become paramount.

Chapter 8 Conclusions

The study was set around the premise that prior research examined the impact of ES use on job satisfaction at the shakedown phase (M. G. Morris & Venkatesh, 2010; Sykes & Venkatesh, 2017). This current research sought to examine how job satisfaction is affected in the onward and upward phase of the ES experience cycle. The bone of contention is that organizations seldom examine the impact of the system at onward and upward phase (Markus & Tanis, 2000; Sykes & Venkatesh, 2017). Thus, this study dives deep to capture new insights that are scant in ES literature and the results highlight salient outcomes that have the potential to broaden the understanding of ES. This study also responds to calls from IS scholars to examine use beyond initial adoption as we might have reached the theoretical limits in the ability to predict individual-level technology use due to the maturity of research on technology adoption (M. G. Morris & Venkatesh, 2010).

Understanding the impact of continued use of ES system on job satisfaction is important due to the increased dependency on IS to drive operational excellence. This increased dependency on IS may require employees to learn new techniques and skills to be competent with the technology and some employees might find acquiring new skills difficult and this can hinder the potential benefits of the system to the adopting organization and possibly lead to employees feeling dissatisfied with their job. Additionally, as stated earlier, the lifecycle of ES is not static and as such a system upgrade might require employees to acquire new technical knowledge which might also impact might employees job satisfaction. The results provide empirical evidence that user satisfaction predicts job satisfaction, and as such can be used to design future initiatives to improve employee satisfaction.

8.1 Implications

The results of this study have both theoretical and practical implications and contribute to the understanding of techno-centric constructs and non-techno-centric constructs such as job satisfaction.

8.1.1 Theoretical implications

Prior studies that have examined ES implementation and job satisfaction have shown that indeed in ES context, the system use can impact how employees feel about their work. I provide evidence that user satisfaction influences job satisfaction in an ES context. Since the explained variance is moderate, this results also suggest that further examination may be warranted. Findings from this study also highlight the impact of facilitating conditions on user satisfaction, perceived usefulness, and perceived ease of use. From the examination of relevant literature, the relationship between facilitating conditions on user satisfaction, perceived usefulness, and perceived ease of use have seldom been examined, and the results shine light and provide how impactful available resources in an organization can foster desired attitudes. Furthermore, the findings of this research highlight that a relationship does exist between techno-centric constructs and non-techno-centric constructs and contributes to the literature in ES context.

This paper takes the first step in examining the impact of continued use of ES in the onward and upward phases and illustrates the effects of technology adoption constructs on an important organizational variable, i.e. job satisfaction. Amongst the three variables (perceived usefulness, facilitating conditions, and user satisfaction) that links with job satisfaction, support was shown only for the influence of user satisfaction on job satisfaction. These results imply that user satisfaction is a salient predictor of job satisfaction in the current context. The non-significance of perceived usefulness may indicate that irrespective of ES aiding employees job performance for organizational benefits, the benefits to the organization is independent to the degree to which an employee is happy with his or her job (Morris & Venkatesh, 2010). This result might also be attributable to the contextual setting. Similarly, the non-significant influences of facilitating conditions on job satisfaction can also be argued to be contextual. However, given that user satisfaction mediates the effect of perceived usefulness and facilitating conditions on job satisfaction, there is an indirect relationship between the aforementioned constructs.

The validation of the relationships among perceived usefulness, perceived ease of use, user satisfaction, facilitating conditions and continuance intention further emphasizes the relevance of these constructs in understanding user behavior even in the post-adoption phase.

8.1.2 Practical implications

The implication of these results for IT managers and individuals responsible for ensuring continued use of an ES to an organization's advantage would be to create a conducive environment where resources are available to aid employees work-related tasks and duties. The results indicate that facilitating conditions positively impact perceived ease of use, perceived usefulness, and user satisfaction of ES. IT managers should ensure that they continue to provide adequate resources to aid employees' use of the system.

Also, IT managers and practitioners should know that continuance intention is significantly influenced by perceived usefulness and user satisfaction. Therefore, it is imperative for IT managers to ensure that the system helps the user improve job performance and that system continues to meet user information needs.

8.2 Limitations

This study has several limitations owing to the context in which the data was collected. Firstly, the data was obtained from a single manufacturing organization with a limited number of respondents, and these findings might not be generalizable across organizations in diverse sectors. Future research can test the model in different industries and different regions for generalizability

Secondly, the model was only tested in an organization that implemented an ES from software vendor, Microsoft. These results may not be generalizable to ES from other ES software vendors, as other systems may possess unique user interface, functionality, etc. Examples of ES vendors include SAP, JDA, and Oracle etc.

Another limitation is that this study was carried out in the Canadian context and these findings might not be generalizable to other countries. As some research has shown that technology adoption behavior differs across regions (Arpaci, Yardimci Cetin, & Turetken, 2015).

Another limitation of this study is the timing of the data gathering. Data was collected cross-sectionally nearly four years after the implementation of ES. Hence, I do not know employee job satisfaction prior to the implementation and post-implementation of ES. Thus, users might have formed beliefs about the current ES context which might have impacted survey responses.

8.3 Future Research

Future studies should test the model across the implementation and post-implementation phases to understand usage behavior changes over time and its impact on job satisfaction. Such studies can uncover and highlight concerns of users that may inhibit or enable continued use of ES. Furthermore, such holistic examination has the potential to enhance the understanding of techno-centric and non-techno-centric constructs relationship.

Future studies can examine this model in order ES context in terms of the type of ES, regional and cultural backgrounds, and organizational backgrounds. There are numerous ES software vendors, and as such findings in the current ES context might not hold in order ES environment. Furthermore, prior research has shown that cultural difference and organizational background does play a part in shaping end-users perception in respect to the use of IT (Arpaci et al., 2015; Shanks, Parr, Hu, Corbitt, & Thanasankit, 2000; Snider et al., 2009)

Future research could also test the model in different technological contexts such as clouding computing, and other forms of ES (e.g. customer relationship management (CRM) systems).

Lastly, future research can explore the model with other job outcomes such as job stress and job performance given that they are frequently associated with turnover and other relevant outcomes (Sykes & Venkatesh, 2017). Examining these constructs can help researchers relate technology use and affective outcome to performance at the individual level and better understand the long-term effect of technology-induced changes in organizations.

8.4 Conclusion

The tenet of this research is understanding the impact of continued use of ES on job satisfaction. Scholars in the IS field have long studied adoption, and implementation of IS such as ES and more recently have called on new research to look beyond adoption and implementation. They have encouraged carrying out empirical studies that incorporate non-techno-centric constructs as a pathway to uncover a deeper understanding of how technology use shapes users in workplaces.

Appendices

Appendix A: REB Approval



To: Ugonna Omeziri
Re: REB 2018-232: The impact of enterprise systems (ES) use on job satisfaction
Date: July 6, 2018

Dear Ugonna Omeziri,

The review of your protocol REB File REB 2018-232 is now complete. The project has been approved for a one year period. Please note that before proceeding with your project, compliance with other required University approvals/certifications, institutional requirements, or governmental authorizations may be required.

This approval may be extended after one year upon request. Please be advised that if the project is not renewed, approval will expire and no more research involving humans may take place. If this is a funded project, access to research funds may also be affected.

Please note that REB approval policies require that you adhere strictly to the protocol as last reviewed by the REB and that any modifications must be approved by the Board before they can be implemented. Adverse or unexpected events must be reported to the REB as soon as possible with an indication from the Principal Investigator as to how, in the view of the Principal Investigator, these events affect the continuation of the protocol.

Finally, if research subjects are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research.

Please quote your REB file number (REB 2018-232) on future correspondence.

Congratulations and best of luck in conducting your research.

A handwritten signature in black ink, appearing to read "Patrizia Albanese". The signature is written over a dashed line that indicates where the signature should be placed.

Dr. Patrizia Albanese, PhD
Chair, Ryerson University Research Ethics Board

The Following protocol attachments have been reviewed and approved.

- Reference REB.docx (submitted on: 21 Apr 2018)



The Impact of Enterprise Resourcing Planning (ERP) system use on Job satisfaction

You are invited to participate in a research study conducted by Ugonna William Omeziri, MScM candidate supervised by Dr. Ozgur Turetken and Dr. Linying Dong of the Ted Rogers School of Management at Ryerson University, Toronto, Ontario. The results of this study will be used for a master's thesis and contribute to the body of knowledge in the management of enterprise resource planning (ERP) system.

If you have any questions or concerns about this research, please contact the lead investigator:

Lead Investigator

Ugonna William Omeziri
MScM Candidate
Ted Rogers School of Management
Ryerson University
Email address: uomeziri@ryerson.ca

Faculty Supervisors

Dr. Ozgur Turetken
Ted Rogers School of Management
Ryerson University
Email address: turetken@ryerson.ca

Dr. Linying Dong
Ted Rogers School of Management
Ryerson University
Email address: ldong@ryerson.ca

Purpose of the Study

The purpose of this study is to examine the impact of continued use of an enterprise resourcing planning (ERP) system on job satisfaction of users and non-users of the system for a master's degree thesis study by Ugonna Omeziri, a graduate student in the Master of Science in Management (MScM) program at Ted Rogers School of Management of Ryerson University. Results from this study may be used to improve overall satisfaction of ES system.

Description of the Study

You are asked to participate in an online survey. This online survey consists of simple and easy to understand questions. Some of the questions may have more than one item to be answered. This online survey should not take more than 15-20 minutes to complete.

Examples of survey questions:

On a scale of 1-7, where 1 indicates that you strongly disagree and 7 indicates you strongly agree with the statement below:

- I. Overall, I am satisfied with my job
- II. I am very satisfied with my interaction with ES system

Risk of discomfort

The nature of the survey may make you uncomfortable and so I ask that if you feel uncomfortable at any time you may skip the question/s or simply end the survey by closing the browser. You can skip any question you wish and still complete the survey. You may also withdraw from completing the survey at any time, by simply closing your browser, and your data will not be saved.

Examples of survey questions that may cause discomfort:

On a scale of 1-7, where 1 indicates that you strongly disagree and 7 indicates you strongly agree with the statement below:

- III. A specific person (or group) is available for assistance with ES difficulties
- IV. I find ES system to be useful in my job

Benefits of the study

The results of this study may be used to improve strategies as well as technical and practical initiatives to improve overall satisfaction with the enterprise resourcing planning (ERP) system. The aim of this research is to provide IT managers with technical and practical solutions to ensure that users of the system remain satisfied while also ensuring continued and improved usage of the system to improve efficiency and effectiveness. While the aforementioned are potential benefits of the study, I cannot guarantee any direct benefit to any individual participants.

Confidentiality

The survey is anonymous and as such will not be collecting information that will easily identify you, like your name or other unique identifiers. Although your Internet Protocol (IP) address can be tracked through the survey platform, the researcher/s will not be collecting this information. Your IP address may be observed only to ensure that one individual is not completing the survey multiple times. Please also note that the survey data will be shared with my faculty supervisors at Ryerson University.

Voluntary nature of participation

Participation in this study is voluntary. Please note that participating in this study will not affect employees' respective job regardless of your responses or your decision not to participate. Your choice of whether or not to participate will not influence future relations with Ryerson University. If you decide to

participate, you are free to withdraw your consent and to stop your participation at any time without penalty or loss of benefits to which you are allowed. At any point in the study, you may refuse to answer any question or stop participation altogether and simply close the web browser or by simply not clicking the submit button at the end of the survey. By doing so, not of your response will be saved or used further for the study.

Questions about the Study

If you have any questions about this research, please contact Mr. Ugonna William Omeziri at uomeziri@ryerson.ca

If you have any questions about your rights or treatment as a research participant in this study, please contact the Ryerson University Research Ethics Board at rebchair@ryerson.ca (416) 979-5042.

Agreement

If you are interested in taking this survey, please select the “I Agree” choice and continue to take the survey otherwise select the “I Do not Agree” choice to end the survey. Thank you so much for your time and participation.

- I agree
- I do not agree

Appendix C: Survey instrument

SURVEY QUESTIONS

AG Please specify your age range

- 18-25
- 26-35
- 36-50
- 51-65
- 66+

GE What gender do you identify yourself as?

- Male
- Female
- LGBTQ2+
- I'd rather not say

HE What is your highest level of education?

- Some high school
- High school Degree/GED
- Some College
- Associate Degree
- Bachelor's Degree
- Master's or Doctoral Degree (MA, MS, MEng, MBA, Phd)

BU What area of the business do you support?

- Distribution
- Manufacturing
- Retail
- Support
- Other

YCO How long have you been working for the company?

- Less than a year
- 1 to less than 4 years
- 4 to less than 7 years
- 7 years and over

PEOU Perceived Ease of Use

The following four statements pertain to the belief that using the current ES (i.e. DAX) is free of effort. Please read each statement carefully and indicate the extent to which you disagree or agree with each statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My interaction with ES system is clear and understandable							
Interacting with ES system does not require a lot of my mental effort							
I find ES system easy to use							
I find it easy to get ES system to do what I want it to do							

PU Perceived Usefulness

The following four statements pertain to the belief that using the current ES (i.e. DAX) enhances job performance. Please read each statement carefully and indicate the extent to which you disagree or agree with each statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Using ES system improves my performance in my job							
Using ES system in my job increases my productivity							
Using ES system enhances my effectiveness in my job							

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I find ES system to be useful in my job							

FC1 Facilitating conditions

The following four statements pertain to the belief that an organizational and technical infrastructure exists to support the use of the current ES (i.e. DAX). Please read each statement carefully and indicate the extent to which you disagree or agree with each statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I have the resources necessary to use ES system							
I have the knowledge necessary to use ES system							
The ES is not compatible with the other systems I use (reversed coded)							
A specific person (or group) is available for assistance with ES difficulties							

US User satisfaction

The following four statements pertain to how you feel about your overall experience of the current ES (i.e. DAX). Please read each statement carefully and indicate the extent to which you disagree or agree with each statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am very satisfied with my interaction with ES system							
I am very satisfied with my experience with using ES system							
Overall, I am very satisfied with ES system							

INT Intention to Continue Using the Current ES

The following three statements pertain to the intention to continuing using the current ES (i.e. DAX). Please read each statement carefully and indicate the extent to which you disagree or agree with each statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I intend to continue using the current ES rather than discontinue its use							
My intention is to continue using the current ES than use any alternative means							
If I could, I would like to discontinue my							

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
use of the current ES (reversed scored)							

JB Job satisfaction

The following three statements pertain to overall job satisfaction. Please read each statement carefully and indicate the extent to which you disagree or agree with each statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Overall, I am satisfied with my job							
I would prefer another, more ideal job (reversed scored)							
I am satisfied with the important aspects of my job							

Appendix D: IBM SPSS Output

Descriptive Statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
JB_1	108	5.12	1.483
JB_2R	108	3.25	1.719
JB_3	108	5.35	1.423
PEOU_1	108	4.85	1.515

PEOU_2	108	4.10	1.756
PEOU_3	108	4.40	1.640
PEOU_4	107	4.19	1.597
PU_1	107	5.11	1.482
PU_2	108	5.03	1.544
PU_3	107	5.17	1.539
PU_4	107	5.60	1.324
FC1_1	108	4.87	1.535
FC1_2	108	5.01	1.391
FC1_3R	107	4.03	1.424
FC1_4	107	4.84	1.755
US_1	106	4.44	1.474
US_2	107	4.37	1.563
US_3	107	4.31	1.532
INT_1	107	5.61	1.227
INT_2	108	5.27	1.294
INT_3R	108	4.52	1.649
Valid N (listwise)	104		

References

- Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived Usefulness, Ease of Use, and Usage of Information Technology: A Replication. *MIS Quarterly*, *16*(2), 227. <https://doi.org/10.2307/249577>
- Addo-Tenkorang, R., & Helo, P. (2012). Enterprise Resource Planning (ERP): A Review Literature Report. *Lecture Notes in Engineering and Computer Science VO - 2194*, *II*(1), 1126. <https://doi.org/10.13140/2.1.3254.7844>
- Aggelidis, V. P., & Chatzoglou, P. D. (2009). Using a modified technology acceptance model in hospitals. *International Journal of Medical Informatics*, *78*(2), 115–126. <https://doi.org/10.1016/j.ijmedinf.2008.06.006>
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Al-Khaldi, M. A., & Olusegun Wallace, R. S. (1999). The Influence of Attitudes on Personal Computer Utilization among Knowledge Workers: The case of Saudi Arabia. *Information & Management*, *36*, 185–204.
- Alvarez, R. (2008). Examining technology, structure and identity during an Enterprise System implementation. *Information Systems Journal*, *18*(2), 203–224. <https://doi.org/10.1111/j.1365-2575.2007.00286.x>
- Amoako-Gyampah, K. (2007). Perceived usefulness, user involvement and behavioral intention: an empirical study of ERP implementation. *Computers in Human Behavior*, *23*, 1232–1248. <https://doi.org/10.1016/j.chb.2004.12.002>
- Amoako-Gyampah, K., & Salam, A. F. (2004). An extension of the technology acceptance model in an ERP implementation environment. *Information & Management*, *41*, 731–745. <https://doi.org/10.1016/j.im.2003.08.010>
- Ang, J., & Soh, P. H. (1997). User information satisfaction, job satisfaction and computer background: An exploratory study. *Information & Management*, *32*(5), 255–266. [https://doi.org/10.1016/S0378-7206\(97\)00030-X](https://doi.org/10.1016/S0378-7206(97)00030-X)
- Ang, S., & Slaughter, S. (2000). The Missing Context of Information Technology Personnel: A Review and Future Directions for Research. In R. W. Zmud (Ed.), *Framing the Domains of IT Management: Projecting the Future through the Past* (pp. 305–328). Cincinnati, OH: Pinnaflex.
- Apps Run The World. (2018). Information technology (IT) spending on enterprise software worldwide, from 2009 to 2019 (in billion U.S. dollars). Retrieved August 15, 2018, from <https://www.statista.com/statistics/203428/total-enterprise-software-revenue-forecast/>
- Arpaci, I., Yardimci Cetin, Y., & Turetken, O. (2015). A Cross-Cultural Analysis of Smartphone Adoption by Canadian and Turkish Organizations. *Journal of Global Information Technology Management*, *18*(3), 214–238. <https://doi.org/10.1080/1097198X.2015.1080052>
- Aziri, B. (2011). Job satisfaction: A literature review. *Management Research and Practice*, *3*(4), 77–86. Retrieved from <http://www.mrp.ase.ro/no34/f7.pdf>
- Bala, H., & Venkatesh, V. (2015). Adaptation to Information Technology: A Holistic Nomological Network from Implementation to Job Outcomes. *Management Science*, *62*(1), 156–179.

<https://doi.org/10.1287/mnsc.2014.2111>

- Baroudi, J., & Lucas, H. C. (1994). The Role of Information Technology in Organization Design. *Journal of Management Information Systems*, 10(4), 9–23.
<https://doi.org/10.1080/07421222.1994.11518018>
- BBC News. (2018). UK tech giant Micro Focus plunges in value as shares crash - BBC News. Retrieved April 18, 2018, from <http://www.bbc.com/news/business-43457024>
- Bhattacharjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, 25(3), 351–370.
- Bhattacharjee, A., & Hikmet, N. (2008). Reconceptualizing organizational support and its effect on information techno. *Computer*.
- Boswell, W. R., Boudreau, J. W., & Tichy, J. (2005). The Relationship Between Employee Job Change and Job Satisfaction: The Honeymoon-Hangover Effect. *Journal of Applied Psychology*, 90(5), 882–892.
<https://doi.org/10.1037/0021-9010.90.5.882>
- Botta-Genoulaz, V., Millet, P.-A., & Grabot, B. (2005). A survey on the recent research literature on ERP systems. *Computers in Industry*, 56(6), 510–522. <https://doi.org/10.1016/j.compind.2005.02.004>
- Brown, S. A., Massey, A. P., Montoya-Weiss, M. M., & Burkman, J. R. (2002). Do I really have to? User acceptance of mandated technology. *European Journal of Information Systems*, 11(4), 283–295.
<https://doi.org/10.1057/palgrave.ejis.3000438>
- Calisir, F., Altin Gumussoy, C., & Bayram, A. (2009). Predicting the behavioral intention to use enterprise resource planning systems: An exploratory extension of the technology acceptance model. *Management Research News*, 32(7), 597–613. <https://doi.org/10.1108/01409170910965215>
- Chan, F., Thong, J., Venkatesh, V., Brown, S., Hu, P., & Tam, K. (2010). Modeling Citizen Satisfaction with Mandatory Adoption of an E-Government Technology. *Journal of the Association for Information Systems*, 11(10), 519–549. <https://doi.org/10.17705/1jais.00239>
- Chang, M. K., & Cheung, W. (2001). Determinants of the intention to use Internet/WWW at work: a confirmatory study. *Information & Management*, 39, 1–14.
- Chen, L., Meservy, T. O., & Gillenson, M. (2012). Understanding Information Systems Continuance for Information-Oriented Mobile Applications. *Communications of the Association for Information Systems*, 30(April), 127–146.
- Chin, W. W. (1998). The Partial Least Squares Approach for Structural Equation Modeling. In G. A. Marcoulides (Ed.), *Modern Methods for Business Research* (pp. 295–336). Mahwah, New Jersey: Lawrence Erlbaum Associates .
- Chiu, C.-M., & Wang, E. T. G. (2008). Understanding Web-based learning continuance intention: The role of subjective task value. *Information & Management*, 45(3), 194–201.
- Chou, S.-W., & Chen, P.-Y. (2009). The influence of individual differences on continuance intentions of enterprise resource planning (ERP). *International Journal of Human-Computer Studies*, 67, 484–496. <https://doi.org/10.1016/j.ijhcs.2009.01.001>
- Chung, S., & Synder, C. (1999). ERP Initiation - A Historical Perspective. In *AMCIS* (pp. 213–215). Association for Information Systems.

- Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. *MIS Quarterly*, 19(2), 189. <https://doi.org/10.2307/249688>
- Davenport, T. H. (1998). Putting the Enterprise into the Enterprise System. *Harvard Business Review*, (August), 1–12. <https://doi.org/Article>
- Davenport, T. H. (2000). *Mission Critical: Realizing the Promise of Enterprise Systems*. Boston MA: Harvard Business School Press.
- Davis, F. D. (1985). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. Massachusetts Institute of Technology. <https://doi.org/oclc/56932490>
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology : A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982–1003.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*, 22(14), 1111–1132. <https://doi.org/10.1111/j.1559-1816.1992.tb00945.x>
- DeLone, W. H., & McLean, E. R. (1992). Information Systems Success: The Quest for the Dependent Variable. *Information Systems Research*, 3(1), 60–95.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Management Information Systems / Spring*, 19(4), 9–30. <https://doi.org/10.1073/pnas.0914199107>
- Dong, L., Neufeld, D., & Higgins, C. (2002). The iceberg on the sea: what do you see? *AMCIS 2002 Proceedings*, 857–864.
- Eden, R., Sedera, D., & Tan, F. (2012). Archival Analysis Of Enterprise Resource Planning Systems: The Current State And Future Directions. *ICIS 2012 Proceedings*. Retrieved from <http://aisel.aisnet.org/icis2012/proceedings/ResearchInProgress/59>
- Esteves, J., & Bohorquez, V. W. (2007). An Updated ERP Systems Annotated Bibliography: 2001-2005. *SSRN Electronic Journal*, 2001, 2001–2005. <https://doi.org/10.2139/ssrn.1006969>
- Esteves, J., & Pastor, J. (1999). An ERP Life-cycle-based Research Agenda. In *First International Workshop on Enterprise Management and Resource Planning: Methods, Tools, Architectures* (pp. 359–371). <https://doi.org/10.1.1.10.1675>
- Esteves, J., & Pastor, J. (2001). Enterprise Resource Planning Systems Research: An Annotated Bibliography. *Communications of Association for Information Systems*, 7(8).
- Festinger, L. (1957). *A Theory of Cognitive Dissonance*. California: Stanford University Press.
- Fillion, G., Braham, H., & Ekionea, J.-P. B. (2011). *Testing UTAUT on the use of ERP systems by middle managers and end-users of medium-to large-sized Canadian enterprises*. *Academy of Information and Management Sciences Journal* (Vol. 14).
- Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research*, 18(3), 382.

<https://doi.org/10.2307/3150980>

- Garbarino, E., & Johnson, M. S. (1999). The different roles of satisfaction, trust, and commitment in customer relationships. *Journal of Marketing*, *63*(2), 70–87.
- Gartner, I. (2018). Gartner Says Global IT Spending to Grow 6.2 Percent in 2018. Retrieved July 7, 2018, from <https://www.gartner.com/newsroom/id/3871063>
- Gefen, D. (2004). What Makes an ERP Implementation Relationship Worthwhile: Linking Trust Mechanisms and ERP Usefulness. *Journal of Management Information Systems*, *21*(1), 263–288.
- Goodhue, D. L., & Thompson, R. L. (1995). Task-Technology Fit and Individual Performance. *MIS Quarterly*, *19*(2), 213–236. <https://doi.org/10.2307/249689>
- Grabski, S. V., Leech, S. A., & Schmidt, P. J. (2011). A Review of ERP Research: A Future Agenda for Accounting Information Systems. *Journal of Information Systems*, *25*(1), 37–78. <https://doi.org/10.2308/jis.2011.25.1.37>
- Greenwood, W. T. (1974). Future Management Theory: A “Comparative” Evolution to a General Theory. *Academy of Management Journal*, *17*(3), 503–513. <https://doi.org/10.5465/254653>
- Gu, J.-C., Lee, S.-C., & Suh, Y.-H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, *36*, 11605–11616. <https://doi.org/10.1016/j.eswa.2009.03.024>
- Gumaer, R. (1996). Beyond ERP and MRP II: Optimized Planning and synchronized manufacturing. *IIE Solutions*, *28*(9), 32–36.
- Hackman, J. R., & Oldman, R. G. (1976). Motivation through the Design of Work: Test of a Theory. *Organizational Behavior and Human Performance*, *16*, 250–279.
- Haddara, M., & Hetlevik, T. (2016). Investigating the Effectiveness of Traditional Support Structures & Self-organizing Entities within the ERP Shakedown Phase. *Procedia Computer Science*, *100*(1877), 507–516. <https://doi.org/10.1016/j.procs.2016.09.189>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Second edi). Los Angeles: SAGE Publications.
- Heather, H. (2001). Extended ERP technology reborn in B2B | Computerworld. Retrieved September 22, 2017, from <https://www.computerworld.com/article/2583660/e-commerce/extended-erp-technology-reborn-in-b2b.html>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hong, W., Thong, J. Y. L., Chasalow, L. C., & Dhillon, G. (2011). User Acceptance of Agile Information Systems: A Model and Empirical Test. *Journal of Management Information Systems*, *28*(1), 235–272.
- Hossain, M. A., & Quaddus, M. (2012). Expectation–Confirmation Theory in Information System Research: A Review and Analysis. In Y. K. Dwivedi, M. R. Wade, & S. L. Schneberger (Eds.), *Information Systems Theory* (pp. 441–469). Springer, New York, NY. https://doi.org/10.1007/978-1-4419-6108-2_21

- Huang, T., & Yasuda, K. (2016). Comprehensive review of literature survey articles on ERP. *Business Process Management Journal*, 22(1), 2–32. <https://doi.org/10.1108/BPMJ-12-2014-0122>
- Hwang, Y. (2005). Investigating enterprise systems adoption: uncertainty avoidance, intrinsic motivation, and the technology acceptance model. *European Journal of Information Systems*, 14(2), 150–161. Retrieved from www.palgrave-journals.com/ejis
- Information and Communications Technology Council. (2014). Digital Adoption, Advancing Canada's place in a global economy, 1–13. Retrieved from <http://www.ictc-ctic.ca/wp-content/uploads/2014/07/AdoptionRoadmap.pdf>
- Ivert, L. K., & Jonsson, P. (2011). Problems in the onward and upward phase of APS system implementation: Why do they occur? *International Journal of Physical Distribution and Logistics Management*, 41(4), 343–363. <https://doi.org/10.1108/09600031111131922>
- Jarvenpaa, S. L., & Stoddard, D. B. (1998). Business process redesign: Radical and evolutionary change. *Journal of Business Research*, 41(1), 15–27. [https://doi.org/10.1016/S0148-2963\(97\)00008-8](https://doi.org/10.1016/S0148-2963(97)00008-8)
- Johns, G. (2006). The Essential Impact of Context on Organizational Behavior. *Academy of Management Review*, 31(2), 386–408. <https://doi.org/10.5465/amr.2006.20208687>
- Jong, D., & Wang, T.-S. (2009). Student Acceptance of Web-based Learning System. In *Proceedings of the 2009 International Symposium on Web Information Systems and Applications* (pp. 533–536). Nanchang, P. R. China.
- Kalleberg, A. L. (1977). Work Values and Job Rewards: A Theory of Job Satisfaction. *American Sociological Review*, 42, 124–143. Retrieved from <http://www.jstor.org/stable/2117735>
- Karaali, D., Gumussoy, C. A., & Calisir, F. (2011). Factors affecting the intention to use a web-based learning system among blue-collar workers in the automotive industry. *Computers in Human Behavior*, 27, 343–354. <https://doi.org/10.1016/j.chb.2010.08.012>
- Khechine, H., Lakhal, S., & Ndjambou, P. (2016). A meta-analysis of the UTAUT model: Eleven years later. *Canadian Journal of Administrative Sciences*, 33(2), 138–152. <https://doi.org/10.1002/cjas.1381>
- Kumar, V., Maheshwari, B., & Kumar, U. (2002a). Enterprise resource planning systems adoption process: A survey of Canadian organizations. *International Journal of Production Research*, 40(3), 509–523. <https://doi.org/10.1080/00207540110092414>
- Kumar, V., Maheshwari, B., & Kumar, U. (2002b). Enterprise resource planning systems adoption process: A survey of Canadian organizations. *International Journal of Production Research*, 40(3), 509–523. <https://doi.org/10.1080/00207540110092414>
- Kumar, V., Maheshwari, B., & Kumar, U. (2002). ERP Systems Implementations: Best practices in Canadian Government organizations. *Government Information Quarterly*, 19, 147–172. [https://doi.org/10.1016/S0740-624X\(02\)00092-8](https://doi.org/10.1016/S0740-624X(02)00092-8)
- Kumar, V., Maheshwari, B., & Kumar, U. (2003). An investigation of critical management issues in ERP implementation: Empirical evidence from Canadian organizations. *Technovation*, 23(10), 793–807. [https://doi.org/10.1016/S0166-4972\(02\)00015-9](https://doi.org/10.1016/S0166-4972(02)00015-9)
- Law, C. C. H., Chen, C. C., & Wu, B. J. P. (2010). Managing the full ERP life-cycle: Considerations of maintenance and support requirements and IT governance practice as integral elements of the

- formula for successful ERP adoption. *Computers in Industry*, 61, 297–308.
<https://doi.org/10.1016/j.compind.2009.10.004>
- Lee, D., Lee, S. M., & Olson, D. L. (2010). The effect of organizational support on ERP implementation. *Industrial Management & Data Systems*, 110(2), 269–283.
<https://doi.org/10.1108/02635571011020340>
- Lee, M. C. (2010). Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation-confirmation model. *Computers and Education*, 54(2), 506–516.
<https://doi.org/10.1016/j.compedu.2009.09.002>
- Lee, Y., Kozar, K. A., & Larsen, K. R. T. (2003). The Technology Acceptance Model: Past, Present, and Future. *Communications of the Association for Information Systems*, 12(50), 752–780.
<https://doi.org/10.1037/0011816>
- Lee, Y., & Kwon, O. (2011). Intimacy, familiarity and continuance intention: An extended expectation-confirmation model in web-based services. *Electronic Commerce Research and Applications*, 10, 342–357. <https://doi.org/10.1016/j.elerap.2010.11.005>
- Liang, H., Xue, Y., & Wu, L. (2013). Ensuring employees' IT compliance: Carrot or stick? *Information Systems Research*, 24(2), 279–294. <https://doi.org/10.1287/isre.1120.0427>
- Lin, C. S., Wu, S., & Tsai, R. J. (2004). Integrating perceived playfulness into expectation-confirmation model for web portal context. *Information & Management*, 42(5), 683–693.
<https://doi.org/10.1016/j.im.2004.04.003>
- Lin, W.-S., & Wang, C.-H. (2012). Antecedences to continued intentions of adopting e-learning system in blended learning instruction: A contingency framework based on models of information system success and task-technology fit. *Computers & Education*, 58, 88–99.
- Lu, J., Yu, C.-S., & Liu, C. (2005). Facilitating conditions, wireless trust and adoption intention. *Journal of Computer Information Systems*, 46(1), 17–24. <https://doi.org/10.1108/10662240310478222>
- Lu, J., Yu, C.-S., Yao, J., Liu, C., & Wang, K. (2008). Determinants of accepting wireless mobile data services in China. *Information & Management*, 45, 52–64.
- Maier, C., Laumer, S., Eckhardt, A., & Weitzel, T. (2013). Analyzing the impact of HRIS implementations on HR personnel's job satisfaction and turnover intention. *Journal of Strategic Information Systems*, 22(3), 193–207. <https://doi.org/10.1016/j.jsis.2012.09.001>
- Marangunić, N., & Granić, A. (2015). Technology acceptance model: a literature review from 1986 to 2013. *Universal Access in the Information Society*, 14(1), 81–95. <https://doi.org/10.1007/s10209-014-0348-1>
- Markus, M. L., & Tanis, C. (2000). *The Enterprise System Experience — From Adoption to Success*. (R. W. Zmud, Ed.), *Framing the Domains of IT Management: Projecting the Future Through the Past*. Pinnaflex Educational Resources Inc. <https://doi.org/10.1145/332051.332068>
- Momoh, A., Roy, R., & Shehab, E. (2010). Challenges in enterprise resource planning implementation: State-of-the-art. *Business Process Management Journal*, 16(4), 537–565.
<https://doi.org/10.1108/14637151011065919>
- Moon, Y. B. (2007). Enterprise Resource Planning (ERP): a review of the literature. *International Journal*

- of Management and Enterprise Development*, 4(3), 235.
<https://doi.org/10.1504/IJMED.2007.012679>
- Moore, G. C., & Benbasat, I. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research*, 2(3), 192–222.
<https://doi.org/10.1287/isre.2.3.192>
- Morris, M. G., & Venkatesh, V. (2010). Job Characteristics and Job Satisfaction: Understanding the Role of Enterprise Resource Planning System Implementation. *MIS Quarterly*, 34(1), 143–161. Retrieved from <http://www.jstor.org/stable/20721418>
- Morris, S. A., Marshall, T. E., & Rainer Jr., R. K. (2002). Impact of User Satisfaction and Trust on Virtual Team Members. *Information Resources Management Journal*, 15(2), 22–30.
<https://doi.org/10.4018/irmj.2002040103>
- Mouakket, S. (2015). Factors influencing continuance intention to use social network sites: The Facebook case. *Computers in Human Behavior*, 53, 102–110.
- Ngai, E. W. T., Poon, J. K. L., & Chan, Y. H. C. (2007). Empirical examination of the adoption of WebCT using TAM. *Computers & Education*, 48, 250–267. <https://doi.org/10.1016/j.compedu.2004.11.007>
- Oghuma, A. P., Libaque-Saenz, C. F., Wong, S. F., & Chang, Y. (2016). An Expectation-Confirmation Model of Continuance Intention to use Mobile Instant Messaging. *Telematics and Informatics*, 33, 34–47.
<https://doi.org/10.1016/j.tele.2015.05.006>
- Oliver, R. L. (1997). *Satisfaction: A Behavioral Perspective on the Consumer*. New York: McGraw-Hill.
- Oliver Wight Inc. (1983). History | Oliver Wight Americas. Retrieved September 22, 2017, from <https://www.oliverwight-americas.com/history>
- Ooi, K.-B., & Tan, G. W.-H. (2016). Mobile technology acceptance model: An investigation using mobile users to explore smartphone credit card. *Expert Systems with Applications*, 59, 33–46.
<https://doi.org/10.1016/j.eswa.2016.04.015>
- Pai, J.-C., & Tu, F.-M. (2011). The acceptance and use of customer relationship management (CRM) systems: An empirical study of distribution service industry in Taiwan. *Expert Systems with Applications*, 38(1), 579–584. <https://doi.org/10.1016/j.eswa.2010.07.005>
- Panorama Consulting Solutions. (2015). Key Findings From the 2015 ERP Report - Panorama Consulting. Retrieved December 13, 2018, from <https://www.panorama-consulting.com/key-findings-from-the-2015-erp-report/>
- Panorama Consulting Solutions. (2017). 2017 Report on ERP Systems & Enterprise Software. *Panorama Consulting Solutions*. Retrieved from <https://www.panorama-consulting.com/wp-content/uploads/2017/07/2017-ERP-Report.pdf>
- Peng, Z., Sun, Y., & Guo, X. (2018). Antecedents of employees' extended use of enterprise systems : An integrative view of person,environment, and technology. *International Journal of Information Management*, 39, 104–120. <https://doi.org/10.1016/j.ijinfomgt.2017.11.007>
- Peppard, J., & Ward, J. (2005). Unlocking sustained business value from IT investment. *California Management Review*, 48(1), 52–70.
- Po-An Hsieh, J. J., & Wang, W. (2007). Explaining employees' Extended Use of complex information

- systems. *European Journal of Information Systems*, 16(3), 216–227.
<https://doi.org/10.1057/palgrave.ejis.3000663>
- Porter, L. W., Steers, R. M., & Boulian, P. V. (1973). Organizational commitment, job satisfaction, and turnover among psychiatric technicians. *Journal of Applied Psychology*, 59(5), 1–21. Retrieved from <https://files.eric.ed.gov/fulltext/ED099485.pdf>
- Porter, M. E. (1990). Competitive advantage of nations: Creating and sustaining superior performance. *Harvard Business Review*, 73–93.
- Porter, M. E., & Millar, V. E. (1985, July). How Information Gives You Competitive Advantage. *Harvard Business Review*. Retrieved from [https://hbr.org/1985/07/how-information-gives-you-competitive-advantage\[28/11/201611:34:33\]](https://hbr.org/1985/07/how-information-gives-you-competitive-advantage[28/11/201611:34:33])
- Psoinos, A., & Smithson, S. (2002). Employee empowerment in manufacturing: a study of organisations in the UK. *New Technology, Work and Employment*, 17(2), 132–148.
- Ptak, C. A., Smith, C., & Orlicky, J. (2011). *Orlicky's Material requirements planning*. McGraw-Hill.
- Rai, A., & Hornyak, R. (2013). The impact of sourcing enterprise system use and work process interdependence on sourcing professionals' job outcomes. *Journal of Operations Management*, 31(6), 474–488. <https://doi.org/10.1016/j.jom.2013.07.005>
- Rashid, M. A., Hossain, L., & Patrick, J. D. (2002). The Evolution of ERP Systems: A Historical Perspective 1 The Evolution of ERP Systems: A Historical Perspective. In *Enterprise Resource Planning Solutions and Management* (pp. 35–50). Hershey: IRM Press.
- Rezvani, A., Dong, L., & Khosravi, P. (2017). Promoting the continuing usage of strategic information systems: The role of supervisory leadership in the successful implementation of enterprise systems. *International Journal of Information Management*, 37(5), 417–430.
<https://doi.org/10.1016/j.ijinfomgt.2017.04.008>
- Rezvani, A., Khosravi, P., & Dong, L. (2017). Motivating users toward continued usage of information systems: Self-determination theory perspective. *Computers in Human Behavior*, 76(November), 263–275. <https://doi.org/10.1016/j.chb.2017.07.032>
- Ringle, C. M., Sarstedt, M., & Straub, D. W. (2012). Editor's Comments: A Critical Look at the Use of PLS-SEM in "MIS Quarterly". *MIS Quarterly*, 36(1), iii–xiv. <https://doi.org/10.2307/41410402>
- Ringle, C. M., Wende, S., & Becker, J. M. (2015). SmartPLS 3. Boenningstedt. Retrieved from <http://www.smartpls.com>
- Roca, C. J., & Gagné, M. (2007). Understanding e-learning continuance intention in the workplace: A self-determination theory perspective. *Computers in Human Behavior*, 24(4), 1585–1604.
<https://doi.org/10.1016/j.chb.2007.06.001>
- Rouibah, K., Hamdy, H. I., & Al-Enezi, M. Z. (2009). *Effect of management support, training, and user involvement on system usage and satisfaction In Kuwait. Industrial Management & Data System* (Vol. 103).
- Saxena, D., & McDonagh, J. (2017). A Systematic Literature Review of the Enterprise Systems Research in Leading IS Journals(2000-2015). *MWAIS 2017 Proceedings*.
- Schneider, S., Wollersheim, J., Krcmar, H., & Sunyaev, A. (2018). How do requirements evolve over time?

- A case study investigating the role of context and experiences in the evolution of enterprise software requirements. *Journal of Information Technology*, 33(2), 151–170.
<https://doi.org/10.1057/s41265>
- Scott, J. E. (1999). The FoxMeyer Drugs' Bankruptcy: Was it a Failure of ERP? *Americas Conference on Information Systems*, 223–225.
- Seddon, P. B. (1997). A Respecification and Extension of the DeLone and McLean Model of IS Success. *Information Systems Research*, 8(3), 240–253.
- Seymour, L., Makanya, W., & Berrangé, S. (2007). End-Users' Acceptance of Enterprise Resource Planning Systems: An Investigation of Antecedents. In *Proceedings of the 6th Annual ISOnEworld Conference* (p. 26(1-22)). Las Vegas, NV.
- Shanks, G., Parr, A., Hu, B., Corbitt, B., & Thanasankit, T. (2000). Differences in Critical Success Factors in ERP Systems Implementation in Australia and China: A Cultural Analysis. In *ECIS 2000 Proceedings*. 53. Retrieved from
<http://aisel.aisnet.org/ecis2000><http://aisel.aisnet.org/ecis2000/53><http://aisel.aisnet.org/ecis2000/53>
- Shin, D.-H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior*, 25(6), 1343–1354. <https://doi.org/10.1016/j.chb.2009.06.001>
- Snider, B., da Silveira, G. J. C., & Balakrishnan, J. (2009). ERP implementation at SMEs: analysis of five Canadian cases. *International Journal of Operations & Production Management*, 29(1), 4–29.
<https://doi.org/10.1108/01443570910925343>
- Sørrebø, Ø., & Eikebrokk, T. R. (2008). Explaining IS continuance in environments where usage is mandatory. *Computers in Human Behavior*, 24(5), 2357–2371.
<https://doi.org/10.1016/j.chb.2008.02.011>
- Stone, R. W., & Baker-Eveleth, L. (2013). Students' expectation, confirmation, and continuance intention to use electronic textbooks. *Computers in Human Behavior*, 29, 984–990.
- Sun, Y., & Bhattacharjee, A. (2011). Multi-level analysis in information systems research: the case of enterprise resource planning system usage in China. *Enterprise Information Systems*, 5(4), 469–494. <https://doi.org/10.1080/17517575.2011.610904>
- Sykes, T. A. (2015). Support structures and their impacts: A longitudinal field study of an enterprise system implementation. *MIS Quarterly*, 39(20), 473–495.
- Sykes, T. A., & Venkatesh, V. (2017). Explaining Post-Implementation Employee System Use and Job Performance: Impacts of the Content and Source of Social Network Ties. *MIS Quarterly*, 41(3), 917–936.
- Sykes, T. A., Venkatesh, V., & Gosain, S. (2009). Model of Acceptance with Peer Support: A Social Network Perspective to Understand Employees' System Use. *MIS Quarterly*, 33(2), 371–393. Retrieved from <http://www.jstor.org/stable/20650296>
- Sykes, T. A., Venkatesh, V., & Johnson, J. L. (2014). Enterprise System Implementation and Employee Job Performance: Understanding the Role Of Advice Networks. *MIS Quarterly*, 38(1), 51–72.
- Szajna, B., & Scamell, R. W. (1993). The Effects of Information System User Expectations on their

- Performance and Perceptions. *MIS Quarterly*, 17(4), 493–516.
- Taylor, S., & Todd, P. (1995). Assessing IT usage: The role of prior experience. *MIS Quarterly*, 19(4), 561–570. Retrieved from <https://search.proquest.com/docview/218111927?pq-origsite=gscholar>
- Teo, T. (2010). Examining the influence of subjective norm and facilitating conditions on the intention to use technology among pre-service teachers: a structural equation modeling of an extended technology acceptance model. *Asia Pacific Education Review*, 11, 253–262. <https://doi.org/10.1007/s12564-009-9066-4>
- Thatcher, J. B., Stepina, L. P., & Boyle, R. J. (2002). Turnover of Information Technology Workers: Examining Empirically the Influence of Attitudes, Job Characteristics, and External Markets. *Journal of Management Information Systems*, 19(3), 231–261. <https://doi.org/10.1080/07421222.2002.11045736>
- Thompson, R., Higgins, C., & Howell, J. M. (1991). Personal Computing: Toward a Conceptual Model of Utilization. *MIS Quarterly*, 15(1), 124–143. Retrieved from <https://search.proquest.com/docview/218128965?pq-origsite=gscholar>
- Tibenderana, P., Ogao, P., Ikoja-Odongo, J., & Wokadala, J. (2010). Measuring Levels of End-Users' Acceptance and Use of Hybrid Library Services. *International Journal of Education and Development Using Information and Communication Technology*, 6(2), 1–21.
- Trunick, P. A. (1999). ERP: Promise or Pipe Dream? *Transportation & Distribution*, 40(1), 23–26.
- Umble, E. J., Haft, R. R., & Umble, M. M. (2003). Enterprise resource planning: Implementation procedures and critical success factors. *European Journal of Operational Research*, 146(2), 241–257.
- Vandenberghe, C., Panaccio, A., Bentein, K., Mignonac, K., & Roussel, P. (2011). Assessing longitudinal change of and dynamic relationships among role stressors, job attitudes, turnover intention, and well-being in neophyte newcomers. *Journal of Organizational Behavior*, 32, 652–671. <https://doi.org/10.1002/job.732>
- Venkatesh, V. (2006). Where To Go From Here? Thoughts on Future Directions for Research on Individual-Level Technology Adoption with a Focus on Decision Making. *Decision Science*, 37(4), 497–518. Retrieved from <https://wpcarey.asu.edu/dsjOnline/editorcorner.cfm>
- Venkatesh, V., & Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences*, 39(2), 273–315.
- Venkatesh, V., Davis, F. D., & Morris, M. G. (2007). Dead Or Alive? The Development, Trajectory And Future Of Technology Adoption Research. *Journal of the Association for Information Systems*, 8(4), 267–286. <https://doi.org/10.1016/j.wneu.2011.04.002>
- Venkatesh, V., & Morris, M. G. (2000). Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior. *MIS Quarterly*, 24(1), 115–139.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425–478.
- Venkatesh, V., Thong, J. Y. L., Chan, F. K. Y., Hu, J.-H., & Brown, S. A. (2011). Extending the two-stage

- information systems continuance model: incorporating UTAUT predictors and the role of context. *Info Systems Journal*, 21(6), 527–555. <https://doi.org/10.1111/j.1365-2575.2011.00373.x>
- Williams, M. D., Rana, N., Dwivedi, Y., & Lal, B. (2011). Is UTAUT Really Used or Just Cited For The Sake Of It? A Systematic Review of Citations Of UTAUT'S Originating Article. *European Conference on Information Systems (ECIS)*, 1–13.
- Williams, M. D., Rana, N. P., & Dwivedi, Y. K. (2015). *The unified theory of acceptance and use of technology (UTAUT): a literature review*. *Journal of Enterprise Information Management* (Vol. 28). <https://doi.org/10.1108/JEIM-09-2014-0088>
- Wu, B., & Chen, X. (2017). Continuance intention to use MOOCs: Integrating the technology acceptance model (TAM) and task technology fit (TTF) model. *Computers in Human Behavior*, 67, 221–232. <https://doi.org/10.1016/j.chb.2016.10.028>
- Yi, M. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human-Computer Studies*, 59, 431–449.