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CRITICAL SUCCESS FACTORS FOR ERP IMPLEMENTATION - THE CASE OF QATAR

BY

MURADALLAH IDILBI

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COMMITTEE PAGE

The members of the Committee approve the Project of

Muradallah Idilbi defended on 07/May/2019.

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Professor Emad Abu Shanab

Thesis/Dissertation Supervisor

_____

Professor Belaid Aouni

Committee Member

_____

Professor Karma Samir Sherif

Committee Member

ABSTRACT

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Title: Critical Success Factors for ERP Implementation - The Case of Qatar

Supervisor of the project: Professor Emad Abu Shanab.

Due to ERP high failure rate, Enterprise resource planning (ERP) implementation issues have been highly addressed in the literatures. Some studies have concentrated on the effect of perceived usefulness (PU) and perceived ease of use (PEOU) on behavioral intention (BI) based upon the theory of technology acceptance model (TAM), others focused on the critical success factors (CSF) of ERP implementation from personal or organizational perspectives. However, few studies put them together to examine the influence of PU and PEOU on BI which are key factors to ERP acceptance besides investigating the most important critical success factors of ERP implementation. This study is a specific attempt that developed a framework extending TAM model with computer self-efficacy (CSE) to examine behavioral intention to use ERP and then explored the major ERP key success factors that can turn the process of the implementation to a success in Qatari environment. Data has been collected from 40 different organizations of different business lines in Qatar out of which 321 valid responses were analyzed. Descriptive, Reliability, and correlations analyses were conducted on the sample respectively, then followed by Linear Regression Analysis that was done to validate the model's significance. PU, PEOU and CSE, indicated significant relations with the behavioural intention to use ERP systems in Qatari organizations and contributed to 56% of its variation. Then a Descriptive Analysis was conducted to rank the CSFs in order of significance from ERP end user

perspective. The study concluded that PU, PEOU and CSE are significant factors to predict ERP implementation and adoption. Moreover, it explored the major critical success factors that brings success to implementation process in Qatari organizations, which are Top management support, followed by User training on software, and finally Project management process.

Keywords: ERP, Enterprise Resource Planning, TAM, Technology Acceptance Model, Perceived Usefulness, PU, Perceived Ease of Use, behavioral intention, BI, PEOU, Computer Self-efficacy, CSE, Critical Success Factors, CSF, Failure, Success, Qatar.

DEDICATION

I dedicate this research to my beloved parents, whom I credit for pushing me to continue this MBA program and who have suffered from my shortcomings due to the amount of time I've invested in the MBA program and my work as well. Thank you for your patience and being the support I needed

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CHAPTER 1: INTRODUCTION

1.1 Background Information

These days, Information systems can't be detached from business practices, they support business through enhancing value chain and increasing business processes efficiency. The user of information Systems also plays a role in supporting business through the collecting, processing, storing and using of data as well as information (Hassan, Mulyani, & Anugrah, 2016). Currently, many organizations are significantly investing in information systems that are more complex than those used in the past and include Enterprise Resource Systems or ERP systems (Rajan & Baral, 2015). A study conducted by A. Henderson, K. Blaylock, G. Lollar, and M. Beheshti defines that an ERP system is a set of business modules that connects an enterprise's functional areas like finance, accounts, manufacturing, procurement and customer service into an integrated single system with a shared information flow platform throughout the whole organization (A. Henderson, K. Blaylock, G. Lollar, & M. Beheshti, 2014). Reitsma & Hilletofth suggest that ERP systems are crucial for effective and efficient supply chain operations and management in organizations. These capabilities are shown as being achieved using ERP systems since these systems can avail seamless integration of the processes in an organization across various functional areas, improvements in workflow or standardization, and access to updated and real-time data. Hence, Reitsma & Hilletofth argue that using ERP systems is essential for an organization that intends to remain competitive in the local and international markets (Reitsma & Hilletofth, 2018). Even though ERP systems have received great attention from experts and researchers, the failures of implementation are still common (Cheng, Yang, Han, & Song, 2007). According to Rajan and Baral, many of these systems are shown as

resulting in failure, and these failures are associated with technical and behavioral factors encountered during their implementation or use. Thus, Rajan and Baral argue that a significant need exists for organizations to comprehend the adoption of such systems from a user's perspective to ensure they reap tangible benefits by using them (Rajan & Baral, 2015). In many cases it is difficult and challenging to implement ERP systems, particularly at the level of user requirement (Ismail & Zamre, 2015). However, the understanding employees and organizations require on the implementation of ERP systems is essential in enabling them to overcome the challenges experienced in using such systems and making them acceptable. In order to ensure successful ERP implementation and prevent failure, it is important to be aware of all the parties involved in the process. The implementation of these systems entails effective involvement of the entire organization (Ağaoğlu, Yurtkoru, & Ekmekçi, 2015). Hence, this paper study will determine the factors influencing the adoption of ERP systems and the critical success factors of ERP systems from the employee's perspective in Qatar.

1.2 Purpose of the Research

The research aims to answer two questions:

- What are the factors influencing the adoption of ERP systems?
- What are the critical success factors of ERP systems from an employee's perspective?

In addressing these issues, the study intends to inform the audiences and stakeholders in Qatar's economy on various matters concerning ERP systems. In this regard, it tells these audiences about the importance of incorporating ERP systems at the workplace, the challenges brought by the implementation of these systems, and the benefits that employees and organizations experience from their use.

1.3 The motivation for the study

Regardless of the benefits that ERP systems bring on an organization, these systems experience numerous challenges that bring about their failure even before they are implemented. These failures are associated with behavioral and technical along with organizational factors that hinder the effective or efficient implementation and operation of ERP systems. Hence, the study is carried out to determine which of these factors affect the application of ERP systems and how they can be overcome in the context of Qatar. These are issues that are also addressed to ensure that future implementation of ERP systems in Qatar overcome these challenges and make their intended benefits realized by both employees and organizations.

1.4 Benefits of carrying out the study

The study will benefit the employee's working in Qatar in organizations that are implementing ERP systems by ensuring their needs are considered, and none of their rights or responsibilities infringed. It will also benefit the organizations implementing ERP systems in Qatar by assisting them to overcome the difficulties anticipated in their implementation by using various models and theories like the technology acceptance model and self-efficacy theory. Further, the study will benefit other stakeholders in other countries by providing them with information ensuring the smooth implementation of ERP systems in their industries or organizations.

CHAPTER 2: LITERATURE REVIEW

The study framework is based on researches in many fields, which discuss technology acceptance model (TAM), Self-efficacy Theory and ERP critical success factors. The literatures that provide the needed conceptual foundations in this research are discussed in the next sections.

2.1 ERP Systems (Benefits, Features, and Implementation)

Garača (2011) shows that Enterprise Resource Planning was first used in 1990 and denoted the "special market segment of business software referring to integral, integrated, modular packages of application software intended to support line transaction processing of business information systems" (p. 23, 2011). In this regard, the author indicates that ERP systems are used for offering support for business processes so that they can achieve higher effectiveness or efficiency for the business as a whole or single activity. More so, he shows that ERP systems are essential for ensuring that the necessary information bases for managing complex business processes or systems are available. Subsequently, Garača (2011) indicates that numerous aspects of information and communications technology (ICT) are responsible for their implementation or adoption in organizations. For instance, Garača (2011) indicates that the effectiveness or speed of implementing a technology ensures a company attains competitive advantage since the success an organization achieves arises from its ability to perform the required activities. The author also indicates that the adoption of ERP systems is influenced by the theoretical knowledge users possess. He suggests that the users of ERP systems require two types of knowledge and they include theoretical knowledge of information technologies and the concrete uses of ERP systems. More so, He

suggests there are two types of relevant educational material, and they include universal educational materials and ERP system documentation materials (Garača, 2011). Another study carried out by Calisir, Altin, and Bayram (2009) examines the factors that affect a user's behavioral intentions for using ERP systems. These authors indicate that organizations are adopting the use of ERP systems so that they can acquire a competitive advantage over others. They, like Garaca, define ERP systems as "integrated, customized, packaged software-based systems that handle the majority of system requirements in all functional areas, such as finance, human resources, manufacturing, sales and marketing" (p. 597, 2009). The significant attributes that ERP systems possess include the powers for sharing common practices and data across enterprises and producing and accessing real-time information (Calisir et al., 2009). These authors indicate that projects for implementing ERP systems in organizations are likely to fail if there are poor communication and the inability of the top management in an organization to offer support. More so, these projects fail since there is inadequate training, underestimation of the resources required for utilizing such systems and even resistance from employees (Calisir et al., 2009). Studies carried out by Abu-Shanab and Saleh (2014) suggest that the performance of an ERP system is measured through their effectiveness, quality, and efficiency. Abu-Shanab and Saleh (2014) argue that ERP systems are implemented to improve operations in organizations to ensure that there is a better use of material, financial and information resources. These activities are shown as aiming at improving customer satisfaction and organizational performances. In successfully implementing ERP systems, four key stages have been proposed and include the steps of readiness assessment, re-

engineering business processes, selecting ERP systems and applying them. In turn, the authors argue that the successful implementation of ERP systems requires objectives, the embedding of technology or organizational dimensions into an information system and resolutions to the problems experienced. Further, they suggest that implementing an ERP system requires that the management in an organization analyzes and studies the processes in the system and pay attention towards the issues positively influencing financial measures. The failure of adopting or implementing the ERP systems in an organization is also considered to be associated with vendor support and employee education. ERP systems are required to be flexible so that they can increase an organization's ability for adapting to sudden changes that grant them a competitive advantage (Abu-Shanab & Saleh, 2014). Other studies Govindaraju, Salajar, Chandra, and Sudirman (2015) suggest that using ERP systems could be mandatory to employees but their attitudes towards such systems may impact their levels of using these systems. These authors indicate that "The decision to adopt a new technology is influenced by users' initial perceptions of the technology characteristics" (p. 1292, 2015). The technology factors that have been proposed include compatibility, complexity, technological innovativeness, system performance, system learnability, perceived trust, output quality, perceived fit and data quality. The authors additionally indicate that the usage of ERP systems is a dependent variable that is used for measuring the levels of using ERP systems in individual users. In this regard, they have defined the usage of ERP systems as the extent that a user utilizes the system to support tasks they are required to perform. Govindaraju et al. (2015) suggest all elements of the enterprise require being integrated with ERP systems and correct functioning is critical for

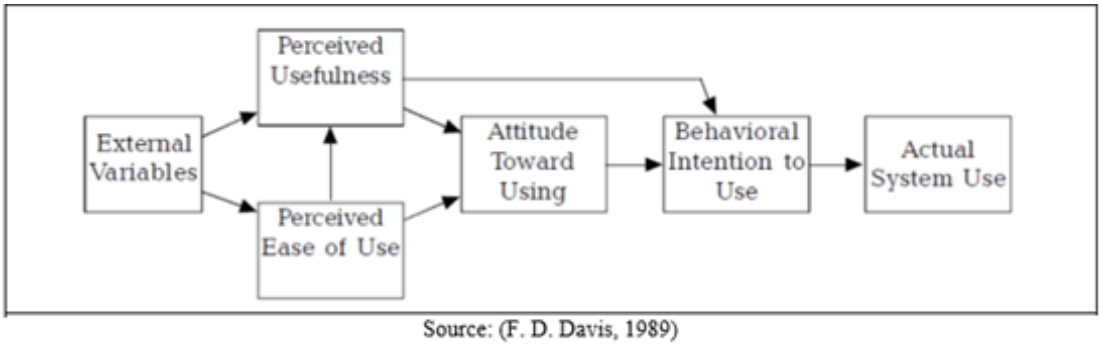
successful ERP implementation. ERP systems with the ability for providing proper functions for employees assist in enhancing their performances and completing their jobs. Hence, the ERPs dependability is described as the extent that an individual believes he can rely on the services or functions delivered by these applications for completing their tasks. In this regard, the technology characteristics that the authors suggest are responsible for influencing the adoption of ERP systems include their predictability, dependability, and ability to meet the users' needs. Subsequently, they indicate that the top management's support or commitment is responsible for shaping the individual's beliefs concerning a technology being useful for employee work activities. It is responsible for revealing the manner technology could be useful to task activities or work processes (Govindaraju et al., 2015). In short, ERP systems could extend the management reach to both internal and external processes and partners. and boost the automation level and business value.

A. What are the factors influencing the adoption of ERP systems?

2.2 TAM (Technology Acceptance Model)

Intention to use has been given considerable attention in literatures. several models were developed from the social psychology aspect: Fishbein and Ajzen proposed (TRA) the theory of reasoned action. Ajzen also proposed (TPB) the theory of planned behavior. Davis too proposed (TAM) technology acceptance model (Ajzen, 2011; Ajzen & Fishbein, 1980; F. Davis, 1985), which is an adaption of TRA designed specifically to model the acceptance of information systems by the user in order to explain the behavioral intention of using the system (Amoako-Gyampah & Salam, 2004). TAM is an extensively used information system model for explaining the

adoption of computing systems by the end user (Rajan & Baral, 2015). It is a robust model of acceptance to new computer systems (Igbaria, Guimaraes, & Davis, 1995). It proposes that whenever users are introduced to some new technology, several factors affect their decision of when and how to use it (Alok & Mocherla, 2016). Especially perceived usefulness (PU), which reflects to what extent a user considers using certain system could boost performance, and perceived ease-of-use (PEOU) which reflects to what extent a user considers using certain system wouldn't need any effort (F. Davis, 1985). Behavioral Intention reflects the extent to which an individual has built a plan in mind to do or not some certain behavior in future such as using a new technology (F. D. Davis, Bagozzi, & Warshaw, 1989). At first, TAM comprised of PEOU, PU, Attitude towards use, intention to use and the actual use (Calisir et al., 2009).



Source: (F. D. Davis, 1989)

Figure 1: Technology Acceptance Model

PU, PEOU, and attitude are key aspects of TAM. They are user intentions main determinants. The attitude that was treated as a mediating variable was excluded in the parsimonious TAM (F. D. Davis et al., 1989). it's worth noting that many empirical

researches have confirmed the links between the constructs of TAM (Viswanath & Fred, 2000). Eventually, PU and PEOU that are the core constructs that underlie TAM lead to behavioral intention. (Amoako-Gyampah, 2007). The objective of TAM is to expound the determinants of technology acceptance, which is general and able to explain the behavior of user throughout an extensive scope of end-user technologies and user populations (F. D. Davis et al., 1989). Research efforts were exerted and devoted for extending the theory (TAM) by examining the antecedents of the fundamental constructs of TAM. According to what Venkatesh and Davis pointed out to, a better comprehension of these constructs would enable us to set efficient organizational interference that could result in greater acceptance and usage of new systems by users (Viswanath & Fred, 2000). Lately, TAM has been used to expound implementation complexity and adoption issues of end users and stakeholders in ERP systems. Recent researches have applied the components of TAM as part of the fundamental constructs in an attempt to understand success stories of ERP implementation. (Amoako-Gyampah & Salam, 2004; Calisir et al., 2009). Rajan and Baral (2015) suggest that ERP systems are software systems having the capability of integrating business processes in various functional areas like sales, manufacturing, human resources, customer services, and budgeting among others. They also suggest that ERP systems have benefits that include reducing the volume of data entered in a system, ensuring upgradability of systems, adaptability, portability and the application of best practices. These benefits are shown as not forthcoming in cases where the implementation of ERP systems fails since they change the manner work is undertaken and organizational structure. Thus, Rajan and Baral (2015) argue that the Technology Acceptance Model or TAM can be used to implement ERP systems and ensure

employees and their organizations reap these benefits. TAM is shown as having its basis on the theory of reasoned action that suggests specific behavioral intentions for using a system are determined by perceived usefulness or ease of usage by users. In this regard, Rajan and Baral (2015) argue that perceived usefulness implies the manner an employee or organization thinks a system influences their job performance and has positive associations with a system's use. Subsequently, Song, Han, Cheng, and Zhang (2007) also suggest that technology acceptance models are adaptations of the theory of reasoned action. In this case, Song et. all indicate that the TAM models rely on perceived usefulness, and the perceived ease of using a technology is directly responsible for affecting the attitudes users have towards a system. These instances are shown as being supported by arguments indicating that adoption of a new system is not always voluntary, and in cases where it is mandatory to use a system, symbolic adoption was required. Hence, symbolic adoption is a term used to refer to the manner a user mentally accepts the new system introduced at his or her workplace. Amoako-Gyampah and Salam (2004) indicate that TAM is the most widely used technology in explaining the relationship existing between user perception, attitude, and beliefs with their system use. These authors argue that TAM suggests that "perceived usefulness and perceived ease of usage of IT are major determinants of its usage" (731). Further, Amoako-Gyampah and Salam (2004) indicate that the TAM was developed to explain behavioral intentions of using a system and the theory argued that perceived usefulness or ease of use was vital in expounding on the behavioral plans of using information systems. Like Rajan & Baral, Amoako-Gyampah and Salam (2004) suggested that perceived usefulness involved the degree a person felt a system improved his job performance whereas perceived ease of using a system entailed the degree a user believed a system

would be used effortlessly. They also believed that behavioral intentions together with intentions that determine a system's usage were determined by a user's perceived usefulness or attitude toward a system. Nah, Tan, and Beethe (2005) mentioned in their paper that many studies have indicated that TAM should be revised or extended to explain end-users' acceptance of complicated and advanced information technology (such as ERP) in organizational environment. AlHirz and Sajeev (2013) show these instances as being supported by Amoako-Gyampah and Salam (2004) who carried out additional tests using constructs like perceived usefulness of perceived ease of usage. Their studies revealed that communication and training influenced shared beliefs among computer users. These influences were, in turn, shown as having the ability for controlling the adoption of TAM. Hence, AlHirz and Sajeev (2013) indicate the findings by Amoako-Gyampah & Salam showed that perceived compatibility or the perceived ease of using a system had indirect and direct effects on concepts like symbolic adoption, but perceived usefulness or fit was mediated by a user's attitude. The study carried out by Mahindroo, Singh, and Samalia (2013) revealed that TAM relied on perceived usefulness, system flexibility and the perceived ease of using a system among users in need of using ERP systems. In this regard, these authors suggested that TAM was responsible for impacting the satisfaction users acquired from using ERP systems in their workplaces. It was the satisfaction that users of ERP systems possessed that Mahindroo et al. (2013) indicated was responsible for ensuring the successful implementation of these systems and organizational productivity improved. These instances were satisfied by studies carried out in India and suggesting that "perceived usefulness, perceived ease of use, perceived enjoyment and perceived risk was proposed and validated using TAM with attitude acting as a mediating variable"

(p. 3). Subsequently, AlHirz and Sajeev (2013) suggested that experience was responsible for affecting the relationship that existed between user intentions on a system and effort expectancy. Hence, they indicated that the TAM model was responsible for variances in behavior intention in Saudi users compared with users in the U.S. These trends were associated with the collective cultures practiced in Saudi Arabia. Alhirz & Sajeev, however, concluded that experience was not responsible for influencing symbolic adoption in ERP systems adopted throughout the Middle-East region. Studies carried out by Sternad and Bobek (2013) are similar to suggestions presented by other authors like Rajan & Baral and Song, Han, Cheng & Zhang among others. Sternad and Bobek (2013) indicate that TAM is "more parsimonious, predictive, and robust than other theoretical models" and has been widely used by IT researchers. They also indicate that TAM's major purpose is providing a basis that ensures they can trace the impact that external factors have on internal factors like intentions, attitudes, and beliefs. The authors also argue that TAM has its basis on issues like perceived usefulness or perceived ease of using a system in determining the acceptance behaviors users' exhibit on a computer system. These authors also indicated that these two beliefs were responsible for positively influencing individual attitudes towards new computers or technologies and their tendency for using them. Hence, Sternad and Bobek (2013) argued that perceived usefulness and perceived ease of using a system that was evident under TAM were largely responsible for influencing behavioral intentions of users and their actual usage of computer systems. Subsequently, Amoako-Gyampah (2007) also indicates that TAM provides a basis through which the tracing of the impacts made by external factors on an individual's beliefs, intentions and attitudes can be done. Amoako-Gyampah (2007) also suggests that TAM is an adaptation of the theory of

reasoned action in an information systems environment. In this regard, the author indicates that the theory of reasoned response argues that an individual's action results from his or her intentions and behavioral intentions in the information technology field lead a user into using a technology. Like the other authors, Amoako-Gyampah (2007) also shows that TAM is founded on the user's perceived usefulness or ease of usage of a system and both factors are responsible for creating behavioral intentions and increased usage of a computer system. Hence, Amoako-Gyampah (2007) indicates that perceived ease of using a system or its usefulness has direct positive effects on the individual's behavioral intentions of using a computer system. Studies carried out by Macedo (2017) also suggested that TAM is used for predicting and explaining the way that technology is accepted or used and had its basis on the theory of reasoned action. The author also indicated that TAM was influenced by the perceived ease of using a system and usefulness of a computer system. Further, he reported that effort expectancy was another determinant for usage of a computer system and a component of TAM. In turn, Macedo suggested that effort expectancy was used for assessing an individual's perception of the effort used in learning or applying a technology to use. More so, he indicated that social influence was a norm that was found in TAM and made users believe they should utilize a new system (Macedo, 2017). Liu and Wang (2010) examine TAM or the Technology Adoption Model and argue that it was attained from the theory of planned behavior in addition to the theory of reasoned action, unlike other authors who discussed the Technology Acceptance Model and claimed it came from the method of reasoned action only. These authors showed that behavioral intentions were influenced by an individual's attitude toward subjective norms or specific behaviors. TAM is also shown as having the ability to act as a predictor of an

individual's ability to accept computer systems (Liu & Wang, 2010). Like other sources, Igbaria et al. (1995) indicate that TAM was derived from the theory of reasoned action and emphasizes the use of perceived usefulness and perceived ease of using a system as the critical variables for determining the acceptable level of these technologies. The authors also suggest that TAM has various advantages that include being easier and simpler to apply but only supplies general information concerning a system to its users. In turn, these authors suggest that the beliefs a user had on a system's usefulness or ease of usage were issues that were affected by the support offered by an organization. Organizational support has been shown as promoting beliefs that are more favorable concerning a computer system amongst the users and company employees. Perceived usefulness and the ease of using a computer system are both factors that are seen as influencing the usage of computer systems. In this regard, these two factors are shown as having indirect or direct effects on the computer system's usage using the impact of its perceived usefulness (Igbaria et al., 1995).

2.3 Self-Efficacy

Self-efficacy is a main component in Bandura's theory of social learning (A. Bandura, 1977; Albert Bandura, 1978) Which Simply indicates to one's belief in his or her ability to carry out some particular task. It concerns the assessment of how well an action can be taken to deal with prospective situations (Albert Bandura, 1982). People seem to assess their skills and capabilities, then they accordingly manage their choices and efforts (Albert Bandura, E. Adams, B. Hardy, & Howells, 1980). In general, people who are expected to have high-level efficacy are more likely to successfully achieve some certain task. Moreover, individuals with high-level self-efficacy are more hard-working than individuals with low-level self-efficacy (Robert & Albert, 1989). Scholars

have frequently detected that the performance gets better with self-efficacy level (Albert Bandura, 1982). There are three dimensions in Self-efficacy. The first one is Magnitude of self-efficacy which can be translated into the difficulty extent of a task that an individual believes she or he is able achieve (Gist, 1987), Magnitude reflects the level of expected capability. People that have high-level self-efficacy magnitude would be found to perceive their ability to achieve more difficult tasks than those who have lower self-efficacy magnitude. The second one is Strength which indicates the confidence a person has in his or her capability to do a task. Therefore, individuals would display confidence about their capability to successfully accomplish certain task. The third is Generalizability that refers to the extent to which Self-efficacy expectations are generalized in different situations or limited to particular ones. Some people may believe that they can perform certain behaviors, but only under certain circumstances, while others may believe that they can perform specific behavior under any circumstances. (Compeau & Higgins, 1995).

Self-efficacy is significant in system usage and also in helping users more easily to obtain skills relating to efficient computer usage (Shih & Huang, 2009). It has been found by Venkatesh and Davis after they empirically tested the determinants of PEOU that self-efficacy is a robust determinant of intention to use and PEOU as well. Moreover, they pointed out that the mechanism of training which is set to enhance the self-efficacy of user is more likely to result in user acceptance (Viswanath Venkatesh, 2000; V. Venkatesh & Davis, 1996). Compeau and Higgins (1995) suggested that self-efficacy and the use of computers were related, and self-efficacy could be defined by magnitude, generalizability, and strength. Hence, the individuals who were found to have high self-efficacy were seen as using computer systems more and those with low

self-efficacy used computer systems less often. Further, according to Rajan and Baral (2015) TAM suggests external variables will influence the acceptance of technology by indirectly affecting the attitudes, beliefs, and intentions of ERP system. The authors indicate that among the individual traits that influence the usage of the ERP system, there are traits associated with computer self-efficacy. In this case, the authors suggest that self-efficacy is the user's confidence in using technology or system or their judgment of the ability they possess to use a system. Hence, these authors indicate that self-efficacy plays a vital role in expounding on usage intentions using perceived usefulness and self-efficacy which were also "a strong determinant of perceived ease of use and behavioral intention" (108). Kwahk and Lee (2008) argue that readiness that users possess for change is responsible for indirectly affecting the behavioral intentions, and this readiness affects perceived ease of using a system or perceived usefulness of a computer system. they asserted that it was the readiness for changing that was responsible for explaining the variances experienced among users of a computer system on perceived usefulness. In turn, the authors argued that perceived ease of using a computer system and perceived usefulness had positive effects on usage intentions for the ERP systems. These authors also added that self-efficacy was not solely responsible for affecting the technological attributes a system possessed, but other factors were responsible for doing so (Kwahk & Lee, 2008). Gist (1987) in her article suggested that self-efficacy entailed the belief an individual possessed about his or ability to carry out a task, and she showed that it had the capability of affecting persistence, goal difficulty and expressed interest in specific tasks. She argued that self-efficacy arose from the gradually attainment of multifaceted linguistic, cognitive, social, or physical skills via the experiences individuals go through. Further, she suggested four information cues

were responsible for influencing self-efficacy, and these cues included vicarious experience, enactive mastery, emotional arousal, and verbal persuasion. In turn, Gist argued that it was the absolute mastery of skills that increased self-efficacy whereas negative experiences were responsible for decreasing self-efficacy. More so, she indicated that modeling has both positive and negative influences on the concept of self-efficacy. A relation between performance and self-efficacy was also proposed by Gist (1987), and she suggested that they remained high in non-enactive modes like modeling. Self-efficacy was also described by her as being a better predictor of the subsequent performances rather than past behaviors. In this case, she argued that self-efficacy had the capability of affecting an individual's choice of activities and settings, effort expenditure, skill acquisition, and persistence when coping with the obstacles a user faced when using technology. Hence, she showed that self-efficacy arose from the cognitive ability a computer system's user had for appraising his or her capabilities. Gist explained that individuals possessing low self-efficacy levels engaged in less coping activities and would give up more easily when confronted by an adversary or had less mastery over an issue. Subsequently, the works presented by Gist also suggested a relationship existed between performance and worked motivation and self-efficacy. These arguments were supported by sentiments indicating that self-efficacy's development took place through social learning processes that, in turn, led to goal-setting activities that were more productive (Gist, 1987). Bandura suggested that in causal tests higher self-efficacy levels were responsible for more top performances or accomplishments and low emotional arousals. In turn, Albert Bandura (1982) argued that self-efficacy was responsible for assisting in accounting for diverse phenomena like the levels of physiological stress reaction, despondency towards failure experiences

and career pursuits among other events. In this regard, Bandura indicated that perceived self-efficacy concerned itself with the judgments made about how an individual could carry out specific actions that were required in dealing with various prospective situations (Albert Bandura, 1982). Bandura indicates that the decisions individuals have concerning their self-efficacy are responsible for determining how much or how long effort is expended in facing aversive experiences. In this regard, Bandura also argued that people having doubts about their capabilities had the tendency of giving up when faced with challenges and individuals having strong senses of efficacy exerted a lot of effort with the aim of mastering the challenges. However, persuasive boosts were shown by Bandura as having the capability of leading individuals with low self-efficacy levels or abilities to attempt to achieve success in developing their skills. Hence, Bandura showed that the higher the perceived self-efficacy an individual possessed, the greater was their performance accomplishment (Albert Bandura, 1982).

B. What are the critical success factors of ERP systems from employee perspective?

2.4 ERP critical success factors

Song et al. (2007) show that past research has mainly focused on the critical success factors or CSFs for implementing ERP systems that include personal and organizational aspects. The authors also indicate that other studies have been focusing on issues like the influence that perceived usage or ease of using a system have on a user's attitude or symbolic adoption by the theories presented under the TAM model. More so, they suggest that the study of CSFs in the field of information technology has been ongoing for a long time and these studies have focused on various issues. For instance, Song et al. (2007) suggest that these studies have been focusing on are IS

planning, requirement analysis, and project management among others. In this regard, they identify the issues that could affect the implementation of ERP systems as including problems like IT failures, business process re-engineering literature, and IT implementation. Hence, these authors have argued that the critical success factors are those "factors which influence the implementation effectiveness of an ERP system" (p. 6255, 2007). Subsequently, studies carried out by Hau and Kuzic (2010) indicate they conform to what Song et al. suggest since they suggest that "the adoption and implementation of ERP systems in organizational contexts have been widely studied at different levels of analysis" (p. 178, 2010). They also suggest that the high failure rates and difficulties experienced when implementing ERP systems have also been widely cited in the literature. In turn, the authors suggest that various studies have also been implemented with the aim of identifying the critical success factors or CSFs experienced in implementing ERP systems. In this regard, these authors point out to surveys carried out on Fortune 1000 Chief Information Officers or CIOs on their perceptions regarding CSFs. They indicate that "change management was ranked as one of the top five factors critical to the success of ERP implementation" (p. 179, 2010). Another study cited by Hau & Kuzic and carried out by Hawking, Foster, and Stein (2005) showed that the major issues affecting ERP implementation revolved around change management and these results conform to findings from other numerous studies showing change management played a vital role in the successful implementation of ERP systems. However, other studies like those undertaken by Ngai, Law, and Wat (2008) argue many other CSFs are responsible for determining the success of ERP implementation, but these factors also included some aspects of change management. In addition to these observations, Hau and Kuzic (2010) indicate that there has been

little information provided and revealing the best practices for the CSFs identified among them change management. These instances are especially experienced because implementing ERP systems changes the manner people work thereby implying their implementation is seen as leading "to uncertainty and insecurity for employees" (p. 179, 2010). In this regard, they suggest it is the low-level employees that bring high levels of resistance to changes, and they are closely followed by the low, middle and higher management respectively. Hence, the authors argue that implementing change management strategies are applied, it is likely that the difficulties or challenges experienced when implementing ERP systems will be reduced (Hau & Kuzic, 2010).

Research also indicates that many studies have been carried out with the aim of eliminating the barriers to successful ERP implementation. In this regard, various CSFs have been identified and "include top management support, vender's support, consultant's competence, user's support, IT capability, and project leadership" (Abu-Shanab, Abu-Shehab, & Khairallah, 2015). Other factors that have been proposed for ensuring the successful implementation of ERP systems are internal audits, project management and activities like consultant planning. Lastly, Abu-Shanab et al. (2015) suggest that the project team needs resolving all the barriers or challenges that are encountered in implementing the ERP system. Other studies quoted by Abu-Shanab, Abu-Shehab & Khairallah suggest that the critical success factors include other factors like interdepartmental cooperation, the project team's competency and the support offered by the top management. Abu-Shanab et al. (2015) also point out other studies imploring that the critical success factors for the implementation of ERP systems comprise of external consultancy and user training. In this regard, they indicate that offering improper training to users while ignoring foreign assistance leads to high

failure rates. However, the authors add that user involvement also assists the successful implementation of ERP systems since it reduced the user's ability to resist any changes made to their workflow through these systems. Employee education along with vendor support was also identified by these authors as having the capability of infecting failure into ERP implementation processes (See table 1.0 containing the key critical success factors for implementing ERP systems, their means and standard deviations respectively in the appendix section).

Subsequently, Reitsma and Hilletofth (2018) suggest that implementing ERP systems is a challenging, costly, complex and also time-consuming activity and many of these projects are not meeting their schedule, cost and scope limits. In turn, they show that the reasons why these ERP implementation projects are likely to succeed are referred to as critical success factors. More so, these authors argue that comprehending these CSFs minimizes the chances for failure being experienced and assists in offering guidance to an organization implementing the system. Unlike what previously examined research by Abu-Shanab, Abu-Shehab & Khairallah suggests, Reitsma and Hilletofth (2018) argue that the project team is the most important critical success factor determining the success of ERP implementation. In this regard, the authors suggest that project teams comprise of process owners, project consultants and the best employees in an organization by their skills, previous accomplishments, flexibility and reputation. Like Abu-Shanab, Abu-Shehab & Khairallah, Reitsma and Hilletofth (2018) suggest that the top management's support is another CSF required since work structures, roles or responsibilities carried out by different personnel could change, and these issues need being accurately determined. These are activities that are seen as being carried out effectively using the policies created by top management and their acts of mediating

between parties having conflicting interests or responsibilities. Further, it is the senior management that is shown by Reitsma & Hilletofth as having the capability of reinforcing the commitment of employees in an organization, which is perceived as being crucial to ensuring the ERPs successful implementation (Reitsma & Hilletofth, 2018).

Sumner (1999) carried out studies to determine the critical success factors or CSFs that are present in enterprise-wide management system projects and found out they included issues like management structure, investments in professional development, re-skilling, acquiring external expertise and re-designing the business processes. More so, Sumner suggested these CSFs included the training offered, effective communication and the role the project's champion played in the implementation of ERP systems. Further, Sumner showed that other projects suggested these CSFs included the ability to obtain strong sponsorship from the top management in a company and the commitment of customers on a full-time basis, being sensitive to the user's resistance and establishing flexible or disciplined program management (Sumner, 1999).

Another study quoted by Sumner indicated these CSFs included the ability for addressing scope expansion, the ability for tackling the severe issues that arose squarely and avoid customization and not adding personnel to a project if it had fallen behind schedule. In short, Sumner suggested that in project re-iterated strategies CSFs included the ability of acquiring the top management's support, IT support, redesigning the business so that they could support ERP systems, using add-ons, creating manual workarounds, providing user-training and maximizing the usage of expert information or advice (Sumner, 1999). Another study conducted by Plant and Willcocks (2007)

revealed several issues concerning CSFs in the implementation of ERP systems. Their investigation showed that there were initially around ten CSFs that had been proposed for the field of project management by people like Slevin and Pinto (1987) and Parr and Shanks (2003) whereas others like those presented by Nah, Lau, and Kuang (2001) had proposed around eleven CSFs. After the ERP systems implemented had started functioning, these studies indicated that these CSFs included more implementation or learning of the ERP system or changing these CSFs so that more meaningful value could be acquired by the ERPs (Plant & Willcocks, 2007). Plant & Willcocks also revealed a similar set of CSFs that affected the implementation of ERP systems, and they were identical to those proposed by other authors previously examined. These CSFs included top management support, the competence of the project teams involved, interdepartmental cooperation, having set objectives or goals and incorporating the principles of project management. Further, Plant & Willcocks suggested these CSFs included interdepartmental communication, managing expectations, having a project champion, acquiring vendor support, carefully packaged selections, carrying out accurate data analysis and conversion and using dedicated resources. More so, these CSFs included having a steering committee, providing user training, educating team on new business processes, BPR, minimal customization, architectural choices, change management, vendor partnership and tools and using consultancy services. Hence, it has been recommended by such sources that additional research be undertaken to ascertain the CSFs associated with certain types of ERP implementation. The additional research should be carried out bearing in mind there are three types of ERP implementation currently known and include the phased, big bang or concurrent types (Plant & Willcocks, 2007).

Bourgault, Françoise, and Pellerin (2009) began their study by first acknowledging that ERP or Enterprise Resource Systems are perceived as the technical solutions for adapting a business's need for effectiveness or efficiency in the management of information. In other words, Bourgault et al. (2009) argued that ERP systems were essential for integrating the complete information needs a company possessed into one computer system. These authors argued that among the most frequent CSFs encountered in studies were user participation or involvement in creating or implementing an ERP system since they ensured user requirements were respected and little resistance was experienced during their implementation. They also recommended that users required perceiving the ERP system as being necessary or important in carrying out their tasks and their involvement in implementing these systems resulted in a project's greater success (Bourgault et al., 2009).

Another article by Nagpal, Khatri, and Kapur (2014) also examined the CSFs that are essential for the successful implementation of ERP systems. The authors began by pointing out that previous studies had greatly emphasized the successes or failures that ERP systems together with the role that CSFs played in bringing these results. In this regard, they suggested that the critical success factor was an element that were necessary for organizations or projects that needed to maintain their missions. Further, these authors indicated that CSFs were not to be confused for success criteria used in ERP implementation projects and that was defined using objectives or measured using Key Performance Indicators or KPI. In this regard, Nagpal et al. (2014) show the critical CSFs identified using research studies as including "top management support, business plan and vision, re-engineering business process, effective project management and project champion, teamwork, and composition, ERP system selection, education,

training, and user involvement" (p. 2, 2014). These authors showed that additional CSFs were added to the list by other scholars and included factors like communication, compensation, skills, ERP team composition, system analysis, and the technical implementation used on ERP systems. They also showed that other studies had categorized CSFs into two categories that included the tactical and strategic groups. In this regard, the strategic CSFs included factors like top management support or commitment, planning, and visioning, building business cases, implementing timeframes and strategy, managing cultural changes, change management and project management. On the other hand, the tactical CSFs included factors like having a balanced team, communication plans, and IT infrastructure together with issues like empowering the decision-makers and enhancing team motivation or morale among others. In summary, the study carried out by these authors showed that a majority of the population was aware of these critical success factors and also understood their importance in ERP implementation. They, thus, explained that a significant community had utilized these factors when implementing ERP systems and attained success but insisted the need for carrying out more research on CSF factors to ensure their benefits were fully reaped in ERP implementation. Hence, Nagpal, Khatri & Kapul recommended that new models could be developed for linking CSF to the success that ERP implementation experienced to ensure these factors were effectively monitored to bring success (Nagpal et al., 2014). Wijaya, Prabowo, Meyliana, and Kosala (2017) in their article also identify the critical success factors or challenges that ERP systems experience by carrying out systematic reviews on literature. The authors indicate that ERP systems are systems that assist in improving work efficiency and increasing performance of an organization. they also identify CSFs as including factors like project

management, business process re-engineering, change management, user training, interdepartmental cooperation, team competence, and top management involvement or support. Further, Wijaya et al. argue that in the field of management, the CSFs that are commonly found are project management, management commitment or support, change management plans, timely and effective communication, external support from consultants, management paradigms, leadership roles, the presence of transformative leaders and project champions. Under the organization, Wijaya et al. also indicate these CSFs include organizational change, clear objectives, organizational structure, organizational learning, and corporate motivation, size of the organization, collaboration, cooperation and coordination among other factors.

More so, these authors indicate that the CSFs considered under software system designing include factors like data accuracy, system quality, system configuration, information quality, data validity and reliability, and minimum ERP customization. In considering the users, Wijaya et al. suggested that their CSFs in ERP implementation included user education or training, user involvement, acceptance user, new mindsets and business opportunity and feedback on user resistance. The critical results acquired by Wijaya et al. after carrying out an analysis of the literature consulted revealed the presence of essential factors of success that were rated from the highest to the lowest rank. These critical success factors included the management's commitment or support, business process re-engineering, ERP performance, user education, and training and integrating information in the system (Wijaya et al., 2017).

Gajic, Stankovski, Ostojic, Tesic, and Miladinovic (2014) also examined various issues that were associated with critical success factors. Firstly, Gajic et al. argue that the CSFs are responsible for determining the success of the implementation

of ERP systems. Secondly, Gajic et al. identifies a series of CSFs in the energy sector that include finances, budgeting, and cost planning, using legacy systems, centralized payments, credit limit checks, a complete inventory and closed purchasing loops. Furthermore, these CSFs include IS-oil basic functionalities, harmonized or integrated processes, closed loops for managing the asset lifecycles, closed loops for supply chain planning of demand or supply and order-to-cash along with well-level production or revenue analysis (Gajic et al., 2014).

A. Henderson et al. (2014) suggested that the significant contributors to ERP implementation failure included CSFs like the inability to involve users in the ERP implementation and inadequate training and communication activities whereas factors like support from top management ensured their success. The authors also suggested that for progress to be achieved in the implementation of ERP systems, other factors that required to be considered included project management, interdepartmental cooperation, user education, and training, setting of clear objectives, change management plans, BPR or business process re-engineering, vendor support, using consultants, minimizing ERP customization processes, organizational culture and user involvement. Hence, the CSFs that were proposed by these authors can be said to conform to the factors that have been presented by other authors examined in this literature review.

2.5 Research Model and Hypotheses

This paper is the first to investigate the factors that affect the success and failure of ERP systems in Qatar. It is an attempt to study the adoption and implementation of ERP in Qatari context by building on both TAM model and self-efficacy theory for research model formation. The formed research model serves as the basis for the development of hypotheses as elaborated. The variables identified and defined above in the literature (Perceived usefulness, Perceived ease-of-use and Self-efficacy) have been used to formulate the hypotheses of this study. The following is a brief description of the variables used to develop the research model:

2.5.1 Behavioral Intention to Use

In business environment or context, and once a new technology such as ERP has been adopted and implemented in a firm or an organization, intention to use can be employed to measure end-user intention to use that technology. It reflects end-user's attitude towards certain technology (Moon & Kim, 2001). Therefore, it serves as an indicator of how technology is adopted in the organization.

2.5.2 Perceived Usefulness

In the present context, perceived usefulness refers to what extent utilizing ERP by a person would improve his or her performance and hence resulting in a successfully implemented ERP system (F. D. Davis, 1989).

H_1: Perceived Usefulness has a positive impact on the Intention to Use towards ERP System.

2.5.3 Perceived Ease of Use

In this study's boundaries, perceived ease of use refers to how easily the ERP system can be used with minimum efforts, thus creating a better intention to use and leading to successfully adopted of ERP system (Bodenburg, Garrett, & Jong-Ho, 2009). *H_2: Perceived Ease of Use has a positive impact on the Intention to Use towards ERP System.*

2.5.4 Self-efficacy

In the same context, Self-efficacy of an ERP system refers to an individual capability to succeed in using ERP to accomplish business tasks (Shih & Huang, 2009). It would considerably affects user's intention to use towards ERP system (John, 2013). *H_3: Self-efficacy of an ERP System has a positive impact on the Intention to Use towards ERP System.*

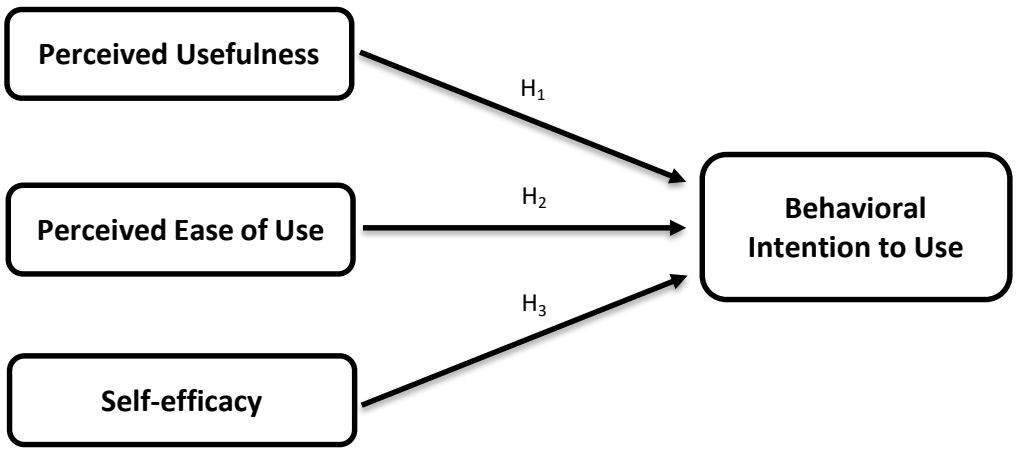


Figure 2: Proposed Research Mode

CHAPTER 3: RESEARCH METHODOLGY

The research intends to evaluate the factors that influence the adoption or implementation of an ERP system along with which critical success factors are required for successful implementation of these systems from an employee perspective and was conducted through two steps, a review of literatures and a survey study. It was important to set the stage by going over the relevant literatures from the same research area, then conducting a survey study to assess the factors influencing the adoption of ERP systems together with ERP critical success factors. The items that constructed the variables in the survey used were adopted from previous literatures (Abu-Shanab & Saleh, 2014; Kwahk & Lee, 2008) to assure the validity of the content.

3.1 Research Instrument

An online-based questionnaire was used in a survey to determine the factors that influence the adoption of ERP systems in Qatar. It contains two sections with the first acquiring organization and respondent demographics whereas the second section determines perceptional measures. Among the organization or respondent demographics that were captured by the questionnaire are their gender, educational level and positions held by respondents, the type of industry they work, previous experience with ERP systems and types of software used. Subsequently, the second section of the questionnaire used in the survey under perceptional measures captures information like behavioral intention (BI), perceived usefulness (PU), perceived ease of using an ERP system (PEOU), and computer self-efficacy (CSE).

Under the second section, the questionnaire also ascertains the critical success factors by allowing respondents to check on the best ratings for the critical success factors provided. The score provided by respondents is based on the importance they

attach each of these critical success factors to the successful ERP implementation. The ratings used for measuring the critical success factors range from 1 to 7 with number 1 being used for denoting the least important factor while seven rates the most important critical success factors. Among the factors provided in the questionnaire are top management support, user training, interdepartmental cooperation and communication, project management process, project manager role, project team competence, and change management among others.

More so, the questionnaire used to carry out the survey provided the respondents or organizations with the opportunity to give their comments on these factors or the study in general. Pilot tests were carried out on the questionnaires to determine whether they are understandable to the respondents based in Qatar which an Arabic speaking country since they will be delivered in English. Online-based survey created using Qualtrics software was distributed to respondents as a link shared on emails and other social media channels, since that the online-based survey is faster, cheaper, more accurate, and easy to use for researchers.

Further, the participants were required to participate in the survey voluntarily. These participants were not required to provide their personal information since the study intends to maintain high levels of confidentiality. Besides, before beginning filling the questionnaire, the respondents were informed about the time required to complete filling a questionnaire which is around ten to fifteen minutes. See the questionnaire used in the study in the appendix section.

3.2 Sample and Data Collection Procedure

The target populations for the research were employees or individuals living in Qatar. These populations were reached through the online-based questionnaires that

were distributed among ERP end-users within XYZ holding group based in Qatar. XYZ is a large Qatari holding group working in diverse business lines such as industry, retail, service, real estate, hospitality, travel service, healthcare, and construction sectors. It has over than different 40 companies all over Qatar, 5000 staff and has so far done about 200 projects. Moreover, the group is using the most popular ERP systems which are SAP, Microsoft Dynamics, and Oracle.

The study used random sampling techniques that involved random selections from employees working within XYZ holding group. In acquiring the responses from these respondents, the XYZ holding group top management's approval was obtained before the questionnaires were distributed among the entire group. Due to our non-disclosure agreement with top management, the name of the company is withheld. Online-based questionnaires were distributed to 800 ERP end-users of the group from all the different business firms.

A total of 325 responses were obtained, out of which 321 responses were usable, representing a response rate of 40% and forming the sample of data analysis. The data were collected from March 15 to March 20, 2019. Collected data was exported from Qualtrics software as an Excel spreadsheet and transferred into SPSS for data analysis.

CHAPTER 4: DATA ANALYSIS

In order to test the hypotheses formulated and to further analyze the data collected, many statistical methods such as frequencies, means, reliability, descriptive analysis, correlations and regressions were used. The collected responses were analyzed using the IBM SPSS statistics software, which provided additional statistical analysis of the data. SPSS developed descriptive tables to display the frequencies of each variable that further helped to describe and compare variables numerically. The used statistical analysis investigated the level of perceptions of respondents and tested the research model.

4.1 Data Demographics

The sample represented 40 companies and included 321 responses from managers, CEOs, CIOs and employees. Employees were the majority of the sample (65.7%), followed by managers (31.5%) then come CEOs and CIOs (forming 1.9% and 0.9% respectively). Also, subjects with bachelor degree were the majority (68.5%), followed by those with master and PhD degrees (19.9% and 1.6% respectively). Finally, the sample of firms were majority consisting of 55.8% contracting firms, 17.4% service firms, and 11.5% manufacturing. The scale used is divided into three levels according to social research: from 1 to 3 refers to low perceptions, from 3 to 5 refers to moderate perceptions and from 5 to 7 refers to high perceptions. The demographics of data are shown in Table 1

Table 1: Demographics details of the respondents

Position	**Frequency**	**Percent**
CEO	6	1.9%
CIO	3	0.9%
Manager	101	31.5%
Employee	211	65.7%
Total	321	100%
Industry	**Frequency**	**Percent**
Service	56	17.4%
Manufacturing	37	11.5%
Information technology	21	6.5%
Consultancy	9	2.8%
Retailing and wholesale	19	5.9%
Contracting	179	55.8%
Total	321	100%
Education	**Frequency**	**Percent**
Bachelor	220	68.5%
Master	64	19.9%
PhD	5	1.6%
Other	32	10.0%
Total	321	100%
Age	**Frequency**	**Percent**
18-20 Years	2	0.6%
20-40 Years	240	74.8%
More than 40 years	79	24.6%
Total	321	100%
Gender	**Frequency**	**Percent**
Male	268	83.5%
Female	53	16.5%
Total	321	100%

The respondents were asked about their gender and age. Most of the respondents (74.8%) were in the age group of 20 to 40. About 83.5% percent of the respondents were male and 16.5% percent were female. To test whether there was any difference between male and female ERP end user regarding Behavioral Intention, One-Way ANOVA was used, and the following hypothesis was tested: There is no significant difference between the Behavioral Intention of male and female ERP end users. Results in Table 2 show the following:

Table 2: One-way ANOVA testing gender groups

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.157	1	.157	.094	.759
Within Groups	530.648	319	1.663		
Total	530.804	320			

The levels of significance are from 0.01 to 0.05, accordingly the value 0.759 is not significant. Therefore, there is no evidence that there is a statistically significant difference between male and female ERP end user regarding the stated variable.

4.2 Descriptive Analysis

The first step involved a descriptive test of item levels, including the evaluation of all items' means and standard deviations. Table 3 depicts the results.

Table 3: Item Descriptive analysis

Behavioral intention (BI)	**N**	**Mean**	**Std. Dev**
Q8_1: Assuming I have access to the system, I intend to use it	321	5.73	1.332
Q8_2: Assuming I have access to the system, I predict I would use it	321	5.46	1.563
Q8_3: I plan to use the system in the future	321	5.68	1.529
Total Construct – BI	321	5.62	1.288
Perceived usefulness (PU)	**N**	**Mean**	**Std. Dev**
Q9_1: ERP Systems are useful to my work	321	5.81	1.359
Q9_2: ERP Systems enable me to accomplish transactions quickly	321	5.66	1.490
Q9_3: ERP Systems increase my productivity	321	5.68	1.406
Q9_4: ERP Systems enhance my effectiveness	321	5.69	1.356
Total Construct – PU	**321**	**5.71**	**1.266**
Perceived Ease of Use (PEOU)	**N**	**Mean**	**Std. Dev**
Q10_1: Interacting with ERP systems is clear and understandable	321	5.24	1.409
Q10_2: It is easy for me to become skilful using ERP Systems	321	5.32	1.383
Q10_3: ERP Systems are easy to use	321	5.18	1.393
Q10_4: ERP Systems are flexible to interact with	321	5.06	1.480
Total Construct – PEOU	**321**	**5.20**	**1.249**
Computer Self-Efficacy (CSE)	**N**	**Mean**	**Std. Dev**
Q11_1: I could use ERP System if there is no one around to tell me what to do	321	4.77	1.672
Q11_2: I could use ERP System if there is someone to assist via phone	321	4.90	1.638
Q11_3: I could use ERP System if there is a built-in help facility for assistance	321	5.08	1.667
Q11_4: I could use ERP System if I have used similar systems before	321	5.29	1.638
Q11_5: I could use ERP System if someone else helps me get started	321	5.42	1.666
Total Construct – CSE	**321**	**5.09**	**1.307**

The majority of means are considered high (Means between 5-7). The results shown in Table 3 indicates that ERP is perceived useful and easy to use and shows a high individual confidence in using ERP as well. where PU, PEOU, and CSE items have high means. Consistency was shown by the values of all items in each construct, where most items were close to each other in value. Similarly, almost all standard deviation values were close to each other in value, which indicates that data is similarly dispersed

around the mean.

4.3 Reliability and Cronbach's alpha

Reliability is conducted to determine internal consistency which is measured by Cronbach's alpha that represents a measure of the correlations between items within the same construct. The value recommended would be higher than 0.8 (values above 0.9 are considered excellent). However, no adjustment would be required to an acceptable value above 0.6 (F. Hair, Black, Babin, & Anderson, 2010). Table 4 shows high internal reliability of all constructs (BI, PU, PEOU & CSE). These results confirm the validity of the used instrument and its consistency if used in further research.

Table 4: Cronbach's alpha value of major constructs

Constructs	N	Number of items	Cronbach's alpha
Behavioral intention (BI)	321	3	0.842
Perceived usefulness (PU)	321	4	0.924
Perceived Ease of Use (PEOU)	321	4	0.905
Computer Self-Efficacy (CSE)	321	5	0.849

4.4 Correlation

It is important to evaluate the correlations between the variables to find out if there is a possibility of multicollinearity. The correlations shown in table 5 indicate significant bivariate correlations between the dependent variable and the independent variables, this means that the variables are selected accurately and based on a solid conceptual basis. Moreover, the correlations presented in table 5 are within the accepted range ($r<0.85$). If the correlations are over 0.85 a question of multicollinearity could be considered. In addition, regression analysis enables us to test for multicollinearity.

Table 5: Pearson's Correlation Matrix

Constructs	(PU)	(PEOU)	(CSE)	(BI)
Perceived usefulness (PU)	1			
Perceived Ease of Use (PEOU)	.723**	1		
Computer Self-Efficacy (CSE)	.476**	.514**	1	
Behavioral intention (BI)	.726**	.616**	.496**	1

4.5 Regression Analysis

The last step is to test the assumed hypotheses therefore multiple regression techniques were used for testing the research model. A Beta value inspection of each predictor is used to test its hypotheses. The regression test estimates all predictors for the dependent variable together. The test is conducted using an enter method based upon the assumed model.

Table 6 indicates that the prediction of behavioral intention is significant and resulted in an $R^2 = 0.564$ (Adjusted $R^2 = 0.560$) with an $F(3, 317) = 136.925$ and a $p<0.001$. One of the important tests that were evaluated is the multicollinearity testing that produced an acceptable level (VIF is around 2, the threshold is more than 10; Tolerance is around 0.2, the threshold is less than 0.1)

Table 6: Multiple regression coefficient

Constructs	Unstandardized Coefficients		Standardized Beta	t	Sig.	Collinearity Statistics	
	B	Std. Error				Tol.	VIF
(Constant)	0.879	0.243		3.617	0.000		
Perceived usefulness (PU)	0.562	0.055	0.553	10.142	0.000	0.462	2.162
Perceived Ease of Use (PEOU)	0.136	0.058	0.132	2.353	0.019	0.440	2.273
Computer Self-Efficacy (CSE)	0.163	0.043	0.165	3.758	0.000	0.713	1.403

Regression Results shows that three variables were significant predictors of the behavioral intention. The sample indicated that the strongest predictor was perceived usefulness (PU, beta = 0.553, $p < 0.001$), followed by computer Self-Efficacy (CSE, beta = 0.165, $p < 0.001$), and finally, perceived Ease of Use (PEOU, beta = 0.132, $p < 0.01$). Consequently, these results support the study's hypotheses H_1, H_2 and H_3. Accordingly, the overall multiple regression equation can be written as follows:

BI = 0.879 + 0.562 PU + 0.136 PEOU + 0.163 CSE

4.6 Critical Success Factors Analysis

It can be recalled that the objective of the second question in the study is to identify the critical success factors of ERP systems from an employee's perspective. In order to investigate the critical success factors, a total of twenty-two questions were used to identify the most critical factors according to the study environment. The questions were adopted from Somers and Nelson (Somers & Nelson, 2004). The respondents were asked to identify how important each factor is based on their knowledge.

Table 7: The means and standard deviations of the list of CSFs.

No	Critical Success Factors (CSF)	Rank	Mean	Std. Dev
1	Top management support	1	**5.78**	**1.33**
2	User training on software	2	**5.65**	**1.36**
3	Project management process	3	**5.64**	**1.35**
4	Clear goals and objectives of system	4	**5.60**	**1.37**
5	Data analysis and conversion	5	5.54	1.46
6	Careful ERP package selection	6	5.51	1.45
7	Dedicated resources	7	5.51	1.41
8	Project champion role (Project Manager)	8	5.50	1.40
9	Project team competence	9	5.47	1.38
10	Interdepartmental communication	10	5.47	1.38
11	Vendor support	11	5.45	1.51
12	Training on new business processes	12	5.45	1.41
13	Interdepartmental cooperation	13	5.44	1.44
14	Use of vendor's tools	14	5.29	1.46
15	Use of consultant for support	15	5.23	1.46
16	Role of steering committee	16	5.23	1.48
17	Business process reengineering	17	5.19	1.50
18	Management of expectations of different stakeholders	18	5.11	1.52
19	Minimal customization needed	19	5.10	1.53
20	Change management	20	5.05	**1.62**
21	Partnership with vendor	21	5.01	**1.54**
22	Architecture choices available	22	4.98	**1.59**

According to the results in Table 7, the most important CSF is "Top management support" followed by "User training on software", "Project management process", and "Clear goals and objectives of system" respectively. There seems to be an agreement on the influence of top management support as a factor to ensure that the implementation of an ERP system is carried out successfully (Std. Dev. = 1.33, mean = 5.78). The low value of standard deviation shows that data are low dispersed and there is an agreement on the mean. Other factors with low standard deviation values are

“Project management process” (Std. Dev. = 1.35, mean = 5.64) and “User training on software” (Std. Dev. = 1.36, mean = 5.65). In contrast, some of the last CSFs ranked by mean values in Table 7 are mostly controversial factors effecting the success of the ERP implementation (Abu-Shanab et al., 2015). The values of their standard deviations compared to the previous ones are high, where “Architecture choices available” (Std. Dev. = 1.59, mean = 4.98), followed by “Partnership with vendor” (Std. Dev. = 1.54, mean = 5.01). and lastly, which was a surprise, “Change management” had the highest standard deviation (Std. Dev. = 1.62, mean = 5.05) contrary to how it is mostly reported in the related literatures (one of the top five factors critical to the success of ERP implementation (Hau & Kuzic, 2010)).

CHAPTER 5: RESULTS

5.1 Summary of Findings

The main purpose of the study was to identify factors that influence the adoption of ERP systems together with ERP critical success factors in Qatar. 321 respondents who are ERP end users of 40 different companies from different industries were surveyed for the study. Frequencies, descriptives, means, reliability analysis and Cronbach's Alpha, correlations, and regression statistical techniques were executed in SPSS to inform about the data utilized for the study. 268 (83.5%) of the respondents were males while 53 (16.5%) were females. 0.6% of the respondents were aged between 18 – 20 years, 74.8% were aged between 20 - 40 years and 24.6% of the respondents were more than 40 years of age. Findings showed that the majority of means are considered high in the descriptive analysis and indicate that ERP is perceived useful and easy to use and show a high individual confidence in using ERP as well. Cronbach's Alpha values of all the variables of the study are greater than 0.6 for reliability analysis. Results also revealed that correlation between behavioral intention and perceived usefulness had a correlation coefficient of 0.726 with a p-value of 0.000, and the correlation between behavioral intention and perceived ease of use had a correlation coefficient = 0.616 with p-value = 0.000. Correlation between behavioral intention and computer self-efficacy has a correlation coefficient equal to 0.496 with p-value equal to 0.000. Regression results showed an F-statistic, $F(3, 317) = 136.925$ and a $p<0.001$ and the regression equation is **BI = 0.879 + 0.562 PU + 0.136 PEOU + 0.163 CSE.** ERP CSFs analysis findings show that the "Top management support" is the most critical factor that guarantees successful implementation, followed by "User training on software", "Project management process", and "Clear goals and objectives of system"

respectively. On the other hand, high disputable factors were ranked low for having minor effect on ERP implementation and they are “Architecture choices available”, “Partnership with vendor”, and Surprisingly, change management.

5.2 Discussion of Findings

In this study, TAM model was extended through the addition of computer self-efficacy construct. The extended TAM model was tested in the context of ERP systems adoption. the study contributed by considering computer self-efficacy construct that reflects on the individual capability to succeed in using ERP to accomplish business tasks. The data analysis of ERP systems implementation in the 40 organizations in Qatar leads to interesting results. The regression analysis found that the H_1 hypothesis is supported, which reveals that the perceived usefulness has a significant impact on the behavioral intention to use ERP system which has also been proved by various previous ERP systems studies (Amoako-Gyampah & Salam, 2004; Calisir & Calisir, 2004; Chung, Mirosław, Skibniewski, & Kwak, 2009; Garača, 2011). This signifies that if ERP systems in the Qatari firms improve the job performance of the employees and increases their efficiency, they will have the intention to use ERP systems. The companies have to guarantee that their ERP system increases the efficiency of the employees' jobs and therefore provides them with the impulse to use ERP systems to achieve their organizational and personal objectives. Therefore, managerial endeavors concentrated on improving ERP perceived usefulness will certainly be important to increase the intention to use ERP systems. H_2 is supported by the findings of the regression analysis as well, which found that ERP perceived ease of use significantly affect the behavioral intention of the employees to use ERP systems. As previously described, the perceived ease of use refers in general to the extent to which a system is

expected to be effort free by the potential user (Chung et al., 2009; F. D. Davis, 1989). The potential user in this situation is the employee who is going to use the ERP system. So, if the usage of ERP system is easy to perform the daily activities, the employee will tend to use it, thus resulting in greater behavioral intention to use the system as well as more acceptance to the ERP in the organization. Similarly, the analysis also supported H_3 and it indicates that Computer Self-Efficacy enhances individual intention to use an ERP system, thus it is consistent with the related literatures (Agarwal & Karahanna, 2000; V. Venkatesh & Davis, 1996). Managers or practitioners need to consider carefully the factors that could promote computer self-efficacy which can lead to positive results in terms of ERP adoption. With good knowledge of computer efficiency sources, management will be able to place its staff in appropriate computer training programmes. Consequently, providing the required knowledge and training helps employees increase their computer self-efficacy, thus increasing the chances of successful ERP implementation. Overall, the regression analysis showed that in the case of Qatari organizations, 56 % of the variance in the intention to use of ERP systems is explained by three factors which are ERP perceived usefulness, ERP perceived ease of use and computer self-efficacy. While these three factors are important factors that impact the intention to use, the rest of the variance could be explained by others. To successfully implement an ERP system, companies should analyze practically and systemically the factors which affect the implementation process (Jing & Qiu, 2007). This study highlighted the top factors to be considered by the management of the organizations in the Qatari context to guarantee that the implementation is successful, and the organization benefits from it. These factors are “Top management support” followed by “User training on software”, “Project management process”, and “Clear

goals and objectives of system" respectively. Top management support strengthens the commitment of all employees in the firm and is essential to the implementation of the ERP system, in particular during the early stages of the project (Bingi, Sharma, & Godla, 1999). A major reason for failure to implement the ERP system is the lack of senior management commitment to the project (Huang, Chang, Li, & Lin, 2004). The organization must be ready to use the ERP system in daily work. Sufficient training for employees can guarantee an effective and correct utilization of the ERP system. Therefore, training is a key element for the successful implementation of the ERP system (Dowlatshahi, 2005). Strong project management is required during ERP implementation and should comprise clear objectives, workplan and resources-plan development, and a cautious monitoring for the development and progress of the project (Laughlin, 1999).

In contrast, the study also highlighted some of the CSFs that are mostly disputable and considered as unimportant in ERP implementation, which are "Architecture choices available" and "Partnership with vendor" (Abu-Shanab et al., 2015), and inconsistent with the literatures, the end users deemed "Change management" as unimportant factor for ERP implementation disagreeing with the researchers whose findings laid stress on the importance of change management as and ERP success factor (Abu-Shanab et al., 2015; Hau & Kuzic, 2010; Nah et al., 2001) Reitsma and Hilletofth (2018) reported similar findings mentioning that the end users of the sample they studied believed that using change management tools and techniques are unnecessary for ERP implementation. These results show that there is a discrepancy between the user perspective and the general perspective that dominates the literature.

CHAPTER 6: CONCLUSION

In order to implement an ERP system, an organization requires financial resources, time and commitment. In view of the time and budget limits, managers need to recognize strategies that can bring about greater benefits. Although ERP systems have changed the functioning of companies in relation to their operations to increase efficiency and accuracy, these systems experience numerous challenges that bring about their failure even before they are implemented. This highlight the need for studies and researches such as this one to ensure and provide further information about achieving ERP implementation success. The end user perspective that falls under the social sciences discipline, has been investigated by using Technology Acceptance Model extended with the addition of computer self-efficacy construct.

This paper is the first in the Qatari environment and reveals that perceived usefulness (PU), perceived ease of use (PEOU), and computer self-efficacy (CSE) are important factors that contribute significantly in the behavioral intention to use of ERP systems by the end user in the Qatari context. At the same time the paper explored various factors that will ensure successful ERP implementation. All factors presented in the study were listed in a survey and distributed among different Qatari companies of different business lines. The results emphasized the significant role of top management support, user training on software, and project management process in the Qatari context. However, a big difference found in comparison with the literature is that users considered change management unimportant for ERP implementation.

Consequently, organizations should assess PU, PEOU, CSE and, ERP CSFs which obviously influence ERP adoption helping to explore the good and bad practices of ERP implementation and clearly differentiate the factors which are significant for

ERP acceptance. To achieve a successful ERP implementation, a compatible and appropriate atmosphere should be created in the enterprise. The more useful and easier an ERP system is to use, the more value it generates.

6.1 Implications and Recommendations

This study has important implications for organizations in the real life. It provides insights for management to efficiently direct the implementation process of an ERP system throughout the organization. Organizations must comprehend and recognize organizational, individual, and technological factors when implementing a complicated system such as ERP. In order to facilitate end users' ERP acceptance, it is essential to enhance their perceived usefulness and perceived ease of use. In parallel, enhancement in end users' computer self-efficacy can increase their ERP acceptance. When an ERP system is adopted in an organization, to stimulate end users' prior acceptance of the system, a variety of features must be provided to prompt end user's perceived usefulness; a user-friendly interactive interface must also be provided to increase the perceived ease of use. In addition, measures to improve the computer self-efficacy of prospective end users should be taken by offering certain training programs and workshops. The main objective of the training programs is to improve and enhance computer efficiency of the ERP end user. These training programs should be comprehensive, planned carefully, considering choosing the right experienced instructor, and breaking down the training tasks into smaller steps. This will show users that they are able to handle the system on their own. Moreover, there are many other ways to enhance end users' computer self-efficacy in addition to the aforementioned suggestions.

The successful implementation of ERPs in the organization relies on perceived usefulness, perceived ease of use, computer self-efficacy, critical success factor, and many other factors. Thus, the assessment of factors such as compatibility, complexity, technological innovativeness, system performance, system learnability, perceived trust, output quality, perceived fit, and data quality will help in understanding the process of ERP implementation, provides more insights, and aid the integration and utilization of ERPs in the achievement of corporate objectives. The strong correlation and dependence of different factors illustrate the role of human agents in determining implementation and harnessing of benefits from ERPs.

TAM is the most widely used model in explaining the relationship existing between user's perception, attitude, beliefs and their system usage. Therefore, executive management and decision makers in an organization should closely consider perceived usefulness and perceived ease of use when identifying ERPs to employ and roles to incorporate. Thereby, TAM will assist significantly in expounding end users' behavioral intentions of using ERP systems, which in turn will contribute to the success of ERP adoption and implementation. The consideration of perceived usefulness, perceived ease of use, computer self-efficacy, and critical success factor obviously plays an important role in guiding ERP implementation and utilization, due to the strong existing correlation between human aspects and ERP success.

6.2 Limitations and Future Directions

Even though the results of the study lead to a better comprehension of the factors that influence behavioral intention toward ERP systems, there are still limitations to this study. Only 56% of the variance of intention to use ERP systems was explained by the model variables. The large percentage of the unexplained variance suggests that

additional research is necessary to incorporate unmeasured potential variables in the current study. These potential variables would be system flexibility or capability, computer anxiety, end user's satisfaction or characteristics, which can importantly contribute to the explanation of intention to use ERP systems and could be employed for further study as well. The results of this study can be applied to countries that are economically and culturally similar to Qatar, such as the countries of the GCC; nevertheless, they might not be applicable to other different countries. Because recently, the implementation of ERP has witnessed a considerable growth in the Middle East (Razi & Hossain, 2019), and this can probably make a gap with other countries such as the countries of poorer economies. Qatar is known for its multicultural society and multinational companies; however, this study didn't investigate the various cultural dimensions that have an influence on ERP adoption decision (Miller, Batenburg, & Wijngaert, 2006). Accordingly, further study might me needed to explore these cultural dimensions. Moreover, further study to investigate performance disparities in certain CSFs and the reasons behind them can be conducted to enrich the results of the research. Finally, Although the sample was collected from 40 different Qatari companies of different business lines, but all these companies belong to one holding Qatari group, so the results might be validated among different populations. Therefore, a similar future investigation into this topic could serve to extend and enrich those findings in a wider sample of companies and organizations.

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APENDECIES

Appendix A: Demographics details of the respondents

Statistics

		Gender	Age	Position	Education	Industry
N	Valid	321	321	321	321	321
	Missing	0	0	0	0	0

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	268	83.5	83.5	83.5
	2	53	16.5	16.5	100.0
	Total	321	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	.6	.6	.6
	2	240	74.8	74.8	75.4
	3	79	24.6	24.6	100.0
	Total	321	100.0	100.0	

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	1.9	1.9	1.9
	2	3	.9	.9	2.8
	3	101	31.5	31.5	34.3
	4	211	65.7	65.7	100.0
	Total	321	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	220	68.5	68.5	68.5
	2	64	19.9	19.9	88.5
	3	5	1.6	1.6	90.0
	4	32	10.0	10.0	100.0
	Total	321	100.0	100.0	

Industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	56	17.4	17.4	17.4
	2	37	11.5	11.5	29.0
	3	21	6.5	6.5	35.5
	5	9	2.8	2.8	38.3
	6	19	5.9	5.9	44.2
	7	179	55.8	55.8	100.0
	Total	321	100.0	100.0	

Appendix B: One-way ANOVA testing gender groups

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
BI	Based on Mean	1.006	1	319	.317
	Based on Median	.893	1	319	.345
	Based on Median and with adjusted df	.893	1	318.541	.345
	Based on trimmed mean	1.013	1	319	.315

ANOVA

BI

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.157	1	.157	.094	.759
Within Groups	530.648	319	1.663		
Total	530.804	320			

Appendix C: Item Descriptive analysis

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q8_1	321	1	7	5.73	1.332
Q8_2	321	1	7	5.46	1.563
Q8_3	321	1	7	5.68	1.529
BI	321	1.000000000000000	7.000000000000000	5.622014537902384	1.287930062395207
Q9_1	321	1	7	5.81	1.359
Q9_2	321	1	7	5.66	1.490
Q9_3	321	1	7	5.68	1.406
Q9_4	321	1	7	5.69	1.356
PU	321	1.00	7.00	5.7095	1.26642
Q10_1	321	1	7	5.24	1.409
Q10_2	321	1	7	5.32	1.383
Q10_3	321	1	7	5.18	1.393
Q10_4	321	1	7	5.06	1.480
PEOU	321	1.00	7.00	5.2009	1.24911
Q11_1	321	1	7	4.77	1.672
Q11_2	321	1	7	4.90	1.638
Q11_3	321	1	7	5.08	1.667
Q11_4	321	1	7	5.29	1.638
Q11_5	321	1	7	5.42	1.666
CSE	321	1.0	7.0	5.092	1.3070
Valid N (listwise)	321				

Appendix D: Cronbach's alpha value of major constructs

BI

Reliability Statistics

Cronbach's Alpha	N of Items
.842	3

PU

Reliability Statistics

Cronbach's Alpha	N of Items
.924	4

PEOU

Reliability Statistics

Cronbach's Alpha	N of Items
.905	4

CSE

Reliability Statistics

Cronbach's Alpha	N of Items
.849	5

Appendix E: Pearson's Correlation Matrix

Correlations

		PU	PEOU	CSE	BI
PU	Pearson Correlation	1	.723**	.476**	.726**
	Sig. (2-tailed)		.000	.000	.000
	N	321	321	321	321
PEOU	Pearson Correlation	.723**	1	.514**	.616**
	Sig. (2-tailed)	.000		.000	.000
	N	321	321	321	321
CSE	Pearson Correlation	.476**	.514**	1	.496**
	Sig. (2-tailed)	.000	.000		.000
	N	321	321	321	321
BI	Pearson Correlation	.726**	.616**	.496**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	321	321	321	321

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix F: Multiple regression coefficient

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.751[a]	.564	.560	.854021334469196

a. Predictors: (Constant), CSE, PU, PEOU

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	299.600	3	99.867	136.925	.000[b]
	Residual	231.205	317	.729		
	Total	530.804	320			

a. Dependent Variable: BI

b. Predictors: (Constant), CSE, PU, PEOU

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.879	.243		3.617	.000
	PU	.562	.055	.553	10.142	.000
	PEOU	.136	.058	.132	2.353	.019
	CSE	.163	.043	.165	3.758	.000

a. Dependent Variable: BI

Appendix G: The means and standard deviations of the list of CSFs

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q12_1	321	1	7	5.78	1.326
Q12_2	321	1	7	5.65	1.364
Q12_3	321	1	7	5.44	1.442
Q12_4	321	1	7	5.47	1.376
Q12_5	321	1	7	5.64	1.353
Q12_6	321	1	7	5.50	1.403
Q12_7	321	1	7	5.47	1.376
Q12_8	321	1	7	5.05	1.616
Q12_9	321	1	7	5.11	1.517
Q12_10	321	1	7	5.60	1.368
Q12_11	321	1	7	5.23	1.479
Q12_12	321	1	7	5.51	1.454
Q12_13	321	1	7	5.45	1.512
Q12_14	321	1	7	5.29	1.464
Q12_15	321	1	7	5.23	1.457
Q12_16	321	1	7	5.01	1.540
Q12_17	321	1	7	4.98	1.589
Q12_18	321	1	7	5.10	1.529
Q12_19	321	1	7	5.19	1.500
Q12_20	321	1	7	5.45	1.407
Q12_21	321	1	7	5.54	1.457
Q12_22	321	1	7	5.51	1.406
Valid N (listwise)	321				

Appendix H: The Questionnaire (Survey)

Critical Success Factors of ERP System

Dear Messrs.

Enterprise Resource planning systems (ERP) integrate resources and facilitate the information, material, and money flows to enhance the operations of firms and the whole supply chain. This study is trying to explore the influence of ERP systems on the performance of firms and probe your opinion regarding the CSF related to ERP implementations.

The following sections will collect some information regarding your experience after implementing ERP systems. Please answer all applicable questions to your situation and try to be as accurate as you can. This survey will take 10-15 minutes and all responses will be treated with full confidentiality and used for research purposes only. Your participation in this study is voluntary, where you can withdraw anytime and answer all questions suitable to you.

The study is approved by the QU-IRB; Approval number: QU-IRB 1029-E/19

Researcher: Muradallah Idilbi
Email: mi1300624@student.qu.edu.qa
Mobile: 66444825

The Supervising Professor: Dr. Emad Abushanab
Email: eabushanab@qu.edu.qa

I don't mind participating in this study: .....

Section 1: Respondent & Organization Demographics

Gender: ☐ Male ☐ Female

Age: ☐ 18-20 Years ☐ 20-40 Years ☐ More than 40 years

Position and education of respondent:

Position: ☐ CEO ☐ CIO ☐ Manager ☐ Employee

Education ☐ Bachelor ☐ Master ☐ PhD ☐ Other .....

Ind stry type:

☐Service ☐ Manufacturing ☐ Information technology

☐ Educational ☐ Consultancy ☐ Retailing and wholesale

☐ Other, please specify .....

Have you ever used ERP Systems? ▪ Yes ▪ No

Section 2: Perceptional measures

Please rate the following statements according to your best belief.

Please consider **1** as "**totally disagree**" and **7** as "**totally agree**".

Behavioral intention (BI)

#	Item description	1	2	3	4	5	6	7
1	Assuming I have access to the system, I intend to use it							
2	Assuming I have access to the system, I predict I would use it							
3	I plan to use the system in the future							

Perceived usefulness (PU)

#	Item description	1	2	3	4	5	6	7
1	ERP Systems are useful to my work							
2	ERP Systems enable me to accomplish transactions quickly							
3	ERP Systems increase my productivity							
4	ERP Systems enhance my effectiveness							

Perceived Ease of Use (PEOU)

#	Item description	1	2	3	4	5	6	7
1	Interacting with ERP systems is clear and understandable							
2	It is easy for me to become skillful using ERP Systems							
3	ERP Systems are easy to use							
4	ERP Systems are flexible to interact with							

Computer Self-Efficacy (CSE)

#	Item description	1	2	3	4	5	6	7
1	I could use ERP System if there is no one around to tell me what to do							
2	I could use ERP System if there is someone to assist via phone							
3	I could use ERP System if there is a built-in help facility for assistance							
4	I could use ERP System if I have used similar systems before							
5	I could use ERP System if someone else helps me get started							

Section 2: Critical success factors needed for the success of ERP implementation:
Please check the best rating for the following CSF based on their importance to the success of ERP implementation. Please consider 1 as the least important and 7 as the most important.

#	Critical success factor (CSF)	1	2	3	4	5	6	7
1	Top management support							
2	User training on software							
3	Interdepartmental cooperation							
4	Interdepartmental communication							
5	Project management process							
6	Project champion role (Project Manager)							
7	Project team competence							
8	Change management							
9	Management of expectations of different stakeholders							
10	Clear goals and objectives of system							
11	Role of steering committee							
12	Careful ERP package selection							
13	Vender support							
14	Use of vendor's tools							
15	Use of consultant for support							
16	Partnership with vendor							
17	Architecture choices available							
18	Minimal customization needed							
19	Business process reengineering							
20	Training on new business processes							
21	Data analysis and conversion							
22	Dedicated resources							

Any extra comments: .....

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End of survey