Proposing model for the adoption of Cloud Enterprise Resource Planning System in UAE Organizations

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Abstract

Cloud ERP is built of a commercial software package that offers seamless integration of all information moving across the company, in order to manage all of the business processes. Cloud ERP is comprised of a group of apps that are highly connected with one another (Fisher, 2018). Dechow and Mouritsen(2005) suggested that an efficient cloud ERP system allows supply chains to manage several effective flows. Information flow complexity can become smooth with an ERP system. Resource and time are both saved since production strategies and delivery schedules are optimized by cloud ERP. With this, the aim of current research is to propose the model that can be adapted for adopting cloud ERP systems. The model is based on the factors that are identified based on previous literature.

KeyWords: Cloud ERP, ERP, Cloud Technology.

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Introduction

Automating business procedures using an ERP solution has the potential to boost a company's performance and growth (Ahmad& Andras, 2019). ERP systems are used by business owners to better comprehend their data, eliminate unnecessary process steps, cut down on waste, cut down on cycle times, and improve overall operational efficiency. An ERP system, that is integrated, allows representatives from marketing, sales, production, and quality control to communicate with one another (AlBar & Hoque, 2019). There is a scarcity of research on ERP deployment in the UAE private sector, which contributes significantly to the economy of UAE (AlBar & Hoque, 2019).

Data is collected in large quantities by businesses of all sizes and across all sectors. Invoices, client information, project plans, shipping and payment information are all examples of what may be stored on a computer hard drive. Eventually, all of this information must be stored and in some way so that reports and analyses may be generated from it (Fisher, 2018). Many businesses are built on this core component of their operations. An enterprise resource planning system (ERP) is a system that manages all of this data and is available in a variety of configurations from a variety of suppliers. For this system to operate and be suitable for as many enterprises as possible, each vendor has developed a unique strategy.

Cloud computing has gained popularity over the last several years; organizations have increasingly embraced this method and realized the many advantages it offers. The similar transformation has occurred in the field of enterprise resource planning systems, with suppliers increasingly concentrating on delivering ERP systems that are hosted in the cloud (Ahmad & Andras, 2019). For the purposes of this proposal, cloud-based ERP systems and the variables that affect its adoption in private sector enterprises across the United Arab Emirates (UAE) are the primary topics discussed.

Enterprise Resource Planning systems (ERPs) are now the backbone of many businesses throughout the world. Company operations are simplified when business data from several departments is collected into a single database and made available for workers to make reports from that database. Increasingly, cloud computing is becoming more prevalent and is making its way into enterprises and corporations. More firms will place their confidence in clouds as cloud systems get better and more thoroughly vetted. Starting to store sensitive corporate data and information in cloud services is a prerequisite for moving forward with the project. Traditional ERP systems are hosted on-premises at each firm, with the company itself responsible for system maintenance. ERP systems are increasingly being built as cloud-based applications as cloud computing continues to expand in popularity and relevance(AlBar & Hoque, 2019). Moreover, the cloud-based ERP system is on the rise, as organizations no longer have to worry about maintaining their own hardware infrastructure.

In ERP, "a framework for organizing, defining, and standardizing the business processes necessary to effectively plan and control an organization in order for the organization to use its internal knowledge to seek external advantage" is defined as follows: "an organization can use its internal knowledge to seek external advantage by using its internal knowledge" (Blackstone, 2010, p. 38). A cloud ERP system is provided via the use of a cloud computing infrastructure (Nayar & Kumar, 2018). The researcher offer the theoretical framework that will serve as the foundation for the research, which looks at technical, environmental and organizational aspects that are predictors of the adoption of Cloud ERP systems. Cloud ERP systems manufacturers may charge a monthly subscription fee in exchange for allowing businesses to use their systems via the internet, rather than requiring them to purchase conventional ERP software and install it on their company's premises (Salim, Sedera, Sawang, Alarifi, & Atapattu, 2015).

Due to changes in technology and business requirements, ERP systems have evolved throughout the years to meet these needs (Budiarto, Sari, Sudaryana, & Prabowo, 2018).In the 1960s, inventory control systems were replaced by Materials Requirements Planning (MRP), which eventually developed into Manufacturing Resources Planning (MRPII) in the late 1990s and early 2000s. Recent advancements in Cloud computing technology have led in the creation of Cloud ERP systems (Nayar & Kumar, 2018), which represent yet another step in the history of ERP systems. Due to the fact that cloud computing is a new technology, its definition is currently in the process of being established. Cloud computing is defined by the National Institute of Standards and Technology (NIST) as "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Zhao & Kirche, 2018, p. 6). Vendors may charge companies a subscription fee in exchange for the ability to use the software over the internet in Cloud ERP systems. In contrast to past adoption models, when firms were required "to pay for, host, and operate the purchased ERP" on their own premises, this represents a significant shift. Because of Cloud computing, ERP providers may host and manage ERP systems on their Cloud servers, allowing them to provide the software as a service to businesses.

Literature Review

"Cloud computing is a newer technology whose definition is still being worked out". It may be defined as "applications offered as services through the Internet, as well as the hardware and systems software in the data centres that enable those services," among other things (Attaran & Woods, 2019, p. 1). Another description that is closely linked to Cloud computing refers to it as "an IT as a Service (ITaaS), an Internet-based software development platform, or a huge data centre architecture that can be accessed over the internet" (Joe-Wong & Sen, 2018). It may be defined as a paradigm of providing computer resources via the internet, in which customers are able to utilize such computing resources provided by cloud vendors in exchange for a charge (cloud computing). Consider ERP software. Organizations may pay Cloud ERP suppliers a monthly fee in exchange for the ability to use the software from any location with an internet connection, such as their offices. If such firms buy and install the ERP software on their own premises, they are spared of the substantial costs that may be connected with the purchasing of software, servers, and other physical equipment that may be necessary. Although the National Institute of Standards and Technology (NIST) acknowledged the need for a clear definition of the emerging technology, it defined Cloud computing as "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grance, 2011, p. 6).

Cloud computing, on the other hand, does not apply to all computer resources that may be accessible over the internet. Cloud computing has been identified as one of the most significant technical shifts of the recent decade (Attaran & Woods, 2019). Private sector companies have taken use of the technology to create yet another evolution of ERP systems, which are now known as Cloud ERP systems. A cloud ERP system is an ERP system that is provided via the use of a cloud computing architecture (Ke, Yeh, & Su, 2017). Web-based interfaces provided by cloud computing services enable enterprises to better regulate their network access (Zoubeidi et al., 2020).

The cloud ERP system, according to Fisher (2018), is better appropriate for businesses with many locations in geographically dispersed areas. Due to the complexity of ERP adoption, bigger organizations have been more hesitant to experiment with cloud computing solutions. Smaller businesses are more interested in this

approach since it makes it much simpler for them to experiment with cloud-based solutions than larger enterprises. According to Srivastava and Nanath (2017), cloud-based ERP systems have a number of advantages over traditional ERP systems that are implemented as stand-alone applications within an organization's computing environment. These advantages include increased scalability, system performance, cost savings through shared operations at a lower cost, and increased flexibility. Srivastava and Nanath (2017) explain that because cloud computing has a high level of elasticity, it allows consumer organizations to scale up or down their services based on their requirements, while at the same time allowing the cloud service provider to distribute the services among their customers based on their requirements.

"Upgrades and maintenance of hardware, apps, and infrastructure are performed at the cloud service provider site and are not visible to the enterprise that is using the cloud service**"** (Attaran & Woods, 2019). Because of the sophisticated nature of the apps, end users are often not engaged in their upkeep and maintenance. This frees up end users' time to devote greater attention to key activities **"**such as managing, maintaining, and upgrading information technology systems inside their own organizations**"**.

According to Fisher (2018), a large number of private sector enterprises in emerging nations continue to do business in a conventional manner. Cloud computing offers these businesses the opportunity to better their company operations and compete in global markets without having to rely on conventional infrastructure to conduct international commerce. Cloud computing, as compared to conventional infrastructure, provides more powerful computer systems at a cheaper cost than the latter. Private sector enterprises in emerging nations, such as the United Arab Emirates, may access data essential for their research and development requirements via the use of cloud computing infrastructures and telecommunications networks.

ERP systems are best suited for private sector businesses in the United Arab Emirates. They will make it easier to find cost-cutting options, increase productivity, and help businesses to maintain a competitive edge. According to case studies, many companies around the world have used ERP systems and proven success by lowering operational costs by large amounts, cutting processing times by a considerable amount, and cutting lead times by a significant amount for private sector companies, and increasing the overall efficiency of their businesses.

Pattanayak, Roy, and Satpathy, (2019) and Hashmi, Ranjan, and Anand (2018) have all stated that while the use of information technology has the potential to significantly boost economic development in underdeveloped nations of this potential is dependent on a variety of factors and elements for CERP installation to be successful..

As per the study findings Ahn and Ahn (2020), the organizational culture is important in order to implement cloud-based ERP. When it comes to cloud-based ERP, businesses must be responsive and agile. Furthermore, when it comes to the direction of company activities, there should be a shared, open, and easy-to-accept organizational culture. **"**The regulatory environment, relative advantage, trialability, and vendor lock-in all played a role in the decision to use cloud-based ERP**"** (Ahn & Ahn, 2020).

As mentioned by Christiansen, Haddara, and Langseth (2022) innovation features affecting the decision **"**to adopt cloud ERP include perceived relative advantage, compatibility, complexity, trialability, and observability. System quality, security, vendor lock-in, and data accessibility are highlighted as technological issues, while a financial advantage and top management support are identified as organizational factors.**"** Finally, environmental factors influencing adoption decisions include competitive and regulatory pressures, as well as support (Christiansen et al., 2022). Atobishi, Bahna, Takács-György reported

similar findings, and Fogarassy (2021) in their study conducted in Jordan.

Theoretical Foundation

"The adoption of technology is impacted by elements that may be determined via the technical context, the organizational context, and the environmental context, according to Tornatzky and Fleischer (1990). "

"The technological context refers to how organizations make the technology adoption decision based on the availability of the technology and how it fits with the firm's current technology. The organizational context examines the characteristics of the organization, such as its structure, quality of human resources, or the extent to which the organization's size influences the technology adoption decision. The environmental context refers to the environment in which a firm's business is carried out."

The TOE framework, on the other hand, is compatible with the concept of innovation as defined by diffusion theory. A large body of literature supports the use of the TOE framework as a theoretical foundation in technology adoption studies, including the following: Al-Hujran, Al-Lozi, Al-Debei, and Maqableh (2018); Kumar, Samalia, & Verma (2017), and Senarathna, Wilkin, Warren, Yeoh, & Salzman (2018).

The primary aim of the current study is to identify the factors (technological, organizational and environmental) that affect the adoption of cloud ERP in UAE.

Model of the study

Olson, Johansson, and De Carvalho (2018) asserted, "Cloud ERP has become more popular software applications modules have emerged for the finance and human resources aspects of a business. Cloud ERP can integrate several business functions, such as sales, manufacturing, human resources, logistics, accounting, and other enterprise functions, while main difference among them is the role that cloud ERP plays in corporate management. As a set of highly integrated applications, Cloud ERP is comprised of a commercial software package that promises seamless integration of all information flowing throughout the organization, as to manage all the business functions" (Fisher, 2018). Dechow and Mouritsen (2005) suggested that an efficient cloud ERP system manage effective flows. Information flow complexity can become smooth with an ERP system. Resource and time are both saved since production strategies and delivery schedules are optimized by cloud ERP. Customers, suppliers, and organizations can benefit from this ERP system (Grant & Yeo, 2018). It is necessary to recognize how the resources are spent and competitive advantage is attained.

"The cloud ERP system has been found faster, cheaper and flexible so organizations are thinking to adopt this technology but commitment at every phase of transformation is required to make the change successful. Top management, technical management, process team and change management and project management considered as the pillars of cloud ERP and study pillars ensured successful implementation (Machado & Gomes, 2018). Overall, it is obvious that there is no clear-cut evidence whether the implementation of Cloud ERP is advantageous to organizations, or not. Further, the factors determining the use of Cloud ERP are different across organizations." To ensure that the cloud ERP project does not fail, the top management must carry out informed decisions and the top management should grade the factors appropriately. The user or individual perceptions should not only be taken into account (Apiyo & Kiarie, 2018). When the cloud ERP system is to be implemented within an organization, reforms are made according to the business practices of that organization on a large scale and new software is to be dispersed to support the reformed business processes (Jenab et al., 2019). Additionally, the job, task nature, and workflow of the employee are altered (Apiyo & Kiarie, 2018). Therefore, it is necessary to recognize the actual user perceptions before implementing a

new system.

With the help of the current research findings, it would be possible to attain in-depth knowledge of how a cloud ERP system should be implemented and which factors would hinder or help the implementation process within the U.A.E. Furthermore, these results can also be useful for the cloud ERP functional consultants since they can use this information to enhance their knowledge pertaining to implementation of cloud ERP and, accordingly, make informed decisions. The research findings can also be used as a reference by the researchers and academic scholars while carrying out research of their own. It would serve as the grounds for future research since it would identify the significant aspects of implementation of cloud ERP (Sun, Sun, & Strang, 2018).

Keeping the above-mentioned information in mind, the current research would focus on "establishing a framework that would manage the challenges and ensuring that the cloud ERP implementation process is carried out successfully within the U.A.E. The current literature has been analyzed, and from that analysis, it was found that the factors had not been researched thoroughly to attain the successful implementation of ERP within the organizations in the U.A.E. Various gaps are present in the literature, which is why it is essential to conduct future research on this topic. The present research would extract the variables responsible for influencing the implementation of cloud ERP process and to provide a guidance model for effective implementation of cloud ERP in the organizations in the U.A.E." The subsequent section will present the methodology adopted to carry out this research. Figure 1 provides proposed model that needs to be studied for the successful adoption of cloud ERP.

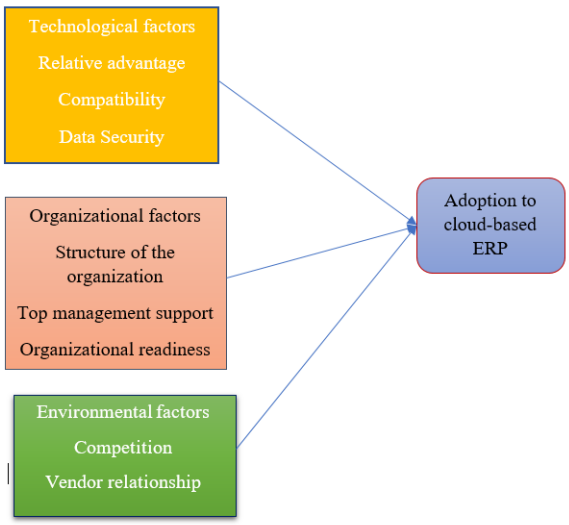

Figure 1 Proposed model of the study

Conclusion

Competitiveness is a necessary component of survival. Private sector enterprises in the Middle East, like those in many other emerging countries, are obliged to compete on a range of characteristics, including price, quality, value-added activities, low-cost manufacturing and ease of manufacturing, reduced lead times, and on-time delivery. Producing high-quality products and services at a competitive price in the global market is a difficult task for any firm, but it is more difficult in emerging nations like the United Arab Emirates. To compete in the global market, private sector firms must have a mix of modern systems and business operations, which have historically been lacking in the majority of Arab private sector corporations (Al-Sabri et al., 2018). According to Al-Zoubi and Al-Haija(2018), the above-mentioned developments, together with other factors, provide new hurdles for private sector enterprises in the United Arab Emirates. Firms in underdeveloped countries are disproportionately harmed by these modifications. Most people agree that these changes in the environment of private sector enterprises should be matched by substantial changes in the way private sector corporations conduct their operations. It is necessary to develop new systems in order to be able to deal with the changing private sector company

environment, in order to assess, derive, and maintain high performance, as well as to obtain a competitive advantage (Luftman, Lyytinen, & ben Zvi, 2017). The ERP system is widely regarded as one of the most effective systems that may assist private sector organizations in the Middle East in competing in the global market by enhancing their company performance.

ERP systems give significant advantages to businesses. Companies in the Middle East recognize that there is a pressing need to better understand ERP adoption and implementation difficulties, given that the usage of ERP systems in these countries is still in its infancy. Furthermore, the usage of cloud ERP is quite restricted, and there hasn't been much empirical research done in this area. The goal of this research is to evaluate the variables that affect the selection and adoption of cloud-based enterprise resource planning systems in private sector enterprises in the United Arab Emirates. The technical and cultural constraints that prevent the effective adoption and deployment of cloud-based ERP in private sector enterprises in the United Arab Emirates were identified via an empirical research and thorough statistical analysis, which was conducted. Based on the variables highlighted in the investigation, a cloud-based private sector ERP model (CBMERP) was designed, with a particular emphasis on flexibility, scalability, quicker deployment, access to modern technologies, and greater simplicity of use being the primary objectives. It was discovered via this study that there is a major gap in the current body of information about the characteristics that contribute to the effectiveness of an ERP system in private sector enterprises in the United Arab Emirates. Because of our research, we were able to close this gap by developing a conceptual framework for the parameters that influence the success of a cloud-based private sector ERP model that is suitable for UAE enterprises.

Companies who embrace Cloud ERP systems will have a greater degree of Relative advantage than companies that do not adopt Cloud ERP systems. In the UAE's private sector, small and medium-sized enterprises (SMEs) have a low adoption rate of cloud-based ERP (Al-Zoubi & Al-Haija, 2018). There has not been much empirical research done in this subject to identify the hurdles to cloud ERP installation in Middle Eastern enterprises, therefore it is hard to say what they are. The goal of this research was to evaluate the variables that affect the selection and adoption of cloud-based enterprise resource planning systems in private sector enterprises in the United Arab Emirates.

The findings of this study's background investigation will be consistent with the findings of previous empirical studies, and the factors examined in this study will be exploring the technological, organizational, and environmental factors affecting the adoption of cloud-based ERP in the private sector companies in the United Arab Emirates.

Companies now depend significantly on information for every element of management. To survive and even grow in today's competitive market, companies must adapt to constantly changing and growing situations. Adaptation choices made by organizations are crucial. To make proper judgments, companies must understand their own system dynamics, existing market position, and the ever-changing dynamics that influence and affect the globe, nation, sector, and organization. It is vital that decision-makers be supported by information systems, notably ERP systems, and have access to accurate data. They must also be able to forecast the effects of their actions on the supply chain (Espinoza, Brooks, & Araujo, 2018). Different firms in various industries have increased their use of ERP systems in recent years. The benefits of ERP systems, including operational, managerial, organizational, strategic, and IT infrastructure benefits, are driving growing adoption (Srivastava & Nanath, 2017).The above advantages increase productivity and customer service while decreasing IT costs. **"**Organizations that subscribe for Cloud ERP services have the benefit of not spending the hefty amount of money that may be associated with acquisitions of the software, servers, and other hardware

equipment that may be required if they purchased and installed the traditional ERP software within company premises. In addition, organizations may be attracted to the characteristics of Cloud computing, which include (Al-Sabri et al., 2018). This includes a) on demand service where consumers can configure computing resources to suit their current needs and universal accessibility since organizations can access computing resources through the internet using different platforms such as laptops, tablets, and mobile phones. This also enhance resource pooling where computing resources are brought together and shared among different consumers; and rapid elasticity where computing resources can be increased and decreased based on the consumer needs. It measured service where use of resources can be metered in order to provide transparency on consumer usage and billings based on results of recent literature analysis, however, there are not many Cloud ERP adoption studies (Al-Sabri et al., 2018)."

"Therefore, this study is important for several reasons. First, it contributes to existing literature by exploring the factors that may differentiate organizations that adopt Cloud ERP systems and organizations that do not adopt Cloud ERP systems. Second, understanding these factors may help Cloud ERP systems vendors understand important factors that may enhance demand for their products. Organizations may also gain a better understanding of how such organizational characteristic as structure may enable or inhibit their ability to adopt innovations."

The researchers further proposes the validation of these factors using multi-criteria decision-making (MCDM) where the factors should be evaluated using the analytical hierarchal process (AHP) and "Fuzzy Analytic Hierarchy Process (FAHP) which is used to determine weightings for the evaluation criteria among decision makers. These MCDM based methodologies are widely employed for solving many engineering and non-engineering-based problems. AHP is a MCDM methodology that is simple and uses Saaty's scale of 1-9 points with an intermediate selection of 2,4,6,8 points for pairwise comparison. FAHP uses extension principles, fuzzy set theory and fuzzy numbers hence providing more range in a pairwise comparison. Thus, FAHP helps in providing more accuracy in the decision-making". The researchers recommends to test the model using above methods as this will really help decision makers in organizations in UAE to adopt cloud ERP systems.

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