''A MODEL FOR THE IMPLEMENTATION OF CLOUD ENTERPRISE RESOURCE PLANNING SYSTEM IN KINGDOM OF SAUDI ARABIA UNIVERSITIES''

Abstract

In light of the developments and changes that the world is witnessing in various fields, and due to the modern management methods, that companies use, information technology (IT) has become an essential part in the companies that rely on their work. Cloud Enterprise Resource Planning (ERP) systems are one of the most prominent technologies that companies use to achieve excellence and compete with each other, which enables them to outperform their competitors and achieve a competitive advantage. Despite the importance and effectiveness of cloud ERP systems, there are many challenges and obstacles for users of cloud ERP systems that limit their implementation in many fields; the educational field in universities is considered one of the most prominent of these fields. In light of this, the study aims to address these obstacles and challenges by developing a proposed model for implementing cloud ERP systems in universities of the Kingdom of Saudi Arabia. This will be done through the use of a quantitative method, a questionnaire tool based on the five-point Likert scale will be employed, which includes a number of axes related to the subject of the study. The questionnaire will be distributed to employees and administrators (unit of analysis) working in three Saudi universities that have a great influence on the process of developing cloud ERP systems in the universities of the Kingdom of Saudi Arabia. The expected outcome of this study is to address the challenges faced by users of cloud ERP systems in universities. In addition to discussing many factors that affect the implementation or failure of the implementation of cloud ERP in Saudi universities. In addition, provide a proposed model for effectively implementing a cloud ERP system in universities in the Kingdom of Saudi Arabia.

Key words: ERP systems, Cloud Computing, Saudi Arabia, Cloud ERP, University.

الملخص

في ظل التطورات والتغيرات التي يشهدها العالم في مختلف المجالات، وبسبب الأساليب الإدارية الحديثة التي تستخدمها الشركات، (ERP) جزءًا أساسيًا في الشركات التي تعتمد على عملها. تعد أنظمة تخطيط موارد المؤسسات السحابية (IT) أصبحت تقنية المعلومات من أبرز التقنيات التي تستخدمها الشركات لتحقيق التميز والتنافس فيما بينها، مما يمكّنها من التفوق على منافسيها وتحقيق ميزة تنافسية. السحابية التي ERP السحابية، إلا أن هناك العديد من التحديات والعقبات لمستخدمي أنظمة ERP على الرغم من أهمية وفعالية أنظمة تحد من تنفيذها في العديد من المجالات؛ ويعتبر المجال التعليمي في الجامعات من أبرز هذه المجالات. في ضوء ذلك، تهدف الدراسة إلى معالجة هذه العقبات والتحديات من خلال تطوير نموذج مقترح لتطبيق أنظمة تخطيط موارد المؤسسات السحابية في جامعات المملكة العربية السعودية. سيتم ذلك من خلال استخدام طريقة كمية، سيتم استخدام أداة استبيان تعتمد على مقياس ليكرت المكون من خمس نقاط، والذي يتضمن عددًا من المحاور المتعلقة بموضوع الدراسة. سيتم توزيع الاستبيان على الموظفين والإداريين (وحدة التحليل) العاملين في ثلاث جامعات سعودية لها تأثير كبير على عملية تطوير أنظمة تخطيط موارد المؤسسات السحابية في جامعات المملكة العربية السعودية. تتمثل النتيجة المتوقعة من هذه الدراسة في معالجة التحديات التي يواجها مستخدمو أنظمة تخطيط موارد المؤسسات السحابية في في الجامعات السعودية. Cloud ERP الجامعات. بالإضافة إلى مناقشة العديد من العوامل التي تؤثر على تنفيذ أو فشل تطبيق بالإضافة إلى ذلك، قدم نموذجًا مقترحًا للتنفيذ الفعال لنظام تخطيط موارد المؤسسات السحابية في جامعات المملكة العربية السعودية.

الكلمات المفتاحية: أنظمة تخطيط موارد المؤسسات ERP، الحوسبة السحابية، المملكة العربية السعودية، Cloud ERP، الجامعة.

1. 1. Introduction 4

Due to modern information management and storage technologies employed by corporations and organisations, information technology has become an integral aspect of their operation. Companies compete with each other using technology and communication to outwit their opponents. Companies must now develop systems that can effortlessly share and exchange information in the age of information technology. Using business applications can help solve this problem (Cascio & Montealegre, 2016). Government and non-profit organisations use ERP programs in a variety of ways (Seethamraju, 2015).

According to Singh & Nagpal (2014), ERP is one of the most widely used technologies by businesses in various areas. Whatever the task (charitable, commercial), it is a group of systems that operate together to automate the company or institution's activities. Accounting, procurement, project management, risk and compliance management, and supply chain operations are all mentioned by Awad (2014). The ERP system also includes enterprise performance management, a tool for tracking financial results.

Vadivelu et al., (2018) have emphasized that ERP is an important technology in coordinating resources, information and processes to complement the major business programs and business operation utilized in various large, medium and small enterprises. Its importance in the organization conducted to better request for ERP systems. Based on the cloud ERP system, investments can grow faster, as exploiting the services provided by the cloud contributes to getting tasks done quickly.

Kiadehi & Mohammadi (2012) noted that ERP is used a long time ago. Many efforts have been made to improve these systems. By providing cloud computing systems, a wide range of online services can be implemented, which has a deep impact on the application of IT and Internet. Numerous researches concentrate on either ERP or Cloud Computing, however the minority of them paid enough interest about the achievement of ERP on Cloud Computing technology.

Venkatraman & Fahd (2016) argue that in light of new technological paradigms, such as cloud computing, cost constraints and other success factors must be reconsidered. Nguyen et al., (2014) noted that there have been many in-depth investigations into cloud ERP. In the past few years, there has been some research on cloud ERP, but not many studies have been carried out regarding its applications in higher education.

Mohammed & Burhanuddin (2018) emphasized that the ERP cloud is a new technology that is starting to grow significantly today. They are techniques that can be effectively monitored and supervised through inside, outsider, or remotely. In people group cloud, organization is shared among many associations of common interest, such as, security, approach, mission, and consistence. These mists are overseen and facilitated inside or remotely through an outsider. Half cloud is a combination of at least two cloud organizations that remain one of type materials, but are limited jointly to give preferences of various cloud configurations.

Despite the relevance of cloud-based ERP systems, Mohammed & Burhanuddin (2018) noticed a dearth of research linked to their development and upgrading. From the user's perspective, traditional internal ERP technology is updated on demand, whereas cloud-based ERPs are updated automatically. Also, major issue with ERP technology is the location of data servers. In terms of technology, server location, and host-server connections, the service is straightforward for business and necessary cloud computing. However, because data is more crucial to the business, they choose to host these technologies on servers located within their own geographical sites.

Moh'd Anwer (2018) studied cloud ERP and investigated competitive pressure, top management support, enterprise readiness, enterprise size, technology readiness, and technical barriers as factors that significantly influence cloud ERP implementation. AlBar & Hoque (2017) also studied the possibility of implementing cloud ERP and found that ICT skills, ICT infrastructure, senior management support, regulatory environment, and competitive environment influence cloud ERP.

The magnitude and history of updates, the loss of information and communication along the method, and the lack of some capabilities are cited as important issues by Bjelland & Haddara (2018). However, according to Bjelland & Haddara (2018); Vadivelu et al. (2018), the main benefits are that users do not have to spend time updating the system and focusing on the ERP technology, allowing them to focus on their core competencies.

Cloud ERP systems indicated a shift in information technology. They must provide scalability, adaptability, availability, and changeable data. This system has rapidly expanded globally. Nevertheless, cloud ERP

implementation in poor nations like Saudi Arabia is still in its infancy (AlBar & Hoque, 2017). Cloud ERP use is also new in growing Middle Eastern countries like Saudi Arabia. The Saudi Arabian Ministry of the Interior said in October 2014 that it would give cloud ERP services to local corporate and public companies, but no information was available on their website. There are several private cloud ERP vendors in Saudi Arabia, but little information about their current offerings (Ahn & Ahn, 2020).

The introduction of ERP in universities can cause concern because it includes not only a new information system, but a radical shift in organisational culture. ERP software can be inadequate for corporate needs due to poor ERP selection and evaluation processes. Ineffective project management, excessive allocation, and high attrition rate are some of the key causes for the gap between current ERP solutions and needs (reasons for failure) at universities. Lack of suitable IT infrastructure, low testing quality, inadequate senior management support, and irrelevant ERP requirements from senior management.

Due to the development of the coronavirus disease in early 2020 (COVID-19), the viability of educational institutions and universities has become a critical business management issue. Cloud-based ERP is becoming more important, as is sustainability. Companies that use cloud-based ERP are substantially more stable in the event of a COVID-19 pandemic. Thus, the interest in establishing or adopting cloud-based ERP has increased. Thus, the current study will address the issue of using Cloud ERP systems in Saudi universities.

1.2. Problem of the Study   5

ERP cloud implementation main issues is unsuccessful implementation (Failure) and problems during the implementation period such as technical, organizational and environmental reasons include skills, vendor, strategy management.

There have been several studies on ERP in cloud computing recently, but there has not been much study on its applicability in education. Apart from that, implementing standard ERP systems can be difficult, expensive, and time-consuming. Cloud-based ERP systems, on the other hand, have lesser cost implications than traditional ERP. Conducting a study on cloud-based ERP for modern education is a vital and advantageous task in the current situation (Nguyen et al., 2014).

As the COVID-19 pandemic has brought about a major transformation in institutions from all over the world, even educational institutions have had to run their activities from home. This can only be done by implementing a cloud-based education management system. Most of the educational institutions in different countries of the world including Saudi Arabia are now relying on ERP cloud for education. Usually, any software application comes with a set of opportunities and challenges and this applies to ERP cloud systems in educational institutions.

There can be some concerns for the application of computer ERP in universities as it involves not only the implementation of a new information system but a radical change in the organizational culture. In addition to a poor selection and evaluation process for cloud ERPs, ERP systems can be found to be inappropriate for business requirements. This emphasizes the need to study the challenges faced by developers and users of cloud ERP systems in universities.

This research study was inspired by the lack of scientific research on implementing ERP systems in higher education institutions in the Kingdom of Saudi Arabia. None of the previous studies focused on the successful implementation and success of ERP systems in Saudi Arabia's universities. Therefore, the researcher decided to implement this study to build a proposed model for the implementation of the cloud ERP system in the universities of the Kingdom of Saudi Arabia.

1.3.   6

Hypotheses of the Study

Most SMEs are concerned about a lack of ICT knowledge and information (Ahn & Ahn, 2020). The rapid rise of ICT has created both commercial opportunities and problems. Adopting and implementing new technologies requires more ICT expertise and understanding. So, the researcher proposes this hypothesis:

H1: Technological context is positively related to the implementation cloud ERP in Saudi universities.

H2: The Organizational context is positively related to the implementation cloud ERP in Saudi universities.

H3: The Environmental context is positively related to the implementation cloud ERP in Saudi universities.

H4: The Competitive advantage has a direct positive impact on the implementation cloud ERP in Saudi universities.

H5: Consensus has a direct positive impact on the implementation cloud ERP in Saudi universities.

H6: Complexity has a direct negative impact on the implementation cloud ERP in Saudi universities.

H7: Trialability has a direct positive impact on implementation cloud ERP in Saudi universities.

H8: Observability has a direct positive impact on the implementation cloud ERP in Saudi universities.

1.4. Objectives of the study   7

The research seeks to develop a model for implementing Cloud ERP system in universities of the Kingdom of Saudi Arabia. In addition, the specific objectives of the study are as follows:

i. To determine the factors affecting the implementation cloud ERP systems in universities.

ii. To develop a model for implementing cloud ERP systems in universities in the Kingdom of Saudi Arabia.

iii. To evaluate the Model.

1.5. Significance of the Study   8

An enterprise can use the ERP system without having to buy and maintain the full IT infrastructure, which is the topic of the present research (Vadivelu et al., 2018). Cloud ERP systems support and coordinate essential business, academic, and financial functions for KSA universities (Sørheller et al., 2018). It is especially crucial in universities and large educational institutions since it connects all departments in a common system and allows fast and accurate information access. Aside from preventing data duplication or partial loss.

Cloud ERP applications will also be utilized faster as hardware and software installation on servers or user devices is not required, Also the ability to adjust the amount of cloud services due to the fluctuation of the university computing or storage needs, Confidence that the data has been backed up and there is a disaster recovery plan, avoid attacks on the university server because the data is not stored locally but in the cloud.

It also provides an integrated theoretical framework covering all parts of the study and develops an ERP Cloud system that fulfils the basic criteria and specifications KSA colleges need. Besides providing a scientific contribution to help programmers and researchers prepare future investigations. From a scientific perspective, this study is significant since it provides a global and Arabic library, specifically Saudi Arabia, with a vital reference linked to cloud ERP systems, which academics and scholars may use to prepare future studies and research.

1.6. Definition of Terms   9

1.6.1. Enterprise Resource Planning (ERP): The term "Enterprise Resource Planning" refers to a technique or tool that can be used to control the internal and external resources of a company, based on the English term. In the literature, there are various unique meanings of ERP as well. It has been described as a package, a software application or a computer-based system or implementation (Jing & Qiu, 2007; Xu et al., 2010). For instance, Ancveire (2018) and Saini et al. (2013) defined ERP systems as software packages designed to enable businesses to effectively and efficiently monitor and manage their resources; while Beheshti et al., (2014) and Panayiotou et al., (2015) defined ERP as a software application that allows businesses to manage their activities.

1.6.2. Cloud computing: "Cloud computing is a model for allowing omnipresent, easy, on-demand network access to a common pool of configurable computing resources (for example, networks, servers, storage, software, and services) that can be easily provisioned and released with minimal management effort or interaction between service providers" (Mell & Grance, 2011).

1.6.3. A Cloud ERP system: A cloud ERP system is "an ERP system which is hosted on the Cloud and provided as a service to the end-customers. The term Cloud ERP assumes that there is an ERP service provider who takes care of the hosting of its customer's ERP system".

2. Theoretical Framework   10

2.1. Cloud Computing   11

Cloud computing has advanced significantly in recent years. As more businesses use cloud services, integrating data is necessary to protect numerous users' data. Monitoring, controlling, and managing user data are some of the major issues that cloud services confront (Kumar & Ragi, 2011; Monika & Kalpana, 2016). Cloud computing is currently a popular way for large individuals or corporations to use many web services at low cost. Personal data is often stored in a public cloud environment. This is incompatible with cloud providers' trustworthy services like confidentiality, integrity, accessibility, and authorization (Suthar, 2017).

Cloud computing is a common term for everything which involves the deployment over the networks of hosting services. In particular these services are classified into three major definitions: "Infrastructure as a Service (IaaS), Platforms as a Service (PaaS), and Software as a Service (SaaS)". Cloud computing was identified after the cloud symbol, which is often used in Diagrams and Flow charts to represent the Network (Wang et al., 2017). The next generation model of technology is called a cloud computing. In the cloud computing environment, all information and resources are provided as on-demand services over the Network.

Cloud is a network infrastructure hardware and software infrastructure system that provides different services over the network or the Internet to meet users' requirements (Leavitt, 2009; Sun et al., 2014; Harkut, 2018).

2.2. Enterprise Resource Planning (ERP) System   12

2.2.1. Definition of ERP System   .12

Concerning the definition of an ERP, it is crucial to note that the terminology is not uniform and that the literature has varying definitions. The term "Enterprise Resource Planning" refers to a method or system for managing a company's internal and external resources. ERP has multiple meanings in the literature. It is a set, a computer programme, or a framework (Jing & Qiu, 2007; Xia et al., 2010). ERP systems were defined as software packages by Ancveire (2018) and Saini et al., (2013), while Beheshti et al. (2014) and Panayiotou et al., (2015) defined ERP as a software framework that allows organisations to control their actions.

Jalal (2011) defines ERP systems as business management software that collects, stores, processes, and interprets data from various business projects. Businesses have widely adopted these networks. Most ERP systems are commercial software packages that serve most business operations (Davenport, 2000; Markus et al., 2000; Saadé et al., 2017). The comprehensive software solution used to integrate an organization's processes through data flow and shared knowledge. To meet the major organisational information functional need, Watson and Schneider (1999) focused on how the ERP system configures and integrates software systems (Madanhire & Mbohwa, 2016).

With regard to Higher Education Institutions (HEIs), Rico (2004) described an ERP system for HEIs as "a solution for information technology that incorporates and automates recruiting, admissions, financial support, student records, and most academic and administrative services". In HEIs, Robert Jacobs et al., (2007) defined ERP systems as multiple in scope, monitoring a variety of activities including human resources systems, information systems for students, and financial systems.

ERP systems are commonly used to optimize manufacturing, marketing, distribution, inventory, human resources, and quality management. They assist introduce responsibility to all aspects of an organization's operations (Bradford, 2011). To build a faultless, streamlined knowledge path across the complete organisational operations, both internally and externally, ERP software systems are designed to do just that (Gürbüz et al., 2012).

2.2.2. Cloud ERP Lifecycle   .12

The ERP process is one of the most common systems adopted by organizations (Awad, 2014), Staehr describes ERP as "Optimized software packages with a standard database that help business operations in organizations" (Staehr, 2010; Awad, 2014). The Cloud ERP lifecycle structure (as shown in Figure 1) is composed of six steps reflecting the life stages of an ERP program within institutions (Bjelland & Haddara, 2018). It also describes four aspects, which are seen as perspectives that can be used to evaluate these steps. The steps are adoption decision, acquisition, implementation, use and maintenance, evolution and retirement. The aspects, also seen as significant topics within the evolution step are: change management, people, process and product. The process of evolution is to incorporate and integrate more capacities and features into the new ERP frameworks (Bjelland & Haddara, 2018). The problem with the stage of evolution is that this process appears to be taken for granted. Albadri & Abdallah (2009) State that the issues frequently faced by users during the evolution process are identified as significant but not properly addressed in an analysis. This step was obviously not a focal point in earlier studies on ERP systems in particular (Kotb et al., 2011), and in the cloud context in detailed (Ha & Ahn, 2014).
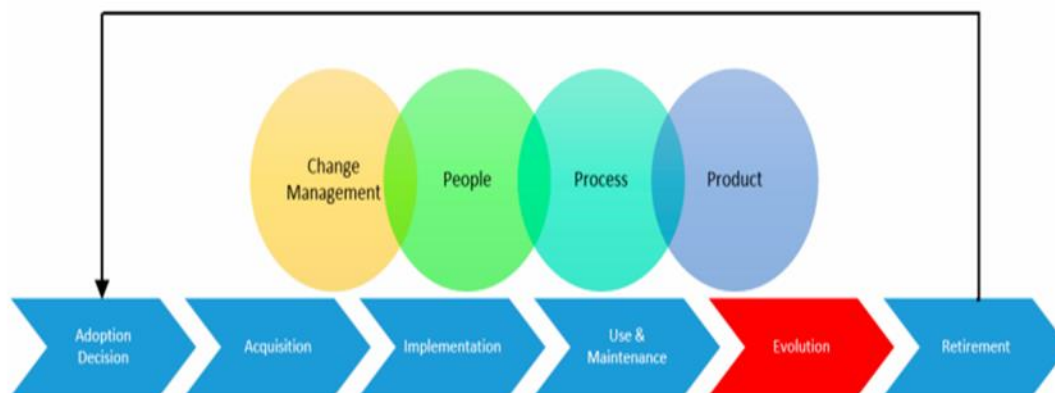

Figure 1: The ERP Lifecycle Framework

2. 3. Cloud Computing Model and Variables   13

Cloud computing is a computing technique that uses a network of computers to generate computing services. Platforms like Amazon, Apple, Google, and Salesforce are common. Cloud computing is not just a type of IT, but it is also more diverse than previous data processing management bodies (Singh & Nagpal, 2014).

Rath et al. (2019) studied security developments in Cloud SaaS, including network, data, and privacy. Aim: Develop the strongest security policies and records that SaaS developers can utilize to establish Cloud SaaS projects. The researchers also discussed AWS and Azure security patterns and solutions (Rath et al., 2019). Sun et al. (2014) addressed many security strategies, issues, and aims for improving data security and privacy for a respected cloud system. Also, a comparative analysis of cloud technology data security and privacy techniques (Sun et al., 2014).

Many cloud services and implementation systems were addressed, according to Sen (2013). Cloud computing has three major issues: structure, security, and privacy. Aside from a quick summary of various cloud computing implementation routes, several solutions were presented to overcome these issues (Sen, 2013).

Kumar et al., (2011) Security problems and technological solutions in a wide variety of cloud computing systems are a very difficult challenge to identify. In the process of evaluating statistical methodology (SLR and survey) researchers found a wide number of problems and prevention approaches in use at the moment as well as in potential cloud services (Kumar et al., 2011).

Based on the accessibility in the Cloud Computing environment for users, this technology is classified into Public Cloud, Private Cloud, and Hybrid Cloud. Based on a service that the cloud is offering, this technology is classified into IaaS (Infrastructure-as-a-Service), PaaS (Platform-as-a-Service), SaaS (Software-as-a-Service). Figure 2 shows the cloud computing model.
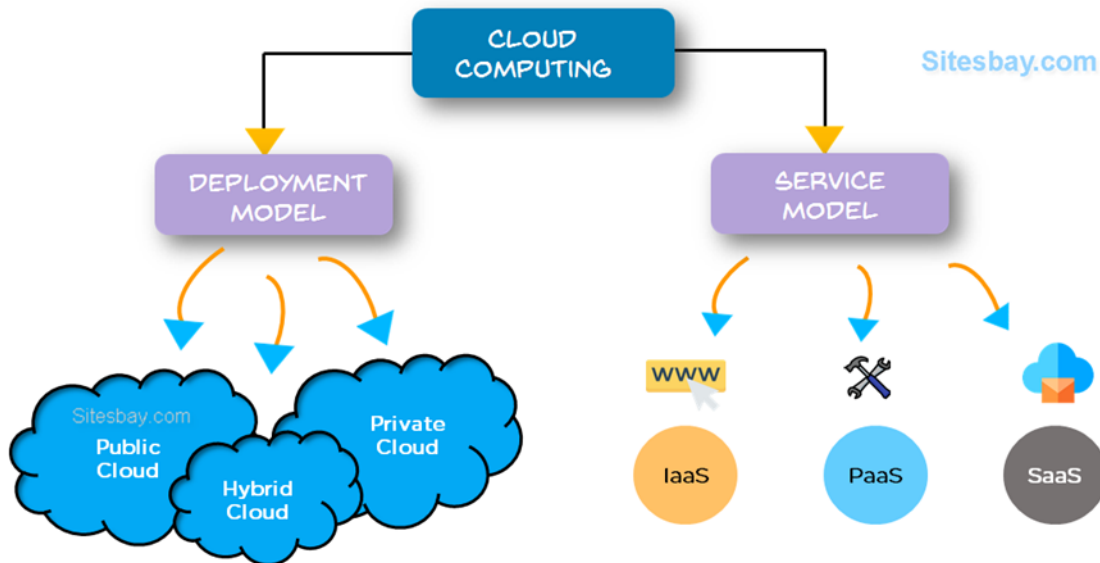

Figure 2: Cloud Computing Model

- ❖ Public Cloud: is a service that requires the use of hardware, computing power and memory shares among various users and virtual machines to run and execute these services (Khan et al.,2016).
- ❖ Private Cloud: Hosting the whole computer network directly and not being shared. The level of security and control is the highest during the use of a private network (Khan et al.,2016).
- ❖ Hybrid Cloud: Usage of private as well as public clouds, based on their intent. They are running several most important applications on own servers to hold it in a more stable and secondary location (Khan et al.,2016).
- ❖ Community Cloud: A community cloud is exchanged among communities that have a common purpose or fit into a particular community (professional community, geographic community) (Khan et al.,2016).

Figure 3 shows four types of cloud computing models listed by (Qaisar & Khawaja, 2012): private cloud, public cloud, hybrid cloud and community cloud.
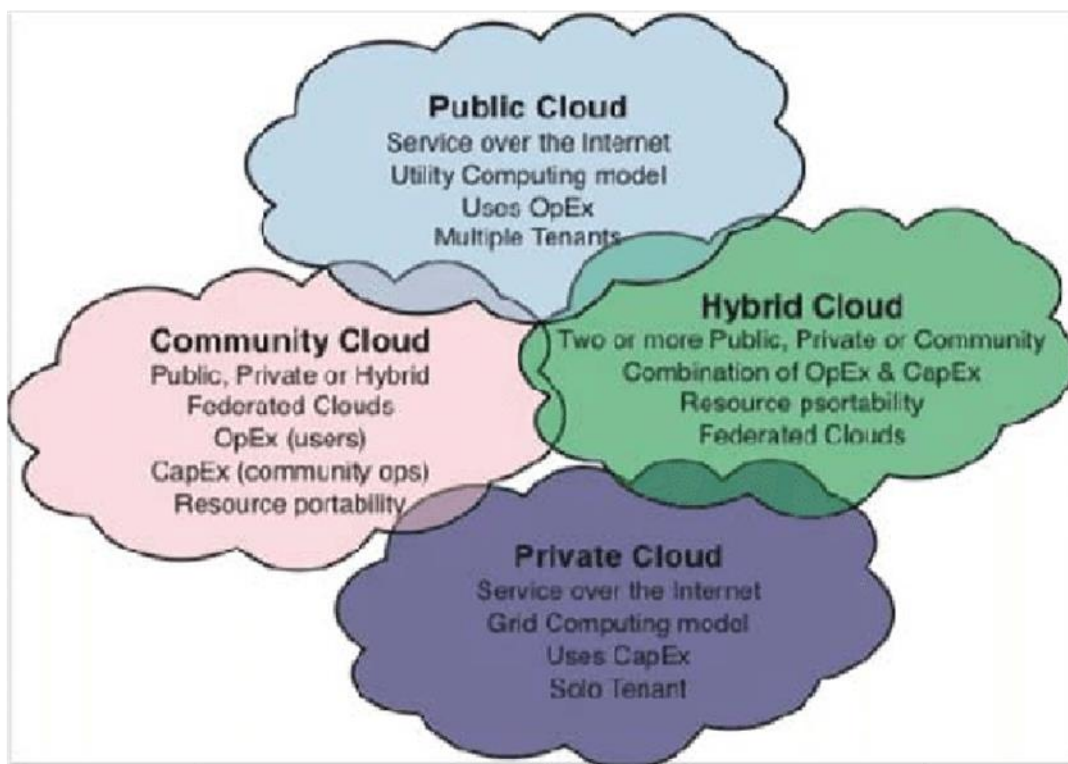

Figure 3: Development Model of the Cloud Computing

2.4. Main Features of Cloud Computing   14

With the advent of the web 0,2 and web 0,3 and the constant growth in internet speeds available to users, many institutions have inclined to make their applications available for use via the internet in what is now known as the computing cloud, making it possible. The technology allows users to save money and give information services to a bigger group of people without having to utilize a computer. On the Internet cloud, these processes are available while protecting data from hackers or viruses. The researcher will cover the key elements of cloud computing in this section. Figure 4 depicts a cloud computing feature.
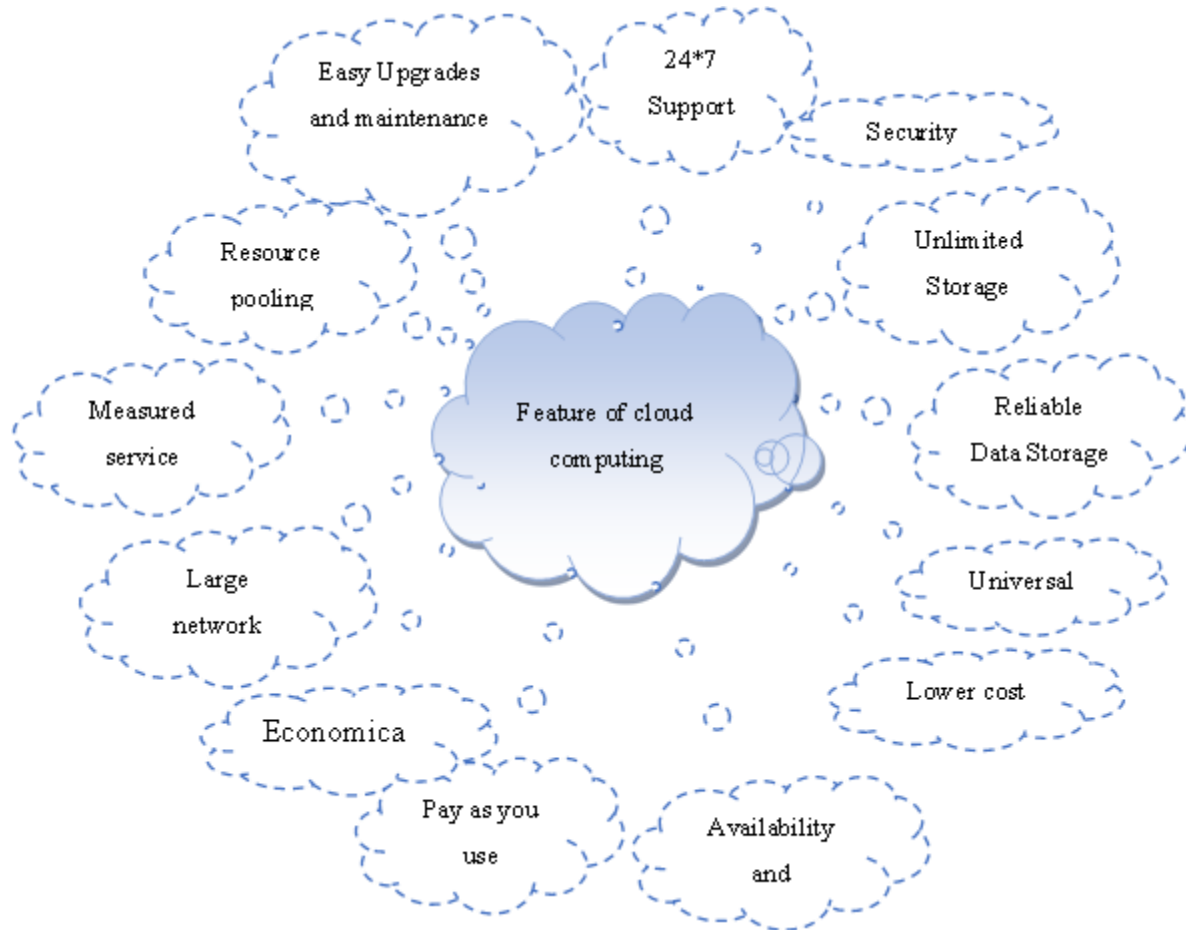
Figure 4: Feature of Cloud computing

2.4.1. Resources Pooling   .14

This means the cloud controller employed a multi-tenant architecture to serve multiple clients. Many physical and digital assets are assigned and reallocated based on the client's request. The client has little or no control over the placement of the delivered resources, but can determine the location abstractly.

2.4.2. On-Demand Self-Service   .14

It is one of the important and valuable advantages of Cloud Computing's, as the client can track the database uptime, functionality, and allocated storage server on a continual basis. With this feature, the consumer can also observer the computing competences.

2.4.3.   .14
Easy Maintenance

The systems are easy to manage and the maintenance is very small, and there is no maintenance except in some situations. Cloud computing also comes up with an upgrade, getting things increasingly improved. The updates are more computer-friendly and run better than earlier ones, along with the bugs that are patched.

2.4.4. Large Network Access .14

The user may access cloud data or upload data from anywhere to the cloud just using a PC as well as network communication. These features are available throughout the internet and obtained using the network.

2.4.5. Availability .14

The Cloud features could be updated according to utilization and may be expanded considerably. This evaluates data use and allows customers to purchase additional Cloud services for a very small number if necessary.

2.4.6. .14
Economical

Cloud computing examines the required data continuously and facilitates a metering feature at some service level. We're able to control, monitor and record the use. It will offer both the hosting and indeed the client clarity. Only the amount spent is on general maintenance, plus a few additional costs.

2.4.7. .14
Security

Data Protection, is one of cloud computing's main characteristic. This provides a summary of the data stored, because even if one of the systems gets destroyed the data may not get destroyed. The information is collected inside the storage systems which nobody else can hack and use. The warehousing provider is fast and efficient.

2.4.8. Pay as you go .14

Through cloud computing, the customer only has to pay for the service as well as the area they used. There is no secret or extra fee payable. The service is cheap, and maybe some area is reserved for free many of the period.

2.4.9. .14
Measured Service

Cloud computing services are calculated and production businesses pay for what they utilize. Pay-per-use allows for configuring resource utilisation. This ensures that the cloud platform provider tracks, calculates, and records the use of cloud assets, whether they are used or stored in the cloud. The price is changeable depending on the producing organization's actual consumption.

2.5. Cloud ERP Systems 15

According to Singh & Nagpal (2014) cloud computing ERP implementation problems have been studied and analyzed. Since a lot of research focuses on a topic and a few have been taken as a study. The researchers discussed the implementation of enterprise ERP in the cloud computing. It has been found that applying ERP in the cloud computing has contributed to solving several problems in various businesses, as both ERP and Cloud Computing have numerous benefits and very few weaknesses.

Cloud-based ERP may be organised quickly, according to Mohammed & Burhanuddin (2018). These are alternatives to local ERP systems. ERP Cloud (SaaS ERP) According to current studies, many large organisations are using cloud ERP. They've discovered the advantages of cloud computing. This research looked into the costs, problems, and disadvantages of ERP cloud systems.

2.6. 16

Challenges of Cloud ERP

According to Awad (2014), despite the fact that cloud computing has proven effective in numerous sectors and applications, and despite the fact that many significant institutions use it in many fields. The technology isn't universally accepted. This is due to concerns regarding ERP cloud computing obstacles and issues. The most significant ERP cloud computing difficulties are discussed below.

2.6.1. .16

Compatibility Challenges

Flexible operation does not indicate that all client expectations are compatible; clients have various skills, procedures and scope. Providers require the client to change their expertise, procedures and technologies to be compliant with the cloud computing.

2.6.2. Disruptive Technology .16

Cloud computing is still regarded as an emerging technology that requires to standardize assessment for successful implementation, and consumers search for cloud acceptance and analysis from institutions with knowledge with it. Many institutions that implement cloud ERP are small and medium-sized enterprises and this will not promote large companies to accept the risk.

2.6.3. Implementation Challenges .16

Cloud services should be flexible; because the clients generally adjustment their necessities; as number of licenses (number of users), limitations, and volume of data changes etc., Therefore cloud ERP providers need to extend their offerings as required by clients. Another challenge for application is the techniques a client uses to obtain cloud storage service on the vendor portal; clients may use techniques like PCs, TAPs, and smart phones with different devices (Grigg, 2012).

2.6.4. .16

Service Level Agreement (SLA)

The service level, scope, and limits are controlled by a contract or SLA among cloud ERP providers and clients. Clients must be concerned about both the terms of the contract and what might actually occur if they need to change any service level such as the amount of license's, bandwidth and so on (Mijač et al.,2013).

2.6.5. Legacy System .16

Any firm or organisation that runs for a period of time has its own technology or programme, and its own servers. If the user wants to switch systems or technologies, he must prioritize his historical data; moving data from one system to another will be difficult as internal systems evolve. Transforming data from traditional databases to cloud storage would be difficult. Unique database, report design and data framework issues.

2.6.6. .16

Cost Challenges

Most previous studies supported cloud storage through the benefits of cost reduction. This advantage is useful for companies that don't have their own processes, or their systems are outdated, but companies that have software and

infrastructures should equate their software configuration costs with the estimated cloud ERP software subscription costs (Mijač et al., 2013).

2.6.7. Provider Power   .16

Once the deal is done, the provider will have ownership control along with the management and entry of your data; this will increase problems in the event of late payment of annual subscription or termination of subscription.

2.6.8.   .16
Trust

The Burton Group Analysis identifies trust as a major barrier to cloud ERP adoption. It requires a mix of consistent performance, verifiable outcomes, service assurances, transparency and contingency preparations to build confidence in a solution. The first is the sensitivity of the data that will be transferred to the company's cloud, and the second is cloud ERP that is not yet sufficiently distributed among well-known enterprises and may not be good practise.

2.6.9. Start-Up Support   .16

Company needs cloud ERP provider assistance to enable the transition to cloud systems, and consumers require learning and process improvement help (Purohi et al., 2012).

2.6.10. Security and Privacy   .16

This challenge presents as a major challenge facing cloud today, which is the greater problem that will not enable companies with private data to openly implement cloud services. The factors behind this can be explained as: the data for the cloud ERP service provider exposed by the institution; and the risk of being confronted with hackers if they maintain to breach the protection of the servers of the company (Kiadehi & Mohammadi, 2012).

2.7. Benefits of Cloud ERP Solutions   17

For small businesses, transitioning to the cloud ERP has several advantages. Peng & Gala (2014) suggest that employing cloud-based ERP saves money, increases efficiency, centralizes network changes, and increases flexibility. Because this study focuses on HEIs, advantages must be shown. In addition to real-time data access, the cloud-based ERP solution allows for service expansion and upgrades. Smaller businesses can afford ERP software by using SaaS (Seethamraju, 2015).

The purpose of ERP integration at HEIs is to integrate various administrative systems formerly helped by legacy systems (such as financial systems, student administration systems, and human resource management systems). Legacy structures, according to Allen & Kern (2001), "add to resource and facility duplication." To overcome this, HEIs have introduced ERP systems. Changing from legacy systems to ERP can help HEIs save money, increase efficiency, improve student learning, improve faculty services, and improve data access (Ahmad et al., 2011).

Judith (2005) studied the impact of ERP systems on university performance processes. His research examined the effects of variables such as community, leadership, performance outcomes, and ERP impact in determining whether ERPs improve performance processes. The study concluded that ERP improves university business efficiency through improving services to staff, faculty, and students.

ERP solutions help HEIs by meeting their needs. The main goal is to integrate all institutional procedures, including employee and student access to papers. ERP systems serve academic and administrative programs such as financial, human resource, and people management (Ahmad et al., 2011). The ERP framework helps improve overall institution services, governance and management, competitiveness, and operational performance. A system's capacity to adapt to multivendor and multi-engine design, communicate with current systems and monitor and

gather data properly in legacy systems, spreadsheets, or a contemporary ERP system makes this possible (Kvavik et al., 2002).

Using an ERP system at HEIs helps decision-making by understanding decision analysis, data warehousing, and providing tangible benefits. Murphy (2004) argues that the ERP platform not only promotes bad business practises for HEI administrators (such better management and governance), but also for students and graduates. In a HEI, the ERP system manages both interactive learning and educational services. These ERP programs enable an organisation handle internal and external sources to provide a dependable and seamless flow of information between business functions (Murphy, 2004). Students will log in to explore the system, track academic achievement, communicate with others, and use distance education tools (Ghuman & Chaudhary, 2012). Also, ERP systems help higher education societies gain new degrees of skill and knowledge in numerous fields (Murphy, 2004).

2.8. The Challenges of cloud ERP Systems   18

Although the cloud ERP implementation challenges differ according to a variety of variables, the key cloud ERP problems faced are the same across diverse regions and market sizes. Here are some of the challenges that organizations may face before, during, and after starting to implement cloud ERP (Sørheller et al., 2018):

2.8.1. Pre-Implementation   .18

Pre-implementation problems include selecting the optimal cloud ERP system (e.g., kind, size, and scope). Troubleshooting (e.g., hardware problems, servers, software problem). Aside from the growing security dangers associated with cloud services.

Data sensitivity is another pre-implementation difficulty, as some companies consider their documents and details confidential. Users are frequently apprehensive about new technologies and their impact on their business. Cloud ERP vendors should pay special attention to explaining cloud ERP resources and services to consumers.

2.8.2. In Implementation   .18

Users and consumers require help from a cloud ERP resource to make the switch from traditional ERP to cloud ERP. Some performance risks exist. The cloud physically separates consumers and cloud computing service providers while connecting them over the Internet. Cloud ERP outputs may have network failures and other connectivity difficulties. Traditional ERP systems grow and become more stable over time. We need time to attain cloud ERP stability and maturity. Cloud ERP systems are geographically outside the organisation, and the control process is more stringent than traditional ERP systems.

2.8.3. Post Implementation   .18

Concerns about senior management involvement in cross-functional communication and security will be operational rather than technical. Companies that employ cloud services are also paid an annual subscription fee to access the software. Cloud ERP contracts might also involve hidden charges like migration, tracking, and cooperation. CPS offers ERP solutions with limited customization and integration options. These drawbacks do not exist in typical ERP systems. Service Level Agreements (SLAs) are a complicated cloud ERP method that must include alignment and customization.

2.9. The Challenges of ERP Systems in the HEIs   19

Some data suggests that HEI ERP system implementations fail more often than corporate ones (Blitzblau & Hanson, 2001; Botta-Genoulaz & Millet, 2006; Abugabah & Sanzogni, 2010). Bologa et al. (2009) studied the CSFs for ERP adoption in Romanian universities and businesses. They concluded that organisational needs differ from educational needs and that human and organisational aspects must be addressed. Because the use of the information system

varies greatly between for-profit and non-profit enterprises (such as HEIs). While HEIs are comparable to profit-making companies, they have unique administrative requirements (Pollock & Cornford, 2004).

Universities are distinct from traditional companies in that they employ technology solely for academic objectives, such as communicating and collaborating with academics and staff (Abbas, 2011). While traditional/industrial ERPs focus on specialized administrative activities (like operations, marketing, human resources, and finance), universities require unique and integrated structures (like course/module management, timetabling criteria, student administration, and virtual learning).

2.10.   20
Related Theories and Models

A variety of studies have been performed to determine the benefits and obstacles businesses face when implementing cloud ERP in their organizations (Mijac et al., 2013; Saeed et al., 2012). Several researchers have concentrated on the implementation of cloud ERPs in various regions such as Europe, the USA, Australia, and Asia. Others have concentrated on embracing cloud ERP in different sectors including banking, healthcare and industrial. Studies have also described a number of elements like relative advantages, culture, language, competitive climate, ICT infrastructure, policy, legal requirements and model of administration that impact cloud ERP adoption (Carutasu & Carutasu, 2016).

Naveed & Ahmad (2019) conduct a systematic literature review to assess the CSFs for cloud-based E-Learning. "Cloud service resilience, university technology sophistication, university organisational readiness, and web-based e-learning imperatives" were described as four components. According to Alotaibi (2014), "people's understanding, mindset, and intent to accept cloud computing" are critical. Concerns about data security and privacy were highlighted by Akin et al. (2014) in their study of cloud computing adoption in Nigerian public universities.

For example, Abdollahzadegan et al. (2013) highlighted the advantages and disadvantages of cloud ERP. Data security, cost, and manpower are cited as major obstacles by Bellamy (2013). Kinuthia (2014) cited cloud ERP adoption variables including as size, cost, CEO attitude, IT experience, flexibility, and staff competition. Organizational structure, top management support, and ERP deployment performance were studied by Law & Ngai (2007). A company's attitude toward technology, according to Bharadwaj & Lal (2012), influences the adoption of cloud computing and cloud ERP.

By integrating the Diffusion of Innovation Theory (DOI) and the Technology-Organization-Environment (TOE) paradigm, Al-bar & Hoque (2017) investigated the factors affecting cloud ERP adoption in the Kingdom of Saudi Arabia. The study showed that the adoption of cloud ERP was significantly influenced by a competitive climate, sophistication, ICT infrastructure, observability, relative advantage, regulatory environment, ICT expertise, and top management support ($p < 0.05$), while compatibility, organizational culture, and trialability had no significant effect ($p > 0.05$).
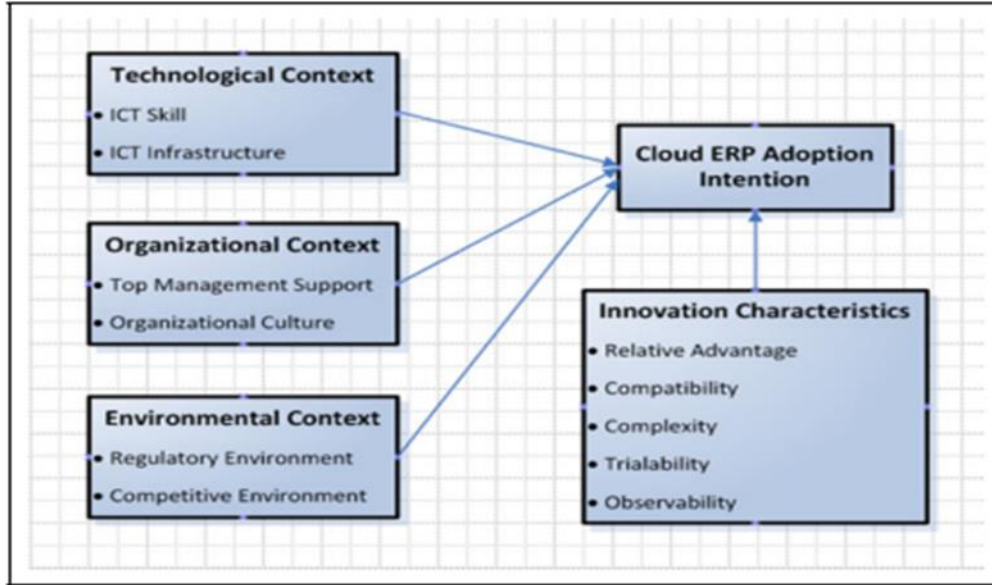
Figure 5: Al-bar & Hoque (2017) model

Ahn & Ahn (2020) evaluated in depth using information technologies, innovation diffusion, and the innovation resistance system model. The study found that while skills, sophistication, observability, data protection, and customization of communication and information technology did not have a significant impact on the intention to use cloud-based ERP. In the figure below, the researchers evaluate the impact of TOE, innovation, and resilience on the intention to use cloud-based ERP. This study's findings are useful for firms looking to implement cloud-based ERP, governments encouraging digital business, and cloud-based ERP providers.
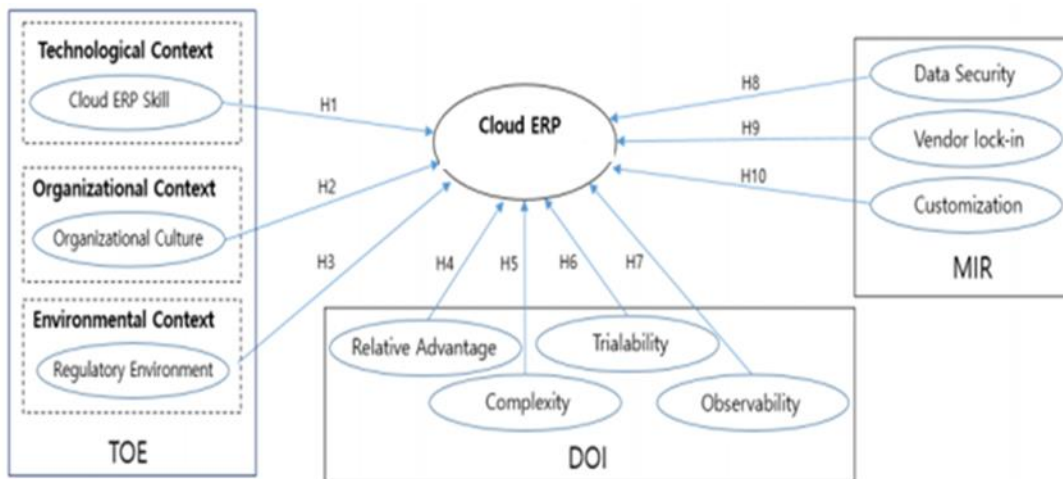

Figure 6: Ahn & Ahn model (2020)

2.11. Literature Review   21

In this part, the researcher summarized some scientific studies and research that are related to the study variables:

Table 1: Summary of the Previous Studies

No	Author(s)	Year	Contributions	Methodology	Setting	participants	Result
1.	Ahn & Ahn	2020	Investigate the variables impacting the purpose of pursuing a comprehensive approach to cloud-based ERP.	quantitative method (questionnaire)	Korean companies adopting and operating ERP systems	148 chief executive officers or key stakeholders such as IT directors	The result revealed that corporate culture, regulatory environment, relative profit, trialability, and vendor lock-in all had a major effect on the intention to adopt cloud-based ERP.
2.	Rath et al.,	2019	Examined security advancements In Cloud SaaS covering numerous security characteristics, such as network protection, data security, and privacy.	Case Study	Amazon Web Service (AWS)	_	Although most security solutions are available in AWS and Azure, some remaining issues need to be resolved, like objective control processing and efficient data lifecycle management in distributed environments (e.g., when data is shared between Cloud back-ends system).
3.	Al-bar & Hoque	2017	Analyzed the factors influencing the acceptance of cloud ERP in the Kingdom of Saudi Arabia By integrating the Diffusion of Innovation Theory (DOI) and the Technology-Organization-	quantitative method (questionnaire)	Organizations in KSA	the CEO, Business Operation Manager and IS managers of 200 sample organizations	The result reveals that TOE and DOI variables had a major effect on cloud ERP adoption.

			Environment (TOE) system.			
4.	Abd Elmonem et al.,	2016	Investigate the Benefits and challenges of cloud ERP systems	systematic review	_	_	Cloud ERP customers should balance between the advantages and challenges when switching to the cloud ERP system.
5.	Christopher et al.,	2014	Investigates the effects and complexities of public universities' implementation of cloud computing in the Southwestern region of Nigeria.	quantitative method (questionnaire)	universities in the Southwestern part of Nigeria	100 IT staff, 50 para-IT staff and 50 students from (10) public universities	The result showed that cloud computing implementation has a substantial effect on cost efficiency, improved availability, low environmental impact, decreased IT complexity, mobility, scalability, enhanced operability and decreased physical asset expenditure. In addition, data vulnerability, regulatory enforcement problems, lock-in and safety problems are the main obstacles facing cloud adoption.
6.	Mijac et al.,	2013	presented a literature review in order to provide an analysis of published studies on the subject of "Cloud ERP Customization"	Systematic Review	_	32 relevant papers	The findings indicate that, along with 12 challenges and difficulties, many prevailing study patterns are recognised.

			carried out in the last 5 years.				
7.	Iqbal et al.,	2012	highlighted the benefits and challenges of cloud-based ERP in education and a cloud-based ERP approach was suggested that could be extended to any educational institution in Vietnam.	Systematic Review	_	_	proposing a cloud-based ERP solution that can apply to any educational institution in Vietnam.

3. Methodology 22

3.1. Research Design 23

The study methodology is one of the most important aspects of scientific research that influences its accuracy and success. The current study will employ descriptive analytical methods relevant to the study's variables. First, the researcher established an integrated theoretical framework that encompasses all study topics. The researcher then developed a model for establishing cloud ERP systems in Saudi universities, addressing the issues involved with installing cloud ERP systems.

The researcher will conduct the study using a multiple case study, which involves studying the reality of using ERP cloud systems in universities in the Kingdom of Saudi Arabia. Three universities were chosen to apply the experiment to it. The researcher considered that the use of questionnaires and quantitative analysis methods was the best way to conduct this research.

Quantitative analysis focuses on numerical data to convey principles, levels of theoretical frameworks, and values that are deemed empirical evidence. Quantitative and positivist notions are often employed interchangeably in science. Statistical processes can be used to analyse numbered outcomes, according to Creswell (2009). Assumptions regarding deductive testing hypotheses, restricting alternative explanations, and generalizing and reproducing results" (Creswell, 2009). So, the researcher thinks quantitative research is better for the current investigation.

The researcher will develop the questionnaire tool and distributed it to the study sample that was selected from the employees in the three selected Saudi universities. The researcher will communicate with the CEO, top Management, and main users.

3.2. Data Collection 24

Often, data in scientific studies and research are classified into two types, which are primary data and secondary data, and these two types differ in the methods and ways in which they are collected.

❖ **Secondary data:** Secondary data in this research are collected from literature, scholarly studies, and recent articles focusing on cloud services and cloud ERP.

❖ **Primary data:** The data for the analytical part will obtained through the questionnaire tool, which can be used as a versatile tool for collecting data because it fits with many different types of research, and the goal is for the conductor of the survey to be able to survey the opinions and perspectives of the participants regarding the study variables.

3.3.   25
Population

These individuals were targeted because they had the authority to develop cloud-based ERP systems in Saudi colleges. To test the research model, an online survey will be administered to 300 employees and administrators from three Saudi universities in Jeddah: 100 from Batterjee Medical College, 100 from Jeddah International College, 100 from University of Business and Technology, and 100 from AlFaisal University - Prince Sultan College of Business. Previous studies' items related to TOE features and advancements were chosen. For the research setting, items relating to resistance qualities were chosen from existing item reviews. Using a five-point Likert scale to rate all participants' responses.

3.4. Sample of the Study   26

Participants who met the study inclusion criteria were included in the study sample. In the current study, the study sample will consist of (300) employees and administrators working in the three or four selected Saudi universities (Batterjee Medical College, International College, University of Business and Technology -AlFaisal University - Prince Sultan College of Business) who have a major influence on the process of implementing cloud ERP systems in the universities of the Kingdom of Saudi Arabia. The Sample size is adequate and sufficient for this study as it was calculated using Krejci & Morgan's (1970) formula for detecting sample size of a known population size, assuming a prevalence of 50% satisfactory level of knowledge of among staff, a confidence interval of 95%, and a margin of error of 5%. This would lead to a statistical significance result with minimum errors.

3.5. Data Analysis Technique   27

The researcher approved the Statistical Package for Social Sciences (SPSS) program to test and analyze the basic study hypotheses and analyze the data collected during the study, using the following statistical methods:

❖ Cronbach Alpha test: it was applied to ensure the consistency of the fields in which the study tool was applied with the variables that it sought to test or in short to ensure the stability of the study tool.
❖ Pearson correlation coefficient test: in order to find the validity of the internal consistency of the questionnaire.
❖ Percentages and Frequencies.
❖ Arithmetic Mean and Standard Deviation.

4.   28
Results

1. Analyze the results associated with the first hypothesis.

2. Analyze the results associated with the second hypothesis.

3. Analyze the results associated with the third hypothesis.

4. Analyze the results associated with the fourth hypothesis.

5. Analyze the results associated with the fifth hypothesis.

6. Analyze the results associated with the sixth hypothesis.

7. Analyze the results associated with the seventh hypothesis.

8. Analyze the results associated with the eighth hypothesis.

5.Conclusion 29

This study focuses on the develop a model for implementing a cloud ERP system in universities of the Kingdom of Saudi Arabia. This chapter explains the questionnaire results will obtain after collecting and analyzing the cross-sectional survey answers distributed to a sample of (300) employees and administrators (unit of analysis) working in three Saudi universities in Jeddah that have a great influence on the process of developing cloud ERP systems in the universities of the Kingdom of Saudi Arabia. 300 questionnaires were retrieved, with a response rate of (100%) of all respondents. in addition, the Statistical Package for Social Sciences (SPSS) will use to analyze the collected data, descriptively and inferred, and the results presented. The expected outcome of this chapter is that cloud ERP systems in the study population face many challenges that affect their implementation. Also, there are many factors that influence the implementing cloud ERP in Saudi universities. In addition, employees and Managements in Saudi universities suffer from a lack of knowledge regarding cloud ERP systems and their importance and Business process.

Referenc 30
es

1. Abbas, M. (2011). ERP systems in HEI context from a multiple perspective view: a case study (Doctoral dissertation, University of Manchester).

2. Abdollahzadegan, A., Che Hussin, A. R., Moshfegh Gohary, M., & Amini, M. (2013). The organizational critical success factors for adopting cloud computing in SMEs. Journal of Information Systems Research and Innovation (JISRI), 4(1), 67-74.

3. Abugabah, A., & Sanzogni, L. (2010). Enterprise resource planning (ERP) system in higher education: A literature review and implications. International Journal of Human and Social Sciences, 5(6), 395-399.

4. Ahmad, R. M. T. R. L., Othman, Z., & Mukhtar, M. (2011). Campus ERP implementation framework for private institution of higher learning environment in Malaysia. WSEAS Transactions on advances in engineering education, 1(8), 1-12.

5. Ahn, B., & Ahn, H. (2020). Factors affecting intention to adopt cloud-based ERP from a comprehensive approach. Sustainability, 12(16), 6426.

6. Akin, O. C., Matthew, F., & Comfort, D. (2014). The impact and challenges of cloud computing adoption on public universities in Southwestern Nigeria. International Journal of Advanced Computer Science and Applications (IJACSA), 5(8), 13-19.

7. Albadri, F. A., & Abdallah, S. (2009). ERP training and evaluation: ERP life-cycle approach to end-users' characterization and competency building in the context of an oil & gas company. Ibima business review, 3(2), 19-26.

8. AlBar, A. M., & Hoque, M. R. (2019). Factors affecting cloud ERP adoption in Saudi Arabia: An empirical study. Information Development, 35(1), 150-164.

9. Allen, D., & Kern, T. (2001). Enterprise resource planning implementation: Stories of power, politics, and resistance. In Realigning research and practice in information systems development (pp. 149-162). Springer, Boston, MA.

10. Alotaibi, M. B. (2014). Exploring Users' Attitudes and Intentions toward the Adoption of Cloud Computing in Saudi Arabia: An Empirical Investigation. J. Comput. Sci., 10(11), 2315-2329.

11. Ancveire, I. (2018, May). Fit gap analysis methods for ERP systems literature review. In 2018 IEEE 12th International Symposium on Applied Computational Intelligence and Informatics (SACI) (pp. 000161-000166). IEEE.

12. Awad, H. A. (2014). Cloud computing as an operational model for ERP services: Definitions and challenges. International Journal of Innovation and Applied Studies, 8(2), 499.

13. Beheshti, H. M., Blaylock, B. K., Henderson, D. A., & Lollar, J. G. (2014). Selection and critical success factors in successful ERP implementation. Competitiveness Review.

14. Bellamy, M. (2013, June). Adoption of Cloud Computing services by public sector organisations. In 2013 IEEE Ninth World Congress on Services (pp. 201-208). IEEE.

15. Bharadwaj, S. S., & Lal, P. (2012, December). Exploring the impact of Cloud Computing adoption on organizational flexibility: A client perspective. In 2012 International Conference on Cloud Computing Technologies, Applications and Management (ICCCTAM) (pp. 121-131). IEEE.

16. Bjelland, E., & Haddara, M. (2018). Evolution of ERP systems in the cloud: A study on system updates. Systems, 6(2), 22.

17. Blitzblau, R., & Hanson, M. (2001). Transforming Georgetown through Technology. Campus Profile. Educause Quarterly, 24(2), 46-50.

18. Bologa, R., Bologa, A. R., & Sabau, G. (2009, November). Success factors for higher education ERPs. In 2009 International Conference on Computer Technology and Development (Vol. 1, pp. 28-32). IEEE.

19. Botta-Genoulaz, V., & Millet, P. A. (2006). An investigation into the use of ERP systems in the service sector. International journal of production economics, 99(1-2), 202-221.

20. Bradford, M. (2011). North carolina state university: Implementing ERP student modules. Issues in Accounting Education, 26(3), 507-520.

21. Carutasu, N., & Carutasu, G. (2016). Cloud ERP implementation. FAIMA Business & Management Journal, 4(1), 31.

22. Cascio, W. F., & Montealegre, R. (2016). How technology is changing work and organizations. Annual Review of Organizational Psychology and Organizational Behavior, 3, 349-375.

23. Davenport, T. H. (2000). The future of enterprise system-enabled organizations. Information systems frontiers, 2(2), 163-180.

24. Ghuman, K., & Chaudhary, S. (2012, March). Incorporation of ERP in educational institutions: an empirical study. In International Conference on Technology and Business Management (pp. 318-324).

25. Grigg, J. (2012). To cloud or not to cloud: that is the question for ERP. MHD Supply Chain Solutions, 42(1), 36-37.

26. Gürbüz, T., Alptekin, S. E., & Alptekin, G. I. (2012). A hybrid MCDM methodology for ERP selection problem with interacting criteria. Decision Support Systems, 54(1), 206-214.

27. Ha, Y. M., & Ahn, H. J. (2014). Factors affecting the performance of Enterprise Resource Planning (ERP) systems in the post-implementation stage. Behaviour & Information Technology, 33(10), 1065-1081.

28. Harkut, D. G. (2018). Introductory Chapter: Cloud Computing. In Cloud Computing-Technology and Practices. IntechOpen.

29. Iqbal, U., Uppström, E., & Juell-Skielse, G. (2012). Cloud ERP implementation challenges: A study based on ERP life cycle model. Advances in Enterprise Information Systems II, 2(2), 389.

30. Jalal, A. (2011). Enterprise Resource Planning: An Empirical Study of Its Impact on Job Performance. International Journal of Business & Information, 6(1).

31. Jing, R., & Qiu, X. (2007, June). A study on critical success factors in ERP systems implementation. In 2007 International Conference on Service Systems and Service Management (pp. 1-6). IEEE.

32. Khan, A. M., Freitag, F., & Navarro, L. (2016). Community Clouds. Encyclopedia of Cloud Computing, 20-26.

33. Kiadehi, E. F., & Mohammadi, S. (2012). Cloud ERP: Implementation of enterprise resource planning using cloud computing technology. Journal of Basic and Applied Scientific Research, 2(11), 11422-11427.

34. Kinuthia, J. N. (2014). Technological, organizational, and environmental factors affecting the adoption of cloud enterprise resource planning (ERP) systems. Eastern Michigan University.

35. Kotb, M. T., Haddara, M., & Kotb, Y. T. (2011, October). Back-propagation artificial neural network for ERP adoption cost estimation. In International Conference on Enterprise Information Systems (pp. 180-187). Springer, Berlin, Heidelberg.

36. Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and psychological measurement, 30(3), 607-610.

37. Kumar, V. S., & Ragi, M. S. (2011). Security Techniques for Protecting Data in Cloud Computing (Doctoral dissertation, Master Thesis Electrical Engineering, School of Computing Blekinge Institute of Technology SE–371 79 Karlskrona Sweden).

38. Kvavik, R. B., Katz, R. N., Beecher, K., Caruso, J., King, P., Voloudakis, J., & Williams, L. A. (2002). The promise and performance of enterprise systems for higher education (Vol. 4). Boulder, Colo.: EDUCAUSE Center for Applied Research.

39. Law, C. C., & Ngai, E. W. (2007). ERP systems adoption: An exploratory study of the organizational factors and impacts of ERP success. Information & Management, 44(4), 418-432.

40. Leavitt, N. (2009). Is cloud computing really ready for prime time. Growth, 27(5), 15-20

41. Madanhire, I., & Mbohwa, C. (2016). Enterprise resource planning (ERP) in improving operational efficiency: Case study. Procedia CIRP, 40, 225-229.

42. Markus, M. L., Petrie, D., & Axline, S. (2000). Bucking the trends: what the future may hold for ERP packages. Information Systems Frontiers, 2, 181-194.

43. Mell, P., & Grance, T. (2011). The NIST definition of cloud computing.

44. Mijac, M., Picek, R., & Stapic, Z. (2013). Cloud ERP system customization challenges. In Central European Conference on Information and Intelligent Systems (p. 132). Faculty of Organization and Informatics Varazdin.

45. Moh'd Anwer, A. S. (2018). Towards better understanding of determinants logistical factors in SMEs for cloud ERP adoption in developing economies. Business Process Management Journal.

46. Mohammed, M. A., & Burhanuddin, G. J. (2018). Cloud-Based ERP Implementation in SME's: A Literature Survey. Int. J. Eng. Technol, 7, 753-755.

47. Monika, G., & Kalpana, Y. (2016). Data Security is the Major Issue in Cloud Computing-A Review. Indian Journal of Science and Technology, 9(43).

48. Murphy, W. D. (2004, April). Developing the role of Management Accountant: A Review of Practioner Orientated Sources. In The British Accounting Association Annual Conference, University of York (pp. 14-16).

49. Naveed, Q. N., & Ahmad, N. (2019). Critical Success Factors (CSFs) for Cloud-Based e-Learning. International Journal of Emerging Technologies in Learning, 14(1).

50. Nguyen, T. D., Nguyen, T. T., & Misra, S. (2014, November). Cloud-based ERP solution for modern education in Vietnam. In International Conference on Future Data and Security Engineering (pp. 234-247). Springer, Cham.

51. Panayiotou, N. A., Gayialis, S. P., Evangelopoulos, N. P., & Katimertzoglou, P. K. (2015). A business process modelling-enabled requirements engineering framework for ERP implementation. Business Process Management Journal.

52. Peng, G. C. A., & Gala, C. (2014). Cloud ERP: a new dilemma to modern organisations? Journal of Computer Information Systems, 54(4), 22-30.

53. Pollock, N., & Cornford, J. (2004). ERP systems and the university as a "unique" organisation. Information technology & people.

54. Purohit, G. N., Jaiswal, M. P., & Pandey, S. (2012). Challenges involved in implementation of ERP on demand solution: Cloud computing. International Journal of Computer Science Issues (IJCSI), 9(4), 481.

55. Qaisar, S., & Khawaja, K. F. (2012). Cloud computing: network/security threats and countermeasures. Interdisciplinary journal of contemporary research in business, 3(9), 1323-1329.

56. Rath, A., Spasic, B., Boucart, N., & Thiran, P. (2019). Security Pattern for Cloud SaaS: From System and Data Security to Privacy Case Study in AWS and Azure. Computers, 8(2), 34.

57. Rico, D. F. (2004). ERP in higher education. Retrieved April, 16, 2007.

58. Robert Jacobs, F., & 'Ted'Weston Jr, F. C. (2007). Enterprise resource planning (ERP)—A brief history. Journal of Operations Management, 25(2), 357-363.

59. Saade, R., Nijher, H., & Sharma, M. (2017, July). Why ERP implementations fail–A grounded research study. In Proceedings of the Informing Science and Information Technology Education Conference (Vol. 5, No. 31, pp. 191-200).

60. Saeed, I., Juell-Skielse, G., & Uppström, E. (2012). Cloud enterprise resource planning adoption: Motives & barriers. Advances in Enterprise Information Systems II, 429.

61. Saini, S., Nigam, S., & Misra, S. C. (2013). Identifying success factors for implementation of ERP at Indian SMEs: A comparative study with Indian large organizations and the global trend. Journal of Modelling in Management.

62. Seethamraju, R. (2015). Adoption of software as a service (SaaS) enterprise resource planning (ERP) system in small and medium sized enterprises (SMEs). Information systems frontiers, 17(3), 475-492.

63. Sen, J. (2013). Security and Privacy Issues in Cloud Computing. memo. Innovation Labs. Tata Consultancy Services Ltd. Kolkata. India.

64. Shanks, G., Parr, A., Hu, B., Corbitt, B., Thanasankit, T., & Seddon, P. (2000). Differences in critical success factors in ERP systems implementation in Australia and China: a cultural analysis. ECIS 2000 Proceedings, 53.

65. Singh, A., & Nagpal, S. (2014). Implementation of ERP in cloud computing. International Journal of Scientific & Technology Research, 3(10), 100-103.

66. Sørheller, V. U., Høvik, E. J., Hustad, E., & Vassilakopoulou, P. (2018). Implementing cloud ERP solutions: a review of sociotechnical concerns. Procedia computer science, 138, 470-477.

67. Staehr, L. (2010). Understanding the role of managerial agency in achieving business benefits from ERP systems. Information systems journal, 20(3), 213-238.

68. Sun, Y., Zhang, J., Xiong, Y., & Zhu, G. (2014). Data security and privacy in cloud computing. International Journal of Distributed Sensor Networks, 10(7), 190903.

69. Suthar, K. C. (2017). Data Security in Cloud Computing using Encryption and Obfuscation Techniques.

70. Vadivelu, K., Balaji, N., Poongavanam, N., Tamilselvan, S., & Rajakumar, R. (2018). Cloud-ERP: Implementation strategies, benefits and challenges. International Journal of Pure and Applied Mathematics, 119(14), 1359-1364.

71. Venkatraman, S., & Fahd, K. (2016). Challenges and success factors of ERP systems in Australian SMEs. Systems, 4(2), 20.

72. Wang, L., Ranjan, R., Chen, J., & Benatallah, B. (Eds.). (2017). Cloud computing: methodology, systems, and applications. CRC Press.

73. Watson, E. E., & Schneider, H. (1999). Using ERP systems in education. Communications of the Association for Information Systems, 1(1), 9.

74. Xia, L., Yu, W., Lim, R., & Hock, L. (2010). A Methodology for Successful Implementation of ERP in Smaller Companies, Service Operations and Logistics and Informatics (SOLI). 380 – 385.

75. Xu, L. X. X., Yu, W. F., Lim, R., & Hock, L. E. (2010, July). A methodology for successful implementation of ERP in smaller companies. In Proceedings of 2010 IEEE International Conference on Service Operations and Logistics, and Informatics (pp. 380-385). IEEE.