A REVIEW OF KEY FACTORS OF CLOUD ENTERPRISE RESOURCE PLANNING (ERP) ADOPTION BY SMEs

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ABSTRACT

The adoption of cloud ERP is influenced by several factors. However, the significant factors can contribute to the adoption of ERP among SMEs which are unclear and the minimum attempts made to summarize for examination in the existing research. The aim of this paper is to provide better understanding of the significant factors which influence on the adaption of cloud ERP for SMES. The approach followed in this paper is based on the Systematic Literature Review. The presented review relates to the advantages such as compatibility, complexity, top management support, Cloud awareness, technology-readiness competitive pressure, and government regulations, amongst others, featured as prior factors that can be considered as the most influential for the adaption of Cloud ERP. This study briefly discusses the adoption of the cloud ERP among SMEs, by pointing out the most influential factors of the adoption cloud ERP. The output of this study adds structure to the previously discussed papers which are based on the adaption of cloud ERP in addition; this paper presents systematic reviews on the relevant literature. This study highlights an insight into the identification of the potential issues and challenges for the advancement of theories in the Information Systems field. Further, this study focuses on the direction for research and contributes to determinants for the adoption of Cloud ERP. The result increases the understanding of the influential factors of the cloud ERP which are based on the benefits of - SMEs.

Keywords: *Cloud, Review, Enterprise Resource Planning, adoption, SMEs.*

1. INTRODUCTION

In the today's globalized world, the Small and Medium Enterprises (SMEs) experience numerous challenges and problems compared to the big corporation, this is due to SMEs which allocates the lower budget, whereas they have a smaller workforce. Hence, their computing environment is less complex. On the other hand, SMEs also experience the similar demands as the large companies have higher expectation. Consequently, there is a call for enhancing their level of services to fulfil the specified business goals. In addition, these goals control and minimize the production costs, as well as adapt the activities to suit the needs of their IT departments [1]. The Cloud ERP is a modern type of technology that enables installation of software which provides an access to ERP software for organizations, users and individuals via on-demand internet access [2]. Through this Cloud facility, SMES are not required to onward IT infrastructure but only required to

lease hardware and make payment for the required services [3]. This can reduce production costs and produce savings for SMEs. Also, Cloud ERP maximizes flexibility by offering attractive opportunities for SMEs and is growing in both developed and developing countries [4]. Cloud ERP systems are exponentially growing, which shows its possible future significance. Although SMEs aim to adopt ERP aggressively as this technology manages business efficiently, high software and license fees as well as complexity in its implementation have created resistance towards traditional ERP packages [5]. Most SMEs are willing to increase their computing resources but they cannot afford this technological advancement due to expensive solutions. In addition, the lack of IT infrastructures, trained IT specialists to support its implementation and reduced IT spending by their organizations due to slowdown of an economic which have contributed to this technological setback. Further, the supported choice is not subscribing to the conventional ERP

packages [6]. However, in spite of such limitations, there is still need for SMEs to discover a suitable resolution in the implementation of ERP that SMEs can maintain their competitiveness in the global market. In alternate, there would be suggestion for reduction in cost as compared to the traditional solutions of ERP. The vague understanding of what constitutes Cloud ERP and its advantages can discuss growth of the theories, models and measurements related to cloud ERP. Therefore, providing a transparent conceptualization and developing an understanding of Cloud ERP is integral to set the pace on the topic.

In this light, there are varieties of the cloud ERP service models available which assists for developing in deployment methods in the current market. As a result, the advantages and challenges on the Cloud ERP will allows prospective Cloud clients to formulate themselves this novel IT-based venture before embarking. While the existing work on Cloud ERP involving SMEs in developing countries is still in its infancy, such as [7], [8], [9] and [10] are researchers which have been identified the adoption factors based on the cloud ERP. The number of studies has been increasing, yet, there is an on-going attempt to systematically review past studies in this field. This is to ensure they can be useful for researchers and practitioners in the future. Thus, it is integral to synthesize the practicality and accuracy of these studies. The aim of this study to employ the approach of Systematic Literature Review (SLR) in order to explore the determinants of the Cloud ERP adoption and presents a comprehensive outline of the current practices for researchers and practitioners. Secondary objective of this study consists of collecting, analyzing and synthesizing the existing studies based on the adopted methodologies. Further, the potential research gaps require more research which can be revealed through this study. Consequently, therefore, research questions have been formulated as follows;

1. What are the current studies regarding Cloud ERP adoption among SMEs?
2. What are the reasons/factors to adopt the Cloud ERPs among SMEs?
3. What are the key adoption factors among SMEs?
4. What are the current research limitations and gaps?
5.

2. BACKGROUND

Cloud ERP has recently been reached to an important milestone and become a fast-growing technology in the field of Information Systems development. The Cloud ERP system consists of a Cloud hosted ERP system and is offered as a service to customers. 'Cloud ERP' means that there is an ERP service provider who manages the hosting of their customers' ERP system. In this paper, the Cloud ERP solutions are evaluated independently based on the chosen service delivery model. These emerging trends have been addressed by many researchers; in addition to the present the need for systematize the results of the past studies. Thus, these researchers have been provided reviews on the accumulated knowledge. This section provides an overview of Cloud ERP where it highlights the concept of the Cloud ERP and summarizes the core definitions which obtained from literature.

2.1 Cloud ERP and SMEs

Over the last few years, there are major changes in the business environment SMEs operate as described in [1]. In this regard, the markets now need SMEs to ensure not only customers' satisfaction, but also provide flexibility in service [11]. To fulfil these needs, firms are adopting a variety of methods and approach that they can improve business operation, in the aspects of business model innovation, enhanced client services via CRM, job automation, improved business process and adopting, data engineering systems such as ERP [12]. In this regard, SMEs need to utilise modern tools that they can clear about the profiles of their customers. This can help them to ascertain the proportion of their values by helping companies to comprehend how viable it is to adopt new technologies like Cloud ERP to ensure sustainability. Based on [13], the adoption of Cloud ERP and the need for it to be addressed by small businesses are motivated by its scalability, cost and flexibility. [14] presents an exploratory study which has been categorized into three categories for the adoption of the cloud ERP. First adoption of the category is based on the strategic driver which comprises of technical security, reliability, and automatic upgrades. The second category is the operational driver including to minimize cost for IT, providing better external support for vendors, on demand, technical pressure to keep high growth with competitors, low capital expenditure, ability to market the products and services on time, flexibility in developing of

innovation and concentrate on the core business. Meanwhile, the technical driver comprises of ability to expedite time to market products, accommodating users' need to concentrate on their core business, pressure to keep up with competitors and services, as well as flexibility for business innovation [15].

3. REVIEW METHOD

A systematic literature review is presented in this paper. The realization of protocol is an important phase in SLR. This protocol outlines the steps that need to be followed in conducting review. Here, the standard protocol was developed and followed for all steps. The protocol begins first by identifying the key search criteria for research before identifying the search strategy. The searching strategy is refined using "quasi-gold" standard to search a string. Furthermore, the researcher identified and developed a list of inclusion and exclusion criteria in this search of stage. The criterion specifies the quality evaluation of the studies chosen for the review. Consequently, the researcher decided on the elements of data obtained from the chosen studies. Finally, the data obtained were analyzed in the last step.

3.1 Review protocol

The systematic review builds the general understanding of the readers which assists in finding of the research gap. Sometimes, it comprises of background, study selection process, Search strategy, research questions, quality assessment, reasoning based extraction of data and data extraction [16]. Figure 1 illustrates research questions, background of cloud ERP and search process for this study.

3.2 Inclusive and exclusive criteria

The aims of the SLR to include quality papers which supports cloud background and strategies followed in the cloud with reasonable suggestions. The selections of papers are based on the research questions which have been carried out in SLR as aforementioned. The selected papers have been come from Scopus digital libraries based on the research questions. Based on the final selection of the papers, there were 426 papers selected which shown in the appendix.

3.3 Search strategy

The search strategy plays a vital role in the selection of qualitative papers based on the research questions. [17]. The search strategy assists to find out the relevant papers related to the literature which helps in utilization of knowledge through search techniques, digital libraries, thesaurus, and filed of interest. Hence, the followed approach focuses on the identification of the research gap, contributions of the research communities in the perspective fields, criticality-based selection of the paper, data extraction, followed experimental techniques are assessed through data synthesis.

3.4 Study selection process

Figure 1 depicts chosen studies for each stage in this SLR. In all, the search came out with 526 matches, and the duplicate papers were eliminated from the search. Moreover, the shorter versions of the papers were also eliminated. The papers were filtered based on their titles and abstracts. However, some of the papers were obtained in the next search of analysis if the title and abstract has insufficient information on their relevance. Papers with less as than 4 pages and do not contain the full text were also deemed as irrelevant. Further, the selected papers are based on the adoption of cloud services involving software teams. Finally, the included papers are 68 found to meet criteria.

3.5 Quality assessment (QA)

The important thing for data synthesis and findings has been obtained through quality assurance (QA). It depends on the selected criteria assisting evaluation of the relevant study. Thus, the selection criteria is based on the five questions as depicted in Table 1. For instance, it would be based on the subjective, framework used in their papers. The selected five questions use high, medium, and low as quality assessment for research paper selection. The quality assurance assessment is achieved with average values based on the QA research questions and communication of two researchers. If there are difference opinions regarding quality assessment in the selection of paper, then the researchers need to justify the things. Based on the provided information, they must agree with the selection of papers and average values of each selected paper must achieve 50% score. The similar steps have been followed by [18]. Table 1 shows five questions based on QA and finally 13 research papers have been removed due to not coming the selection criteria of quality.

3.6 Data extraction and synthesis

The data extraction and synthesis have been achieved by reading selected articles which have been stored and managed in Mandalay. The aiming of such reading of articles is to extract information and save them accordingly as described in the questions as shown in Table 1. Further, the study id is used to identify the research article, title of the article, authors with publication data along with keyword and the publisher's information. These datasets assist to analysis research questions and their objectives. The classification of the schemes, methodologies used, tools and techniques and other domains of knowledge have been mapped accordingly to the objectives.

4. RESULTS

This section assists in the analysis of the results which have been extracted during paper reading of papers. The extraction of the outcomes of the papers were based on the selected sources, number of citations, publication whether it is Scopus or else, and their proposed methodologies. Based on these information, this paper analysis the results as follows in the subsequent section.

4.1 Overview of the publication sources

The selected studies for this paper have been published in the quality journals and conferences where they have higher citation results. Sourcing the papers from highly ranked, high impact sources illustrate the prospective impact of this systematic review, and the general quality of the assessment. The sources of primary studies are presented in Fig. 2. As observed, most primary studies were sourced from journals (n= 59; 60%), conference articles (n=32; 35%) and published in workshops and symposiums (n = 3; 5%)

4.2 Research methodologies

Figure 2 shows the distribution of the studies which have involved in regards to the search methodologies. In addition, it is observed that quantitative and qualitative methods were commonly adopted. In some of the studies, both qualitative and quantitative were combined together to complement each other. As shown in Figure 6, there are 51 qualitative works, 34 papers were on the quantitative works, 26 papers on the conceptual works, and only 4 mixed method papers.

4.3 Factors of cloud ERP

After the selection and extraction of primary studies, the research questions can be derived from 716 studies analyzed. The study was mapped accordingly based on the most relevant questions and the same studies of research articles were combined together. Table 3 presents the outcomes of the research questions which have been carried out in Section 1 as follows

5. DISCUSSION

The systematic review has been done including cloud ERP with the support of SMEs. The review discusses either to use SME with cloud computing adoption or not. However, this does not mean that the remaining factors do not possess influential impact on Cloud ERP adoption. Some factors yield the same meaning as other factors. For instance, 'ease of use' is perceived as simplicity and 'regulatory support' as 'governmental support'. These factors have been examined based on the frequency of use because some researchers have used similar terms on different occasions. For example, the terms 'relative advantage' and 'perceived usefulness' have been used in the same study [19]. The factors that have the biggest influence on Cloud ERP adoption based on the literature reviews will be discussed. These Cloud ERP adoption factors that were sourced from related literature reviews have been ranked based on frequency to indicate priority. The process involved sourcing for pertinent factors from each article and these factors are recorded in the right context (Refer to Table 3). Subsequently, the factors are assigned with a tick (√) based on their frequency in each study (Refer to Appendix 1). The ranking of the factors increased accordingly.

Based on relevant literature reviews, it was found that capability, relative advantage, top management support, security, production costs, technological readiness, complexity, competitive pressure, government support which depends on the firm size. Further, the firm size is the key factors in Cloud ERP adoption among SMEs. The reviews have also shown that through the adoption of a new technology such as Cloud ERP, which are based on the usage of technological, organizational and environmental contexts of the SMEs as well as innovative characteristics can prove to be more holistic and meaningful as it provides invaluable

insights for practitioners and researchers. Table 4 is a presentation of the most frequent factors according to the reviews. Compatibility topped the list with a frequency of 27 followed by relative advantage with a frequency of 25, top management support with a frequency of 24 and security with 23. These were seen as the most frequent factors found in the previous studies. Other frequent factors include production costs with a frequency of 17 followed by technological readiness, complexity, competitive pressure, government regulation and support as well as firm size. Based on the classification found in previous studies, the considered vital factors are technological, organizational, and environmental. Compatibility and complexity were considered by previous studies as technological factors. In terms of relative advantage, some considered this as an organizational factor while others perceived it to be a technological factor. Factors such as security and trust were deemed as technological factors while technological readiness and top management support were considered as organizational factors. On the other hand, governmental regulations and support as well as firm size are considered as environmental and organizational factors respectively. Table 4 highlights the various factors, frequency and categories.

The findings also showed that factors in relation to Diffusion of Innovation (DOI) were highly frequent. Researchers claimed that DOI is part of the TOE framework [20]. Many researchers have criticized this framework since the model was described in terms of taxonomy of variable which is not fulfilling the requirements of the suggested theories in the articles. Due to this, we have thoroughly examined their proposed solutions whether it is sufficient for cloud ERP or not. Similarly, another study highlighted that the TOE framework does not possess major constructs in each context [21], [22]. This framework is limited in explaining technological adoption [23], [24], [25], [26]. It has also been observed that the suggested solutions are not constructive according to the content of the clouding computing [27] and [28]. This framework was adapted by a number of researchers and they altered the model to include a variety of technological factors. These include DOI factors such as compatibility and complexity [29], [30], and [31]; [32] and [33]; [34], [35], and [36] as well as other factors such as security [37], [38] and [39]; [40] and [41] and trust [42], [43] and [44]. This was probably due to the fact that past studies have used TOE which highlights factors of DOI as technological factors. Another interesting finding

form the literature is the decision making to relate the existing methods with ERP based cloud adoption. These parameters are managerial support, competitive pressure, previous experiences. While there is a prevalent and considerable amount of emphasis on providers' trustworthiness and reputation, Cloud ERP applicability for ERP systems has not been investigated in-depth. Consequently, not many studies have been discussed and highlighted in related scientific literature. In addition, the lack of opportunity to work with products for a substantial period of time and minimal information on product uses among firms have affected the usage of Cloud ERP to a certain extent. The scientific value and credibility of the findings may have been affected by these reasons. The lack of information regarding negative aspects of Cloud ERP is also prevalent in most of the articles that were reviewed. A large number of authors focused mainly on the benefits instead of potential problems.

6. CONCLUSION

The papers reviewed in this study have explored the factors and related to the cloud ERP adoption based on the SMEs. In addition, this study investigates key factors found in the papers, with the objective of identifying and prioritizing key factors based on the frequency of use found in the literature reviews of various studies. In other words, the ultimate aim of this study is to derive a robust, valid and a clear set of factors based on SLR which may adopt cloud ERP based on the SMEs. Initially, this study addresses challenging issues and based on these issues with different research questions have been used. These research questions have further carried out from literature where this paper has suggested research questions. Based on these research questions including capability issues, relevant advantages, maintaining of management, security production costs, technological readiness, complexity, competitive pressure, government support and regulations as well as firm size are key factors that were discussed in literature reviews related to Cloud ERP adoption. These factors have a direct impact on whether firms should adopt Cloud ERP or not. Further, the cloud ERP is a new technology and all types of organization should adopt it for better utilization of reduced cost in the context of SMEs which assists new directions for research communities in cloud. The first research question has been answered by discussing a number of current studies that were conducted by different researchers. Based on the key factors with their

context categorization, the adopted method in the literature for analysis was employed and the results of the analysis were presented. Besides that, empirical results from the articles were synthesized to identify the key Cloud ERP adoption factors. The summarized results regarding adoption factors (Refer to Table 3) to answers the second research question. Finally, a number of important findings from the review were discussed and results for researchers and practitioners as well as research limitations and gaps were pointed out.─It is suggested that service providers based on the cloud ERP allocates maximum advantages to their business with reduction of performance of services. The key factor is the adoption of the Cloud ERP for decision making and has been recommended for industry, and all organizations for reducing cost. In essence, more quantitative and qualitative studies should be conducted to test and examine the pertinent factors with rigorously and consequently, come up with key factors that may affect Cloud ERP adoption. This will be a step in the right direction. It is important to mention that this is an ongoing research. Therefore, the proposed model (figure3) should be validated empirically for future research in order to form a valid and comprehensive framework.

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Appendix

Table 1: Quality assessment (QA)

Questions	ID
Have the selected objectives been clearly defined for this paper?	QA1
Are the selected papers highlights the issues of the cloud ERP?	QA2
Have the data collection method been explained in the paper?	QA3
Does the paper provide sufficient contributions for academic and industry communities?	QA4
Have the findings of the paper clearly explained and assisted in the results explanation?	QA5

Table 2 Extracting data from primary studies

| Description	Extracted data
paper search by id Name of authors The name of the paper appears in the stage of searching, Publication data that is 2010 to 2016, Research Materials based on the selected topic Domain of the study, the covered topics that were adoption, effect, challenges, etc. Theory adopted in the paper, e.g. DIO, TOE, etc. Quantitative, qualitative or mixed method Such as survey, case-study, observation, experiment etc.	**Study ID** **Authors** **Study Title** **Publication Data** **Source** **Research Theme** **Outcome Measures** **Theory** **Methodology** **Data Collection Method**
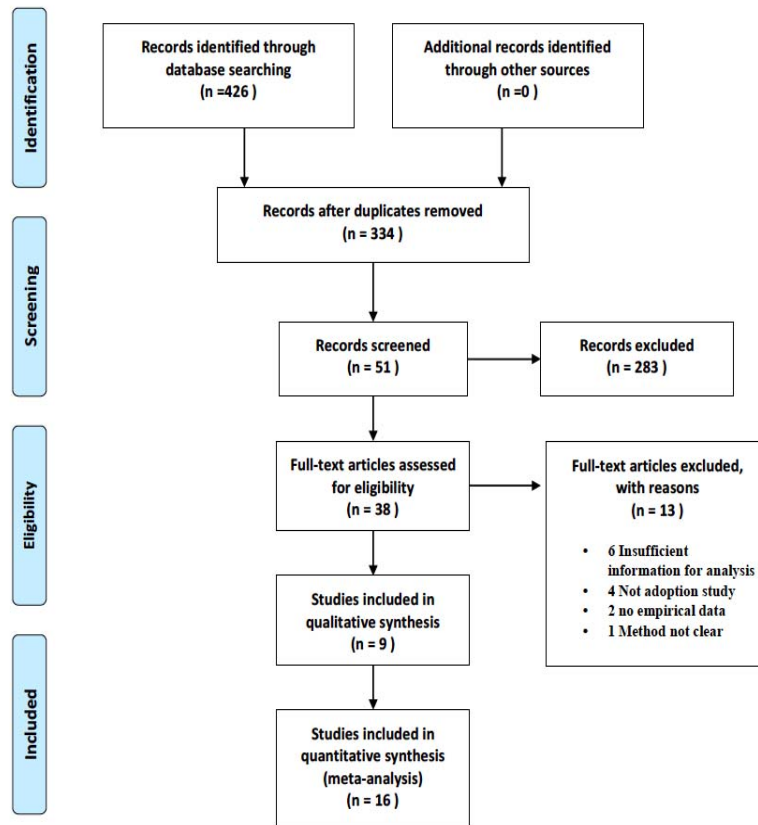
Fig1. Selection Process. Adopted From; Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009).
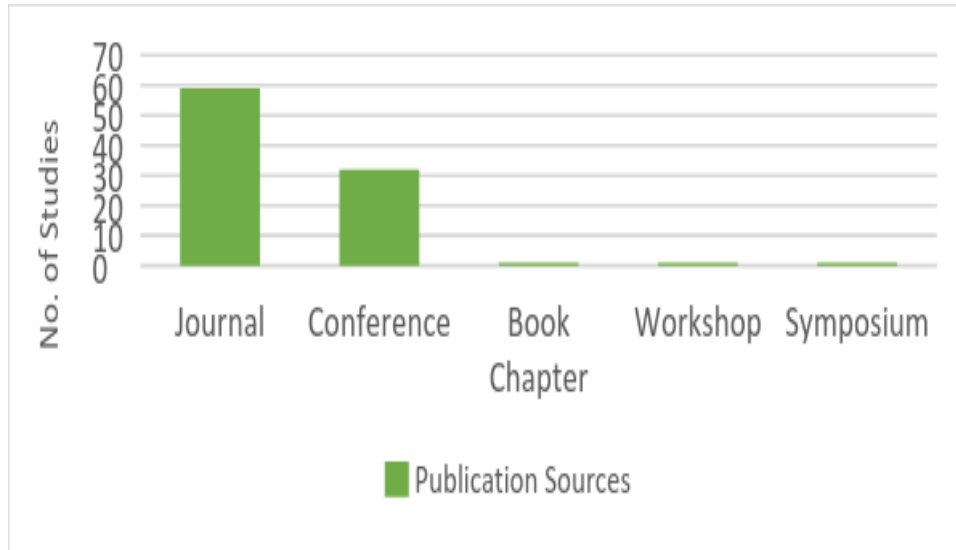
Fig2: Distribution Of Studies Based On Source Of Publication

Table: 3 Selected Primary Papers And Identified Factors

Authors(s)	Factors	Methods	Objective/Result
[26]	Market scope Trialability, Uncertainty, Complexity, Innovativeness, related advantage, Top management support, Compatibility, Size, Prior IT experience, Competitive pressure, external computing support and Industry Supplier efforts	Qualitative	The studies explored and developed the SME cloud computing based on the adoption model. The model is hypothetically based on the TOE framework. The TOE framework has technological, organizational, and environmental which are linked to each other.
[34]	Technical diffusion, Industrial associate Subsidies, Top management, Privacy, Cost, Benefit, Security, Flexibility Compatibility, Competitors, Customers/supplies, Government support Performance gab, Operational requirements	Review	The focus on different potential factors that influenced on the cloud-based ERP system among SMEs. The research model derived from TAM-DTM model
[27]	Regulatory support, Security concerns Relatively advantage, Compatibility Complexity, Technology readiness, Cost savings, Top management support, pressure, Firm size	Quantitative	The aim of this paper is to find their proposed adoption techniques for cloud computing, innovative characterization and used based on the environment context in organization. Their proposed model is based on DOI and TOE.
[28]	Cost, Vendor, Flexibility	Review	Cloud ERP platform is defined and is based on how enterprise customers can select web services and customize a unique ERP system to fulfil their specific needs. Provides flexible services of entire ERP service through multiple vendors.
[29]	Compatibility Cost-savings, Privacy, Service-level agreement Accessibility, Lack of Data, Security, Lack of Data, Size, Size of IT, Advises, Resources, Intention, , Competencies, , Relative advantages, Pressures, Support,	Mix (Qualitative and Quantitative)	The study explored theories thoroughly, and accordingly. It has been proposed a new framework and integrated into cloud computing for small and medium enterprises. This work assists to improve existing framework for future

			directions.
[30]	Provide better service, Cost, Remote, Disaster recovery, Back-up, Flexibility, Availability, Storage capacity	Qualitative	The government department now adopts services of the cloud computing for reducing with flexible IT communication because of reducing of human interactions. Futher, the time-effective and convenient services could be delivered to the public.
[31]	Behavioral intention, Ease of use, perceived usefulness, Availability, Scalability, Return on time, Security risk, Privacy risk, Attitude	Quantitative	The study showed that library professionals have strong desire to use cloud for their internet sites, integrated library cataloguing system for cataloguing, acquisition and repository systems as well as library loan system. This indicates that observed usefulness, perceived ease of use and ubiquitous availability is strong drivers of cloud computing technologies in libraries. Moreover, attitude is significantly correlated with the behavioural intention to adopt cloud computing services, but among, security risk is the biggest issue that obstructs the intentions to adopt cloud computing in the academic libraries
[32]	Flexibility, Faster time, Concentration, IT cost, Scalable, Cost, Advantage, Reliability	Quantitative	
[33]	Relative Advantage, Compatibility, Complexity, Trailability, Security, Top Management Support, Cloud Knowledge, IT Infrastructure	Review	The study proposed a theoretical model to explore the influencing factors. It presents instrument to measure the effect of these factors on making the decision for adoption of cloud computing.
[34]	Compatibility, Relatively advantage, Complexity, Image, Security, Trust	Review	This study considers empirical studies based on the cloud computing for developing of innovative theories like Diffusion of Innovation and the Technology Acceptance Model.
[35]	Cost, Ease of used, Reliability, Sharing and collaboration, Security and privacy	Quantitative	The study illustrates five factors that influence the use of clouds usage for business communities, with difference needs and business requirements compared to large enterprises
[36]	Relative advantage, Top man ager's support Adequate resource, Benefits Environment, Government policy, Perceived industry pressure, Security, Complexity, Compatibility, Cost	Quantitative	Data security, observed industry pressure across adoption of CIO innovativeness, top management, compatibility, and sufficient resources for hospitals.
[1]	Performance expectation -Effort expectation, Social influence, Trust in e-Government -Perceived risk, Facilitating conditions Security concerns	Quantitative	The e-Government based noticed risk has been identified and made relationship for adopting of e-invoicing.
[2]	Organizational readiness, IT infrastructure, Top management, Technological advancements, Relative advantage, Simplicity, Compatibility, Experience ability, Environmental readiness, Competitor pressure, Partner pressure	Quantitative	All the variables strongly influence the adoption of SaaS and the intentions and attitudes toward SaaS.
[3]	Technology; Lack of interoperability, Convenience, Compatibility, Organizational, Innovativeness, Entrepreneurial orientation Environment; Trust in supplier, Competitive pressure, Organizational Mobility	Quantitative	The research showed that aspects like entrepreneurial orientation compatibility, convenience, organizational innovativeness, and believing on the suppliers are important influence using cloud.
[4]	Relative advantage, Technology complexity, Technology, compatibility, Organizational context, Firm size, Top management support, IT expertise	Quantitative	A Survey was carried out on 699 IT experts from countries like USA, Germany, Austria and Itay

	of business, users, Competition intensity, Government Regulatory environment		
[5]	This was an exploratory study using case study	Qualitative	The findings showed that relative advantage, compatibility, complexity, trainability, observability, collaboration, traceability, trust and auditability, convincing IT manager, security and legal issues, view on the term cloud and risk were the most important factors for cloud adoption.
[6]	Technological; Privacy, Security, Reliability, compatibility, Organizational; Top management support, Technology readiness, Environmental, Government policy, Legal environment, Competition	Qualitative	The cloud computing improves the healthcare sectors based on the cloud computing that includes security, and reliability of information.
[7]	This was a literature review study done to identify the factors that may influence an organization's intention to move towards adopting the cloud.	Review	The Availability, Reliability, Security, Privacy, Trust provides for innovation in technological advancements for organization.
[8]	Technological, Relative advantage, Compatibility, Complexity, Organization, Interoperability, Focus on key, Business processes, more organization, Meet security, Standards, Meet environmental Standards, Transparency of Processes standards Environment, Bureaucracy, Political matters, Legal issues	Review	Findings show that from technological perspective, relative advantage compatibility and complexity are important factors. From the organizational perspective, desire for interoperability, reduction of IT management overheads, need for meeting security, transparency of processes desire, and environmental policies, were identified as to be positively influencing the adoption. From the Environmental angle, political matters, bureaucracy, and legal issues seemed to be influencing cloud adoption in public sector. Most of the factors hindering the cloud computing adoption were seen to be related to the environmental context.
[9]	Relative advantage, Compatibility Complexity, Organizational readiness, Training and education, Top management support, Perceived usefulness, Perceived ease of use, Trading partner support, Competitive pressure	Quantitative	The findings depict organizational competency, compatibility, relative advantage, complexity, top management commitment, training, and education, were important variables for affecting cloud computing adoption.
[10]	Technology; Relative advantage, Complexity, Compatibility, Organization, Top management support, Firm size, Technology readiness Environment, Competitive pressure, Trading partner pressure	Quantitative	The findings show that aspects like firm size , relative advantage, top management support, , competitive pressure, and trading partner pressure characteristics can significantly impact the adoption of cloud computing
[11]	Relative advantage; Compatibility, Complexity, Trialability, Observability	Qualitative	IT managers and software engineers should adopts services of the cloud computing for with minimum cost.
[12]	Technology; Data Security, Complexity, Compatibility, Costs Human; CIO innovativeness, perceived technical, competence, Environment, Government policy, Perceived industry, pressure Organization; Relative advantage, Top manager support, Adequate resources, Benefits	Quantitative	Reducing of cost and adoption of cloud computing is the important technology for reduction of cost.
[13]	Cost advantage, Fast implementation, Opportunities for innovation, Strategic flexibility, Focus on core competences, Accessibility, Trialability, Relative advantage Online collaboration, Top management support Attitudes towards technology, Security & privacy, Performance risks, Economic risks, Lock-in, Provider reputation, Partner pressure	Qualitative	Use of cloud computing is based on the 43 factors for internal and external organization.

[14]	Security, Awareness, Cost, Service Availability, Compliance and Perceived Usefulness	Quantitative	The research community should need to aware of the challenges influenced on the organization and its benefits.
[15]	Reliability, Security, Performance Scalability, Compliance/compatibility, Cost Feature, Time to market, Innovation integration	Qualitative	This study highlights that the research community should aware the organization regarding deployment of cloud and organizations should not ignore its facilities.
[16]	Cost reduction, Scalability, Lack of knowledge, Poor internet connectivity, Security, Lack of trust, Top management support, Trialability, Competence, Compatibility	Qualitative	The reduction of cost for maintaining IT infrastructure up using cloud computing, has been discussed in this article. However, the drawback of this paper is knowledge in terms of minimum internet connection.
[17]	Technology; Data Security, Complexity, Compatibility, Costs, Human; CIO innovativeness, perceived technical, competence, Environment, Government policy, Perceived industry, pressure, Organization; Relative advantage, Top manager support, Adequate resources, Benefits	Review	This study has been focused on the barriers and drivers based on the ERP cloud adopting using SMEs.
[18]	Security, Flexibility, Efficiency, Ubiquity	Review	Efficiency, Flexibility, Ubiquity, and Security have been highlights in the cloud for resolving challenges.
[19]	Cost, Security, Availability, Usability, Implementation, Ubiquity, Flexibility, Compatibility, Analytics, Best- practices	Qualitative	There are ten factors used for managing SaaS model in the ERP cloud.
[20]	Accessibility, Trialability, Relative advantage, Security, Privacy, Cost, Service Availability, Compliance/compatibility, Perceived Usefulness, Top management support	Quantitative	The TOE and DOI used as framework in the public and private sectors of the Saudi Arabia country.
[21]	Decision makers cloud knowledge, Cost advantage, Opportunities for innovation Strategic flexibility, Focus on core competences Accessibility, Relative advantage, Online collaboration, Top management support, Attitudes towards technology, Security & privacy, Performance risks	Quantitative	The innovation based two theories has been used in this study.
[22]	Technological, Organizational, Environmental, Perceive value, Perceive challenge	Review	The pragmatic based adoption of the cloud computing suggested.
[23]	Environmental, Economic, Innovation, Human Vendor	Qualitative	The barriers and drivers in the cloud computing usage have been investigated with the support of conceptual model which is used in the statistical model.
[24]	Organizational context, Technological context, Environmental context, Compatibility, Relative advantage, Triaability, Usefulness, ease of use	Quantitative	The study proposed a framework for cloud readiness assessment and an expert system. And heighted various factors toward the adoption of cloud computing.
[25]	Technological, Environmental, Organizational	Review	The proposed study is based on literature for resolving issues of barriers and drivers in cloud.

Table 4. The Most Frequented Factors In Selected Studies And Their Classification

Types/Classification	Frequency	Factors	ID
Technological	27	Compatibility	F2
Organizational	25	Relatively advantage	F8
Organizational	24	Top management support	F4
Technological	23	Security	F5
Technological	17	Cost	F1
Technological	16	Technology readiness	F7
Technological	15	Complexity	F3
Environmental	13	Competitive pressure	F6
Environmental	13	Regulatory/government support	F9
Organizational	9	Firm size	F10

Factors/Study	ID
Cost	F1
Capability	F2
Complexity	F3
Top management support	F4
Security	F5
Competitive pressure	F6
Technology readiness	F7
Relatively advantage	F8
Regulatory/government support	F9
Firm size	F10

Appendix 2: Factors And Their Frequency Appearance From Selected Studies.

F10	F9	F8	F7	F6	F5	F4	F3	F2	F1	Study
√		√		√		√	√	√		[26]
√	√	√		√	√	√	√	√	√	[34]
	√	√	√		√	√		√	√	[27]
					√				√	[28]
√	√	√	√		√			√	√	[29]
					√					[30]
					√				√	[31]
		√			√				√	[32]
		√	√		√	√	√	√		[33]
		√			√		√	√		[34]
					√				√	[35]
	√	√		√	√	√	√	√	√	[36]
					√					[1]
		√	√			√		√		[2]
			√					√		[3]
√	√	√	√	√		√	√	√		[4]
	√	√			√		√	√		[5]

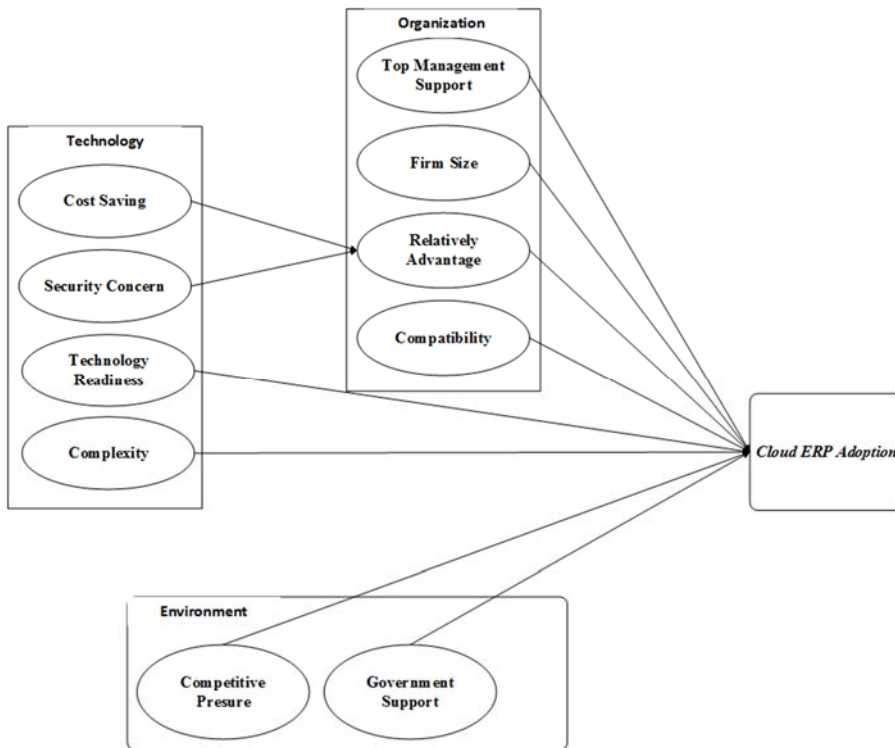|										
	√		√	√	√	√		√		[6]
√		√	√	√	√	√	√	√		[7]
	√	√	√		√		√	√		[8]
		√		√		√	√	√		[9]
√		√	√	√		√	√	√		[10]
		√				√	√	√		[11]
	√	√	√		√	√	√	√	√	[12]
		√		√	√	√			√	[13]
						√			√	[14]
						√		√	√	[15]
					√	√		√	√	[16]
	√	√	√	√	√	√	√	√	√	[17]
						√				[18]
						√		√	√	[19]
		√			√	√		√	√	[20]
		√	√		√	√				[21]
√	√	√	√	√		√		√		[22]
		√						√		[23]
√	√	√	√	√				√		[24]
√	√	√	√	√	√	√	√	√	√	[25]
9	13	25	16	13	23	24	15	27	17	F(s)

Figure 3: Proposed Research Model