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Factors Affecting the Intention of Adopting Cloud Computing in Jordanian Hospitals

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Abstract

The purpose of this study is to examine the different factors that are expected to influence the intention of hospitals to adopt cloud computing in Jordan. This study is conducted using quatitative methodology. 223 questionnaires were distributed to the IT departments of different hospitals to evaluate their ability and willingness to adopt cloud computing. The data were tested using multiple regression in order to determine whether Technology, Organizational, and Environmental factors (TOE) played a role in hospitals' decision to consider cloud computing as a beneficial investment. The findings of this study showed that all the factors had a significant positive impact on the intention of hospitals to adopt cloud computing, with the Technological factor having the most impact on the decision made.

Keywords

Cloud Computing, Hospitals, Jordan, TOE Framework

1. Introduction

Global competition places huge pressure on organizations to reduce cost, increase profitability and enhance productivity, in order to survive in this rapidly changing environment [1]-[3]. This has encouraged information technology (IT) managers to adopt the most up-to-date technologies that enable them to reduce costs, sustain competitive advantage and improve the bottom line [4]-[6]. The use of information Technology can improve the effectiveness of businesses and provide a positive advantage to organizations [7] [8]. As information technology

services are becoming increasingly expensive and time consuming, adoption of cloud computing has evolved as a major technological innovation to reduce these processing costs through enhancing reliability, flexibility, availability and processing throughput [9]-[11]. Recently, cloud computing has been an important concept in the field of Information Technology; it is recognized as an important area of Information Technology investment [12]-[14]. Cloud computing is considered a new phenomenon that provides opportunities for organizations, by offering a large collections of easily accessible virtual computer resources [15], and it has the possibility for facilitating economic growth by offering existing implemented remote infrastructure for computing and data management needs with lower initial investment capital. Nevertheless, the challenge remains to determine the factors that lead organizations to adopt and deploy cloud computing [16]. Cloud computing technologies have become a serious target in the field of information system development; it provides organizations with different advantages such as resource pooling, rapid elasticity, broad network access…etc. [17].

Cloud computing is considered a new Information Technology innovation phenomenon. It has been developed from the idea of sharing and standardizing the resources in a centralized environment [18]. Adopting new technologies like cloud computing will help many organizations to gain a competitive advantage and allows them to become more efficient and productive [19]. Cloud computing is changing the way organizations buy, sell and deal with customer; moreover, it is also becoming an essential part of the organization's strategies [20].

The adoption of the newest technologies, like cloud computing, plays an essential role in the ability of organizations to maintain a competitive position in the marketplace, and has become a core strategy to ensure effective management of IT resources [21] [22]. Nevertheless, the decision whether to adopt a cloud computing model is often complicated by challenges and uncertainties about the expected business value related to the new technology [23]. Different studies have discussed the Technological, Organizational and Environmental factors (TOE) that have impact on the cloud computing adoption. However, there is still a need to analyze the adoption of this technology in different business sectors to have a better understanding of cloud computing [24].

Jordan is considered as a desirable location for investment in the Healthcare sector. Jordan hospitals are investing heavily in modern technology to sustain its reputation of providing high quality and affordable healthcare. Patients from around the world fly to Jordan for medical treatment, with over 250,000 patients travelled to Jordan in 2012 and the number is increasing each year [25]. Even though the sector has been growing in recent years, it still suffers from various challenges; such as pressure to decrease costs, intense competition, the difficulties of managing information as people and organizations integrate, continuing to gain and sustain a competitive advantage through growth and diversification, the convergence in considering suppliers, payer sources, providers and customers. With these emerging challenges comes the need to access information and services from anywhere [26]. Cloud computing is significantly changing the implementation and adoption of health care information technology, specifically for the development of electronic health record [27] [28]. Cloud based healthcare information is rapidly becoming a leading trend for the healthcare information system development worldwide [29], as the new IT platform has positively changed the structure and nature of the hospital's information system [30]. However, according to reference [28] hospitals must be carefully evaluated when deciding to adopt this new IT innovation.

According to [31], there are many researches that studied cloud computing architecture [32], potential application [32] and benefits and Costs [34]. Unfortunately, few experimental studies that studied the adoption of cloud computing in the Arab world in general and Jordan in particular are available. Because of the lack of such studies, this study provides clear understanding to the influence of TOE factors on the adoption of cloud computing. This research is carried out to understand how TOE factors affect cloud computing adoption in Jordanian Hospitals. The findings of this research can help organizations, more specifically hospitals in Jordan to, firstly, better understand cloud computing itself and, secondly, how Cloud computing can increase hospitals' effectiveness. Moreover, this study can be considered as guidelines to how TOE factors can affect the decision of whether to invest in adoption cloud computing model or not.

2. Literature Review

2.1. Cloud Computing

The emergence of cloud computing has transformed the way the IT services are developed, deployed, maintained, used and paid for [35]. Cloud computing can be defined in many different ways. Cloud computing is defined by the National Institute of Standards and Technology (NIST) as "a model for enabling ubiquitous, conve-

nient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction". It also can be defined as a technology for providing highly scalable services which empowers IT managers to adjust to changing business requirement by easily obtaining and releasing computing services as needed [5]. Moreover, it can be viewed as a computing pattern where scalable IT related capabilities are given as a service over the internet to various external customers, using interconnected and virtualized computers that allocate resources based on service-level agreement negotiated between service provider and clients [36]-[38]. It can also be defined as a pool, very adaptable and abstracted infrastructure that is capable of facilitating end-client applications that are charged by consumption [39].

The future of Information systems will depend on cloud computing technology; this is because it can reduce the costs of IT services at the same of increasing the reliability and flexibility [40]. Moreover, it is regarded as a potential solution to improving organizations' IT competitiveness and performance [13] [41]-[43].

Cloud computing has three service models; first, infrastructure as a system (IaaS). It is known as the fundamental level of cloud services, which delivers infrastructure services to customers over a network like hardware and software [17]. Platform as a service (PaaS) is the second level of cloud computing. It offers online access to every resource that is needed to build an application. The services include; application design, development, testing, deployment and hosting tools, which provide access to programming languages and libraries [44]. The third service model is Software as a service (SaaS). It is known for providing users with a piece of software over a network such as internet, where it enables users to install the software and use the application anytime and anywhere they have access to the network [45]. It also provides an agile updating for applications as the service provider hosting the application systems performs updates that take place seemingly without any scheduled downtime, and it helps with the removal of legacy systems which helps organizations to extend their software application into other global regions [46] [47].

There are many problems with the adoption of cloud computing. One of them is that are no clear understanding of the relationship between TOE factors and the adoption of cloud computing [48]. The adoption of cloud computing will be perceived positively by organizations if they have an adequate budget, human resource support, ample time, good top management involvement and other factors [30].

2.2. TOE Framework

TOE framework was developed by Reference [49] mainly to study the adoption of Information Systems inside business organizations. This framework is becoming an important theoretical guideline for Information Technology adoption [50]. According to reference [51], the adoption of complex IT innovation requires an advantageous technology portfolio, organizational structure, and environmental strategy. For the purpose of this study, the theoretical model is needed in order to get better understanding for this technology.

The current study stipulated that three components are relied upon to determine the intention of organizations to embrace cloud computing, these are: Technological, Organizational and Environmental. The incorporation of TOE elements has leaded it to become more valuable compared to other models in studying technology adoption [52].

2.2.1. Technological Context

Technological context means the internal and external technologies that organizations can use in their business [24]. Internal technologies are those that are already in use at the firm, while external are those available in the market place and not using by the organization [53]. Technologies that are currently in use by the firm influence decision of adopting cloud computing because they determine the scope and limit of the technological change that the firm can accept. Technologies not in use by the firm and exist in the marketplace influence adoption decision by indicating how firms can evolve by accepting new technologies. The changes brought about by technologies that exist beyond an organization's boundaries include incremental, synthetic, or discontinuous changes. Technologies that offer incremental changes only add new features to existing technologies and are regarded as the least risky of the three. Synthetic changes result when existing technologies are combined in novel ways. These kinds of changes are considered moderately risky. Discontinuous changes are technologies that are radically different from existing ones [54]. Although the successful adoption of IT depends to a large degree on the technology competence of the organization [55], there is a dearth of studies that take technological characteris-

tics into account when studying factors affecting IT adoption decision [56]. Technological Context can be discussed from three point of views; Relative Advantage, Complexity and Compatibility.

1) Relative Advantage

Relative Advantage is defined as the level to which a Technological factor has more benefits that disadvantages to the organizations [57]. It is logical for organizations to weigh the benefits that are expected to come from adopting an innovation [58]. It has been reported that the probability of adopting a new technology increases when firms perceive a relative advantage in that innovation [59]. Cloud computing promises various advantages to organizations that adopt it such as speed of business communication, efficient coordination among firms, better customer communication, and access to market information mobilization [24]. Other benefits of cloud computing includes reduced costs, scalability, flexibility, mobility, pay-per-use, and shared resources [60] [61]. Organizations can avoid expenses associated with owning and maintaining an IT infrastructure that is not fully utilized by using cloud computing, thereby radically reducing the total cost of IT operations [35]. Cloud computing also offers rented service where organizations pay-per-use which leads to adjusting the level of usage according to the organization's current needs [62]. Furthermore, as the requirements for cloud computing increase, the user is able to scale up resources and infrastructure to satisfy new requirements [63]. In terms of flexibility, cloud computing allows users to access and works with documents from any place and any time given that they have access to a computer and an internet connection. Moreover, the ability to offer shared resources is another advantage of cloud computing that enables employees to access resources placed on cloud regardless of their location, thus saving businesses a lot of time and money [64].

2) Complexity

Complexity can be defined as the perceived degree of difficulty of understanding and using a technology [65]. It is related to time taken to perform tasks, integration with cloud infrastructure, efficiency of data transfer, system functionality, and interface design [45]. According to reference [57], the probability of adopting a new innovation will be less likely if it is seen as more challenging to use. Adopting new technologies may present organizations with challenges such as changing the processes that interact with their business systems [53]. In order to increase the chances for adoption success, technologies should be user friendly, manageable, and easy to use [66] [67]. Furthermore, cloud computing is still in its early stages which may scare organizations away from adopting such a new technology [9].

3) Compatibility

Compatibility refers to "the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" [57]. Perceived compatibility takes into consideration whether current values, behavioral patterns, and experiences of an organization and its members are consistent with a new technology [68]. Increased compatibility between an innovation and adopters' needs facilitate an easy integration of the technology within the organization and business functions. Compatibility can provide adopters with several benefits. For instance, it can result in time and cost reductions as users will not have to deconstruct a costly infrastructure if a new technology was adopted [48]. The incompatibility between the features of the innovation and the potential adopters' needs and business processes is considered a major barrier affecting the adoption of that innovation [69]. The more the technology is recognized as being compatible with existing systems and organizational values and beliefs, the more likely organizations are to think about adopting cloud computing. Cloud computing allows organizations to keep up with new technology without affecting existing legacy systems aligned with their different organizational, managerial, and operational needs [61].

2.2.2. Organizational Context

Organizational context can be defined as the resources and characteristics of the firm [54]. In this study the organizational context is composed of two main components. The first part is top management support while the second part is technological readiness.

1) Top Management Support

Top management support plays a significant role in initiating, implementing, and adopting of information technology [45]. Their support can be seen in their sponsoring of initiatives and engaging in the adoption of new technologies within the organization. Top managers are responsible for setting organizational strategy and for establishing direction for technologies such as cloud computing. Top managers can secure enough resources and produce a supportive climate for cloud computing [48]. Top management awareness of potential benefits of adopting cloud computing is regarded as essential to manage potential organizational change through an ex-

pressed vision and commitment, sending positive signals of confidence in the new technology to all employees of the firm [24]. Taking in such support helps the organization to avoid any internal barriers and opposition to change. It can be concluded that top management support is vital for organizations searching to produce a competitive environment, whilst also providing the resources needed to adopt cloud service [61].

2) Technological Readiness

The technological readiness means the readiness of infrastructure and IT human resources which influence the adoption of a new technology [52] [71]. Reference [24] referred to technological infrastructure as "installed network technologies, and enterprise systems, which provide a platform on which the cloud computing application can be built". IT human resources are considered the sources of knowledge and skills that are needed to implement cloud computing related IT applications [24]. Organizations can be segmented into five different groups based on their technology readiness, from explorers who are the first to adopt a new technology, to laggards who are the last to adopt a new technology and are not technologically motivated.

2.2.3. Environmental Context

Environmental Context covers the small environment where the organization runs their business including industry market as well as Technology Service Providers [61]. Environmental context refers to a firm's industry, competitors, and government policy or intention [24] [55]. The environmental factors used in the study include competitive pressure, trading partner pressure, and vendor scarcity.

1) Competitive Pressure

According to [72], Competitive pressure is the degree of pressure which organizations can face from their rivals in the same industry. This Competition can play a positive role in the adoption of any new technology especially when the technology affects the competition [73]. Adopting technology helps organizations in changing the competitive environment in different ways such as industry structure and outperforming competitors. Cloud computing can increase the operating efficiency, data accuracy, and decrease costs [24]. Therefore, organizations that are first to adopt cloud computing are expected to derive benefits in terms of competitive advantage and survival [45].

2) Trading Partner Pressure

In cloud computing, trading partners relate to the cloud service providers. Organizations, regardless of size, rely on the experience and skills of trading partners when looking to adopt cloud services. Trading partner previous history and past projects can affect on the decision of whether to adopt a new Information Technology innovation or not [61]. Organizations that want to adopt cloud services are concerned about the ability of service providers to ensure the availability of data when needed. To ensure the desired level of availability, service level agreements and a combination of precautionary measures can be used. Security is another concern organizations have with regards to trading partners. Cloud computing security is more than just authenticity, authorization, and accountability; it is also related to data protection, disaster recovery, and business continuity. Privacy and confidentiality also relate to security because service providers have access to all the data and could intentionally or unintentionally use it for unauthorized purposes. Consequently, many companies are reluctant to host their data on external computers that might be co-hosted with other companies' application [45].

3) Vendor Scarcity

Vendor scarcity refers to the lack of reputable and qualified cloud service vendors in the cloud service market. Given that cloud service is still a fairly new market, existing knowledge or experience about the cloud service may be limited. Having a limited number of vendors may in turn result in lower service quality. Thus, the availability of enough vendors with good reputation improves the organization's confidence in cloud services and lets them make a positive trusting attitude towards cloud services transformation. As such, vendor scarcity will have a negative influence on firm's trust towards cloud service [74].

2.3. Factors Affecting Cloud Computing Adoption

Many studies have been undertaken in an effort to understand different factors that are expected to influence the decision to adopt various technologies such as [75]. With regards to cloud computing, researchers have chosen different ways to explain what encourages or discourages organizations to adopt cloud computing. Reference [24], for instance, examined the effect of eight factors: "relative advantage, complexity, compatibility, top management support, firm size, technology readiness, competitive pressure, and trading partner pressure" on the de-

cision of high-tech companies to adopt cloud computing. The findings indicated that five of these factors, namely: "relative advantage, top management support, firm size, competitive pressure, and trading partner pressure, significantly affected the adoption of cloud computing". Reference [53] "investigated the influence of the TOE framework on the adoption of cloud computing in SMEs". The factors included in this study were technology factors ("relative advantage, uncertainty, compatibility, complexity, and trainability"), organizational factors ("size, top management support, innovativeness, and prior IT experience"), and environmental factors ("competitive pressure, industry, market scope, supplier efforts and external computing support"). The results showed that most of these elements had a significant effect on the adoption of cloud services in SMEs. The only factor that was not found to have any contribution in the process of adopting cloud computing was competitive pressure. In addition, reference [61] used the TOE framework to determine which factors influence the decision of managers to adopt cloud computing in the UK. The results indicated that the following four factors had positive impact on the adoption: "competitive pressure, complexity, technology readiness and trading partner pressure".

Reference [30] studied the effect of various factors on the decision of hospitals in Taiwan to adopt cloud computing. The study revealed that the five most critical factors were data security, perceived technical competence, cost, top manager support, and complexity. Further, it was noted that among the four dimensions proposed to influence the adoption of cloud computing, the most important one was technology, followed by human, organizational, and environmental factors. Moreover, a study was conducted by reference [76] with the aim of identifying the factors with the most influence on the intention of organizations to adopt cloud services. The study found that the factors of availability, reliability, security, privacy and others had a significant impact on the decision to adopt cloud computing. Only trading partner pressure which not. Reference [45] also tried to understand which factors influenced the adoption of cloud computing in organizations. The researchers used an integrated model composed of both Technology Acceptance Model (TAM) and TOE factors in addition to two mediating variables including perceived usefulness and perceived ease of use to explain the variation in the dependent variable, intention to adopt cloud computing. The findings of the study suggested that relative advantage, compatibility, complexity, organizational readiness, top management commitment, and training and education were the most important variables affecting the adoption.

3. Research Model and Hypotheses

The main objective of this study is to investigate the influence of TOE elements on the Intention of organizations to adopt cloud computing. Therefore, the variable of primary interest is the "Intention to adopt cloud computing", which is the dependent variable, and Technological, Organizational, and Environmental factors are the independent variables used to explain the variance in the dependent variable. Research Model is represented in **Figure 1**.
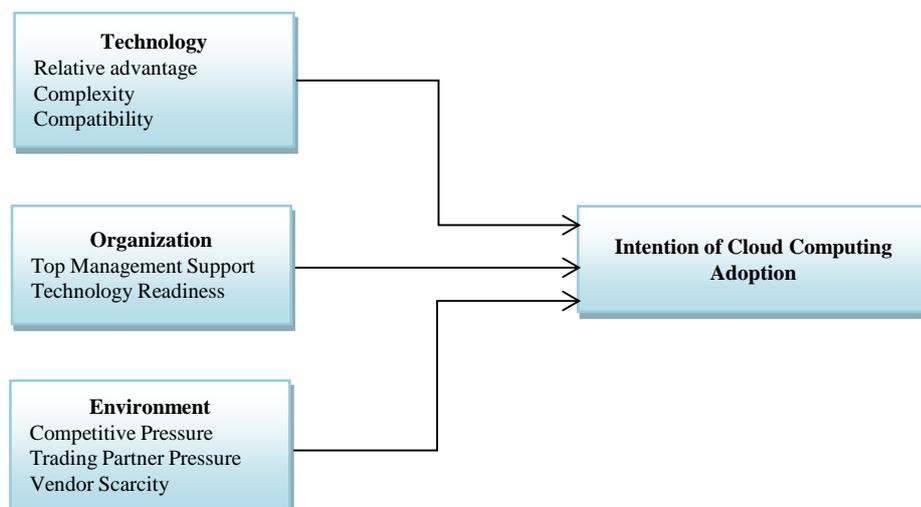

Figure 1. Research model. Technological, Organizational and Environmental (TOE) model.

Based on the objective of this study as well as the study's research model, the following hypotheses are developed and will be tested:

H1: Technology factor does not influence the intention to Adopt Cloud Computing.

H2: Organizational factor does not influence the intention to Adopt Cloud Computing.

H3: Environmental factor does not influence the intention to Adopt Cloud Computing.

4. Research Methodology

In order to evaluate how Technological, Organizational and Environmental factors affect the cloud computing adoption decision, a quantitative research will be conducted, where data will be collected through a questionnaire, which will attempt to help hospitals gain a better understanding about how these three factors affect their decision to adopt and deploy a cloud computing model.

The population of the study consisted of 47 hospitals that operate in the Jordanian healthcare sector. 223 questionnaires were distributed to the employees working in the IT department in hospitals located in the capital of Jordan, Amman. The hospitals were selected randomly based on Uma Sekaran sampling method, employees' were be chosen from each of our randomly selected hospitals to represent the sample used in this research [77].

Three factors that affect the decision to adopt cloud computing will be measured through 8 variables; Technological factor which includes 3 items; relative advantage, complexity and compatibility as suggested by reference [62], Environmental factor includes 3 items; where competitive pressure, trading partner pressure are also derived from [62] and supplier scarcity is derived from a study conducted by reference [74]. Finally, Organizational factor that includes 2 items; top management support and technology readiness are also derived from [61]. Cloud computing adoption was measured through 3 items based on a study conducted by [48].

In order to investigate the hypotheses associated with this research, the collected data will help examine the relationship between the variables of interest to the study. The data were analyzed using Statistical Package for Social Sciences (SPSS) version 19. A measure of multiple regression analysis will be conducted, in addition to reliability and multicollinearity tests. The results will provide the foundation for accepting or rejecting the hypotheses and answering the research question.

5. Data Analysis and Results

In order to examine the effect of TOE research Model on the intention to adopt cloud computing, 5 points Likert scale systems were used. Scale varies between strongly disagree = 1 and strongly agree = 5. Reliability and validity analyses were conducted, in addition to multi co-linearity test. Also multiple regression analysis was conducted to test the research hypothesis.

5.1. Validity and Reliability

Validity and reliability are two important measures that determine the quality and usefulness of the data collected. Validity is about accuracy and whether the instrument measures what it is intended to measure. Reliability is about precision; it is used to check the consistency and stability of the questionnaire. The researchers of the current study depended on scales and items that were previously developed and used by other researchers with similar interests. In addition, a draft of the questionnaire was reviewed by four academic lecturers–who have sufficient knowledge and experience in this scope to make sure that each item is measuring what is expected to measure, and to avoid any ambiguity or complexity in the phrasing of the questions. The reliability of the instrument was measured by the Cronbach's alpha coefficient. According to [78], the values of all indicators or dimensional scales should be above the recommended value of 0.60. **Table 1** represents the results of Cranach's alpha for the independent and dependent variables. Cronbach's alpha coefficients of all the tested variables are above 0.60 which indicates that the composite measure is reliable.

5.2. Hypotheses Testing Results

The objective of this research is to investigate the effect of TOE framework (Technology, Organizational, Environmental factors) on the Intention of Hospital in Jordan to adopt cloud computing. Consequently, in order to test the hypotheses developed for this study, multiple regression technique was used. Further, the level of significance (α-level) was chosen to be 0.05 and the probability value (p-value) obtained from the statistical hypo-

theses test is considered to be the decision rule for rejecting the null hypotheses [79]. If the p-value is less than or equal to α-level, the null hypothesis will be rejected and the alternative hypothesis will be supported. However, if the p-value is greater than the α-level, the null hypothesis cannot be rejected and the alternative hypothesis will not be supported. In addition, normality of the independent variables and the absence of multi co-linearity problem (a case of multiple regression in which the independent variables are themselves highly correlated) were checked. As suggested by [80], most of the values should be inside the adequate ranges for normality. For this purpose, tolerance and Variance Inflation Factor (VIF) were investigated; a VIF value of 5 or 10 and above and a tolerance of less than 0.20 indicate that variables are multicollinear. **Table 2** shows the results.

From the above table, it can be seen that VIF ranges between 1.407 and 1.565 which are well-below five. In addition, the tolerance values range between 0.639 and 0.711 which are above 0.2. These factors indicate that there is no evidence of multicollinearity problem in the regression model. In addition to the VIF and tolerance values, Pearson Correlation Matrix was computed for the independent variable dimensions to check correlation between them (**Table 3**).

According to [81], a value of 0.75 and above suggests high correlation between the variables. The results in the above table, are all below 0.75 and thus don't suggest high correlation between the variables. Therefore, these findings also show that there is no evidence of multicollinearity problem.

The results of testing the three hypotheses regarding the effect of TOE framework on the intention to adopt cloud computing are presented in **Table 4**.

As indicated in **Table 4**, there is a positive correlation between TOE framework and the intention to adopt cloud computing since the multiple correlation coefficient r = 0.431. The adjusted R^2 relates to the generalisability of the model. It allows us to generalize the results taken from the respondents to the whole population. In this case it equals 0.186. The results showed that F-ratio for these data is equal to 16.633, which is statistically significant at $p < 0.05$. Therefore, we conclude that there is a statistically significant effect of TOE framework on the intention to adopt cloud computing.

The β indicates to the individual contribution of each predictor (independent variable) to the model, if other predictors are held constant. **Table 4** shows the standardized coefficients for each TOE framework dimension.

Table 1. The study variables' Cronbach's alpha.

Variable	No. of Items	Cronbach's alpha
Technology Factor	7	0.680
Organizational Factor	8	0.745
Environmental Factor	7	0.700
Intention to adopt cloud computing	3	0.651

Table 2. Tolerance and VIF for the independent variables.

Variables	Tolerance	VIF
Technology Factor	0.711	1.407
Organizational Factor	0.639	1.565
Environmental Factor	0.698	1.433

Table 3. Pearson correlation matrix.

Variables	Pearson Correlation		
	Technology factor	Organizational factor	Environmental factor
Technology factor		0.501	0.426
Organizational factor			0.514
Environmntal factor			

Table 4. Result for the study model (b).

Variables	R	R²	F	Sig (f)	β	t	Sig (t)
Technology Factor	0.431[a]	0.186	16.633	0.000[a]	0.211	2.918	0.004
Organizational Factor					0.113	1.480	0.140
Environmental Factor					0.207	2.840	0.005

[a]Predictors: (Constant), Technology factor, Organizational factor, Environment factor; [b]Dependent variable: Intention to adopt cloud computing.

The values of β for Technology factor, Organizational factor, and Environmental factor are 0.211, 0.113, 0.207 respectively, which are all positive. The level of effect of these variables depends on the *β* value, the higher *β* value the higher the effect on the dependent variable. It can be concluded from the values of beta that the variable that has the highest contribution in the model is Technology factor, followed by Environmental factor and finally the Organizational factor.

6. Discussion and Conclusion

The main purpose of conducting this research was to determine whether the factors suggested by the TOE framework influenced the intention of hospitals to adopt a new innovation like cloud computing, particularly in the country of Jordan where healthcare sector cared tremendously about any new breakthroughs in technology that might aid in the improvement of healthcare services provided. The results of the study indicated that the three factors proposed by the framework (Technology, Organization, and Environment) played a role in the decision to adopt cloud computing in Jordanian hospitals.

The first hypothesis of this study states that "Technology factor does not influence the intention to Adopt Cloud Computing". This hypothesis was rejected; it was found that the Technology had a positive significant impact on the intention to adopt cloud computing. Moreover it was found that this factor had the most impact on the decision of adopting this new innovation. This result supports the findings of other researchers such as [11] [29] [45] [46] [53]. This may be attributed to the dimensions of the technology factor, where it has been suggested that when firms perceive a relative advantage from an innovation, they are likely to adopt it [59]. The technology of cloud computing has different benefits such as reduced cost, mobility, flexibility and resources sharing [46]. Cloud computing services can make organizations more effective [53]. Organizations require confirmation that substantive benefits from cloud computing are feasible before its adoption can be considered. This could be important particularly when spending on such technology is constrained by limited budgets [48]. Moreover, complexity plays an important part in cloud computing adoption. Many organizations have some concerns and fears about investing in new IT innovations. Compatibility is another reason why technology is an important factor to take into consideration when adopting cloud computing. It is crucial to understand if the technology is compatible with the current infrastructures in the organization and if the technology is compatible with current values and needs of adopters [45]. Cloud computing must be compatible with companies' policy, IT development environment, and business needs [29]. Therefore, steps must be taken to change existing processes to meet compatibility of cloud solutions in the organization's infrastructure. However, researchers such as [61] and [24] stated that compatibility was not considered and crucial motivational for cloud computing adoption. This disagrees with the findings of this study.

The second hypothesis stated that "Organizational factor does not influence the intention to Adopt Cloud Computing". Results showed that the organizational factor did have an influence on the decision to adopt cloud computing, but was not as strong as the other two factors (Technology and Environment). In this study, organizational context included top management support and technology readiness. As suggested by previous studies [69] [83] [84] these factors could affect the process of adoption new technology. Literature supports that top management support has influence on the adoption [85]-[87]; without top management support, organizations are less likely to adopt new technologies. This suggests that the supportive behavior of top management may be an important driver in influencing adoption strategies and outcomes [48]. Top management support is important, however, reference [61] found that top management support was no longer a driving force for the adoption of cloud computing. This may be due to the growing awareness between business and IT managers regarding the potential benefits of cloud computing that outweigh the risks of its adoption [58] and [53]. Furthermore, the

technology readiness of organizations has positive influence on the adoption of cloud computing; the more readiness organization has, the more intention to adopt cloud computing [75]. The findings of this study were supported by those of references [48] [52] and [88]. This is mainly because organizations with high technological readiness are aware of current IT infrastructure potential and limitations and are willing to provide adequate training to enable the skills need to adopt cloud computing. Consequently, organizations that have technological readiness are better prepared for adopting cloud computing [61]. Reference [24], however, found otherwise. The researchers found that technological readiness has no significantly impact on cloud computing adoption. This result may come from the fact that organizations with sophisticated hardware, software and expertise resources may not influence initial cloud computing adoption but the extent of implementation instead.

The third hypothesis, Environmental factor does not influence the intention to Adopt Cloud Computing, was rejected as this factor was found to have a positive impact on the decision to adopt cloud computing. Reference [24] [52] [58], and [84] agree with the findings of this study. These References stated that organizations that face strong competition tend to implement changes more aggressively and respond more quickly in a competitive environment. When competitors implement cloud computing as a competitive tool, other organizations face strong competition and thus feel pressure of adopting cloud computing so as to maintain a competitive edge. Tough competition forces organizations to shift to cloud computing [89]. Furthermore, trading partner power also has a positive effect on IT adoption decisions; this power can be either convincing or compulsory. Firms which adopting cloud computing technology are depending on whether they have been influenced by convincing power or through compulsory power, whereby the firm that has more bargaining power has requested that the firm with less bargaining power adopt cloud computing [24]. In order to work in the best way, cloud computing technology requires full cooperation of all business partners, therefore, cloud computing adopters' organizations form working networks with all participants so that the needs of customer requirements can be satisfied [45]. Reference [69] and [53] contradict this conclusion; they found that trading partner and competitive pressure were not statistically significant for adopting cloud computing. Vendor scarcity also played an essential role given that the presence of sufficient, reputable, and competent vendors will encourage organizations to adopt cloud service and form a positive trust attitude towards cloud service transformation [74].

This study attempts to test the suggested adoption model presented in **Figure 1** (TOE model). Results of this research proved that the three factors of this framework (Technology, Organization and Environment) are connected to each other and significantly influence the decision of organizations, particularly hospitals, to adopt cloud computing. The factor that influenced the intention to adopt cloud computing the most was the Technological factor followed by the Environmental factor, and finally the Organizational factor. The findings of this research are critical to ICT managers as well as providers. Findings can help in developing plans for cloud computing adoption. For ICT service providers, the research model can help them to understand clearly how and why hospitals in Jordan choose to adopt cloud computing services. In addition, organizations can assess whether services are in fact compatible with their systems and how complex is the service to implement and understand.

Future research can use this study as a base to build on in an effort to adopt better cloud computing in other sectors as well. In this study a structured questionnaire was used to collect data regarding the influence of the TOE framework on the intention of hospitals to adopt cloud computing. Although this approach is useful in understanding business-related decisions, it may not be able to reflect the exact reason behind the intention of decision makers to adopt or overlook cloud computing. Furthermore, the study was undertaken in the country of Jordan where not many organizations, particularly hospitals, have heard of let alone attempted to adopt cloud computing so further studies need to be conducted in order to be able to generalize the results obtained in this study.

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