

The Role of Cloud Computing Features in Improving Accounting Information Systems

Sanaa. N. Maswadeh

Accounting Department, School of Business, Jadara University, Irbid, Jordan

sanaam@jadara.edu.jo

Abstract. The objective of the current study is to investigate the role of cloud computing features (flexibility, widespread access, pooling resources, safety, and security), in improving accounting information systems of Jordanian small and medium-sized companies SMEs. A questionnaire has been developed and targeting accountants and financial managers in Jordanian (SMEs) used cloud computing services, One-Sample t-Test conducted to test the hypotheses of the study. Among the most prominent findings of the current study are the importance and the significant role of all cloud computing features (flexibility, widespread access, cloud pooling resources, safety, and security) in improving the accounting information systems of Jordanian SMEs. Further, safety and security considered the most important cloud computing features in improving accounting information systems.

Keywords: Cloud Computing, Accounting Information systems, Jordanian SMEs companies.

1. Introduction

A good accounting system that responds to changes in the surrounding environment and developments in information technology is a requirement to provide management and other parties with the data and information required to make rational decisions. Cloud computing has helped achieve this goal as companies become aware of the characteristics and benefits of cloud computing. This is a major reason why cloud computing is growing exponentially, as companies begin to use cloud computing to do their duties without having their technology infrastructure.

Cloud computing has been used as a means of communication between companies and in the exchange of knowledge and information between different parts of the world, allowing the spirit of innovation. It is growing among the major providers of cloud computing through the software service, and the ability to quickly transfer information from one location to another to provide new services that adapt to change in business processes.

The pioneer companies use the cloud as a means of collecting skills and knowledge that was previously not possible, and cloud computing is also used as a way to take advantage of the integration and application of mobile technologies. Especially in the present era, the mobile phone plays an important role in the market, helping to integrate mobile applications with the accounting system within the company.

Cloud computing has been a reflection of the growing market needs' so, Dimitriua and Mateia (2014) mentioned in their study that according to a study by the Cloud Computing Institute CAI (2013) the growth rate in adopting the use of cloud computing recorded a dramatic increase of more than 43% in financial and accounting firms from 2012 to 2013.

Azadi (2013) demonstrates that there is some evidence that software based on cloud computing has become accepted by accountants and companies. It is estimated that 14% of companies and 23% of accountants are attracted to using cloud accounting to manage their accounts in Australia. He found that 60-77% of accountants who do not use cloud systems plan to use it in the coming years. He concluded that accountants who are not inclined to use cloud computing are putting their business at risk.

Small and Medium-Sized companies (SMEs) have now begun to change their accounting information systems in response to changes in the environment and the evolution of information technology. Therefore, accounting has become dependent on entering electronic records and data and on the distribution of the electronic accounting information to keep up with developments in the local and international markets. This study intends to investigate the role of cloud computing features in improving the accounting information systems of Jordanian SMEs.

The high cost of quality information systems performance, especially in small and medium-sized enterprises (SMEs), which have scarcity resources find it difficult to create new software and applications infrastructure that require large investments. This has sparked controversy in the role of cloud computing in improving the performance of the accounting information systems over time because it offers gradual solutions, flexible expansion, widespread access, security and safety, and resource pooling. Also, Cloud computing is an additional resource that is not available to companies and it helps them to use the new generation of computing and to work on high technology capabilities infrastructure, which is transferred by the cloud's provider without the need for high investment from SMEs companies.

The significance of the study is to demonstrate the role of cloud computing features in improving and enhancing the accounting information systems in light of the company resources. It also helps the company design accounting information systems to achieve data collection and processing processes in the way that coordinate and integrate company activities, and it satisfies the needs of various managerial levels of information, which leads to develop the performance of the company and achieve its competitive advantage.

In addition it tries to find solutions to develop the accounting information systems which enable companies to follow the changes in the competitive environment of the local and international companies, and make rational decisions to achieve the objectives of the company, and alerting accountants and auditors to the most important features of the use of cloud computing and its impact on improving accounting information systems, in order to develop their professional performance in the light of changing in the surrounding environment and information technology.

This study contributes to determining the appropriateness of cloud computing to help small and medium-sized companies that are resource-constrained to use cloud computing technology and tries to link them to a unified technology to exploit cloud data, applications, and services to integrate the activities and processes of their accounting information systems.

It also identifies the most important features that enhance the ability of the accounting information systems to deal with the challenges faced by the company when using cloud computing and tries to overcome these challenges, to enhance the accounting information systems to produce high-quality information. Furthermore, it investigates the best ways to ensure the security of company data in general and the security of customer data in particular.

Also, most of the previous studies which were applied in Arab countries did not expand in studying cloud accounting and its features as one of the most important developments associated with the technological advancement of

information. Therefore, this study came to focus on the role of cloud computing features in improving the accounting information systems in SMEs companies that used cloud computing services in Jordan.

2. Theoretical Framework

The accounting information systems are defined as a system for collecting, recording, storing and processing data to produce information for decision-makers (Grabinski, Kedzior, and Krasodomska, 2014). Romany (2012) defines it as a system that collects, enters, processes and stores data to access valuable information that is provided to decision-makers. The accounting information systems can be a simple manual system based on paper and pen or a very complex system that uses computers and software or is in the middle of this and that, and regardless of the degree of simplicity or complexity of the system, the processes followed by the system is the same. Al-Rashidi (2012) defines it as a set of tangible and intangible elements used in the implementation of the accounting duty and the completion of the full accounting cycle, which is concerned with the collection, recording, classification, processing, storage and delivery of valuable information in the form of financial reports to the interested parties in order to help them in making good decisions.

For many years, companies have been using technology services from different sources. Cloud computing is not new, it enables companies to use the infrastructure of a cloud service provider, often outside the company's borders, to store, host e-mail and other services necessary to produce accounting information through the Internet.

Although there are many concepts of cloud computing, there is no single concept professionals accept for cloud computing as a definition, Dimitriua and Mateia, (2014) recognize that its key features and functions, including the processing and storage of accounting information and other data through applications, servers, and Web site service provided outside the company by a service provider, can explain the concept of cloud computing. Cloud Computing has been recognized by the National Institute of Standards and Technology (NIST) as a model for enabling access to a set of online shared resources group that can be quickly available and released on demand and in a convenient manner such as networks, servers, with minimal management or interaction with the service provider, so this model enhances the availability of the cloud. Gartner (2009) defines cloud computing as a computing style that is based on the widespread provision of Information technology services, as external customer service using Internet technology.

Grossman (2009) finds that the proper use of hardware resources, especially servers, can provide good benefits for companies such as reducing operational costs and reducing initial corporate costs, especially virtualization technology because it

helps to use servers more effectively.

Jones et al. (2017) note that UK government organizations have begun shift to cloud computing services to reduce their overall investment and resources in information technology infrastructure. It indicates that there are many key advantages to using cloud computing, such as improved information and management, flexible work practices and significant cost savings for government companies based on cloud computing services. Taha's (2016) study aims to explore ways to improve the performance of the information systems by proposing a hybrid cloud computing system for the company. The study concluded that the hybrid cloud computing system results in more efficient performance of the company's information systems by focusing on more important operations and activities required by the company and by organizing transfer and copying of the data in cloud data centers and providing security for cloud information. The study of Al-Alimi (2014) shows that the concept of cloud computing faces uncertainty in the scientific community and studies and researches did not address it adequately, and knowledge and experience about cloud computing are still overlapping and interrelated, especially concerning the applications and risks and ways of using it. The study recommended corporate management increasing interest in the information technology infrastructure for the transition to cloud computing services. Al-Mutairi (2012) aims to identify the characteristics of electronic accounting information systems in terms of speed in providing information and in terms of the accuracy of the information and its reflection on the measurement of the credit risk of Kuwaiti banks. The study concludes the importance of the appropriate timing (speed) as an important feature of the electronic accounting information systems, and the need for Kuwaiti banks to continue to adhere to the security and safety of the system as it leads to reduce the level of credit risk. The study of El-Helou, Sabah (2008) seeks to determine the success of modern information and communication systems and their technology in helping Jordanian banks perform their duties. The study concluded that commercial banks in Jordan will not be able to continue to work or compete if they do not use computer technology and communications effectively in the performance of their various duties. Also, it concludes that investment in computer technology and communications lead to lower costs, and there is a relationship between the degree of development of computerized information systems and the way banks doing their activities and daily work.

Dhali (2015) aims to investigate the cloud adoption factors that lead to the initiation of cloud integration between SMEs. The results of the study showed that cloud computing leads to develop existing business processes, increase their business value with the attendant ease of movement, improve customer relationships and create competitive opportunities for SMEs, manage and maintain private data centers with cost reduction investment and capital spending in

information technology. Kinkela (2013) shows that cloud computing seeks to reduce the cost of accounting data processing through third-party data storage and processing, although investment and innovation in cloud storage and data management have added a new risk to corporate data security. So companies need to develop effective policies to use the cloud and a risk response plan, enabling companies to take advantage of this new technology to increase the operational efficiency of their operations.

Serkan and Cemal (2015) conclude that the Turkish cloud service provider must take all necessary arrangement when dealing with cloud computing so that digital data is not destroyed, lost or possessed by harmful third parties by building the necessary technical infrastructure to operate a flawless system and to maintain digital organization data in a secure environment.

Shihong (2015) conducts a methodology study on how to choose cloud services that fit the accounting information systems. The study found a lack of awareness of cloud services and a comprehensive understanding of service level agreements by companies using cloud computing services, so companies should continue to look for the appropriate model of cloud computing, and cloud service providers can help companies choose the appropriate cloud services according to the needs of their accounting information systems. Dimitriua and Mateia (2014) show that the benefits of using cloud computing solutions are great and companies should do their best effort to explore all opportunities and learn from ever-changing markets. The study also pointed out that the transition to cloud computing is inevitable for most companies and in many cases; the only question that arises is "when".

Llie and Windekilde (2014) clarify the importance of using cloud computing and how it affects companies in terms of improving knowledge management and informatics in the company, as well as improving the flow of information. The study found that cloud computing is a key factor in the progress, prosperity and corporate sovereignty in the market.

The study of Sacer and Ioluic (2013) highlights the impact of information technology on the quality of the SMEs Croatia accounting information systems. The study showed that the quality of the accounting information systems and the quality of accounting information are significantly affected by information technology.

Adel, A., et al. (2013) clarify impetus, needs, and fears surrounding the adoption of cloud computing by SMEs in the UK. The study found that there is a major role of cloud computing in addressing the shortcomings of performance, and consider a key factor to the growth of SMEs by increasing their competitiveness since the adoption of cloud computing services will make SMEs able to access the modern technologies with no need for high costs. The study showed that SMEs were interested in information security as an important factor when they using cloud computing.

Therefore, this study came to test the hypotheses of the study raise from the role of cloud computing features (cloud flexibility, widespread access, pooling resources, safety, and security) in improving the accounting information systems of Jordanian SMEs companies. So, the study will test the following hypotheses:

- Cloud flexibility features have a role in improving accounting information systems of Jordanian SMEs companies.
- Cloud widespread access features have a role in improving accounting information systems of Jordanian SMEs companies.
- Cloud pooling resources features have a role in improving accounting information systems of Jordanian SMEs companies.
- Cloud safety and security features have a role in improving accounting information systems of Jordanian SMEs companies.

3. Methods

In order to achieve the primary objectives of this study, a theoretical literature review has been done to develop a questionnaire which distributed to accountants and financial managers work in Jordanian Small and Medium-Sized companies (SMEs) used cloud computing, to investigate the role of cloud computing features in improving the accounting information systems in these companies.

3.1. Population and Sample of the Study

The population has consisted of 277 Jordanian SMEs' companies using cloud computing services at the end of the year (2018). The sample was selected using the simple random sampling approach with a sample size of 170 SMEs companies. In order to determine the size of the representative sample of the population, the table for determining the sample for a known population was referred to (Krejcie and Morgan, 1970). The primary respondents from these SMEs were financial managers and accountants who have a good educational level background. A total of 510 questionnaires were distributed in a period of four months; between January to May 2019 with the help of enumerators. Out of 510 questionnaires, only 455 were fit for analysis with a percentage of (89%) approximately of total questionnaires distributed.

3.2. Instrumentation

The data of this study were obtained through a survey; questionnaires were distributed to the sample size of 170 SMEs companies. The questionnaire is divided into two sections. The first section includes the demographic characteristics of the respondent (certification, educational level, and expertise). In the second section, 43 items of the four categories of the role of cloud computing features (14 items cloud flexibility, 12 items widespread access, 8 items pooling resources, 9 items safety and security) in improving the accounting information systems of Jordanian SMEs

companies.

The respondents were asked to indicate the level of importance toward these 43 items on a five-point Likert-scale, ranging from 1 – not important to 5- fully-important.

3.3. Statistical method

The questionnaires obtained from the survey were tested for internal consistency and reliability using Cronbach alpha tests. In order to measure the level of importance toward role of cloud computing features in improving the accounting information systems of Jordanian SMEs companies, the study tested the hypotheses using One-Sample t-Test, by comparing the mean calculated to each item and each perspective with the test value (arithmetic mean) which is (3) calculated in the equation $((5+4+3+2+1)/5)$ as the scale of the questionnaire was graded using the five-point Likert scale starting from 1 to 5,. Hence, if the statistical significance level ($\alpha \leq 0.05$) at 95% confidence level, this means there are statistically significant differences from the mean of the item or perspective and the test value (arithmetic mean). Consequently, the study would accept the alternative hypothesis, if the significance level ($\alpha \leq 0.05$), and accept the null hypothesis if the significance level ($\alpha > 0.05$), in each perspective of the study.

4. Results

Calculated to measure the reliability of the questionnaire. The alpha values showed high reliability for the whole questionnaire (0.80) also, in each of the cloud computing features dimensions: cloud flexibility (0.82), widespread access (0.77), pooling resources (0.84), safety and security (0.78). These findings prove that the questionnaire is a valid instrument to evaluate the role of cloud computing features in improving the accounting information systems of Jordanian SMEs companies.

The statistical analysis to demographic characteristics of the sample respondents (certification, educational level, and expertise) by using descriptive statistic such as frequencies, showed that 81% of the respondents certification was a bachelor's degree and the specialization was concentrated in the accounting, the years of experience ranged from (10-14 years), which can be considered as an indicator of the availability of expertise and sufficient scientific qualifications for the sample respondents to answer the questions of the study.

The questionnaire's results from One-Sample t-Test conducted on the Jordanian SMEs' companies using cloud computing showed the following results:

Testing the first hypothesis: Cloud flexibility features have a role in improving accounting information systems of Jordanian SMEs companies. The results were tabulated and presented by the table (1).

Table 1: Cloud flexibility in improving the accounting information systems

Items	mean	Relative importanc e	Std Deviation	T - Value	Sig
The degree of importance related to the elements of cloud flexibility in improving AIS:					
1. Developing cloud applications and services, increasing the system's ability to handle cloud applications, in ways leads to increase the efficiency of the accounting information system performance.	4.26	85%	1.01	8.42	0.00
2. Cloud computing helps companies define a clear strategy for keeping private and important data.	3.51	70%	1.06	8.72	0.03
3. The capacity of cloud computing infrastructure to maintain supplier's and customer's data and not deleting them improves the performance of the accounting information system.	4.72	94%	0.91	9.44	0.00
4. Virtualization technology helps companies to use servers more effectively, which helps the accounting system to perform its functions more effectively.	4.51	90%	0.8	9.72	0.00
5. Cloud computing helps using Information technology resources more efficient in ways that improve the performance of the accounting information system.	4.01	80%	0.83	9.07	0.00
6. The ability of cloud computing to allocate resources and applications dynamically is needed and then released when it is not needed.	4.56	91%	0.86	8.24	0.00
7. The integration of applications and management tools in cloud computing improves the accounting information system.	4.12	82%	0.78	8.63	0.00
8. The cloud helps companies to collect and process data so that it can coordinate the activities of the accounting information system and integrate them with the objectives of the organization.	4.16	83%	0.75	8.14	0.00

9. Having a strong infrastructure when using cloud computing technology accommodates accounting information system requirements, thus increasing the efficiency of its performance.	4.35	87%	0.89	7.4	0.00
10. Cloud computing offers all the services and applications that are appropriate to the company accounting information system.	4.29	86%	0.74	7.92	0.00
11. The time required to make receipts and documents when relying on cloud applications is less, which increases the speed of completion of the accounting information system operations.	4.77	95%	0.76	8.97	0.00
12. The fast response of the cloud to changes in technology applications increases the effectiveness of the accounting information system.	3.91	78%	1.17	8.57	0.00
13. Cloud computing applications and it's efficient to use increase the possibility of entering valid and documented data for the accounting information system.	4.21	84%	0.96	8.53	0.00
14. The inclusion of the cloud on a wide range of applications covering different business and accounting applications improves the output of the accounting information system.	4.12	82%	0.84	8.91	0.00
The arithmetic mean (test value) of the total items related to the elements of cloud flexibility in improving AIS.	4.25	85%	0.83	9.07	0.00
Source: Result Output from SPSS Statics Analysis.					

Table 1 shows that all features related to the role of cloud flexibility in improving the accounting information systems of Jordanian SMEs companies have meant higher than the test value (M=3) at a statistical significance level ($\alpha \leq 0.05$), indicating the important role of the cloud flexibility features in improving the accounting information systems of Jordanian SMEs companies.

Also table 1 shows, the most importance cloud flexibility features roles in improving the accounting information systems related with “The time required to

make receipts and documents when relying on cloud applications is less, which increases the speed of completion of the accounting information system operations” and “The capacity of cloud computing infrastructure to maintain suppliers and customer's data and not deleting them improves the performance of the accounting information system" with the means is 4.77, 4.72 respectively, and relative importance approximately 95%, 94% respectively at a statistical significance level ($\alpha \leq 0.05$).

Also table 1 shows the least importance cloud flexibility features roles in improving the accounting information systems related to “Cloud computing helps companies define a clear strategy for keeping private and important data” and “Fast response of the cloud to changes in the technology applications increases the effectiveness of the accounting information system ” with the means are 3.51, 3.91 respectively, and relative importance approximately 70%, 78% respectively at a statistical significance level ($\alpha \leq 0.05$).

Table 1 shows One-Sample t-Test results to the overall items related to the first hypothesis have mean score ($M=4.25$) and relative importance approximately 85%, at a significant level (0.00) which is less than ($\alpha \leq 0.05$), implying a significant importance role to the cloud flexibility features in improving the accounting information systems of Jordanian SMEs companies, and allows accepting the alternative hypothesis which states, “Cloud flexibility features have a role in improving accounting information systems of Jordanian SMEs companies”. This result was consistent with the outcomes of the Dhali(2015), Jones et al. (2017), Shihong (2015) these studies pointed out that flexible work practices consider as key advantages to using cloud computing.

Testing the second hypothesis: Cloud widespread access features have a role in improving accounting information systems of Jordanian SMEs companies. The results were tabulated and presented by the table 2.

Table 2: cloud widespread access in improving the accounting information systems.

Items	mean	Relative Importance	Std Deviation	T-value	Sig
The degree of importance related to the elements of cloud widespread access in improving AIS:					
1. The company's accounts can be navigated easily on the cloud, from anywhere and from a different and large number of devices.	4.45	89%	0.78	8.94	0.00

2. Making updates to the accounting information system is easier as the responsibility of developing the cloud-related to the cloud providers, who have huge capabilities and resources.	4.39	88%	0.94	7.2	0.00
3. The storage of information on the cloud network increases the storage capacity of the accounting information system.	4.5	90%	0.62	10.46	0.00
4. The use of cloud services without the need for direct communication with the cloud service provider increases the processing speed of the information system.	4.41	88%	0.83	5.89	0.00
5. Relying on cloud computing services over the internet provides access to system information quickly and easily.	4.81	96%	1.01	4.11	0.00
6. The ability of the cloud to provide services immediately and continuously increases the efficient performance of the company's information system.	4.75	95%	0.9	4.22	0.00
7. Available legal and regulatory requirements governing the work of the cloud, improve the performance of the accounting information system.	3.51	70%	0.85	3.37	0.00
8. Providing software and special applications to facilitate cloud data access, and the speed to access the information.	3.88	78%	0.88	3.18	0.04
9. Companies sharing cloud computing CPU, memory, storage and also virtual cloud computing resources, lead to meet the requirements of their accounting information system.	4.15	83%	0.86	8.17	0.00
10. The ability of cloud applications to link with the company's databases accelerates data processing procedures of the accounting information system.	4.45	89%	0.77	8.77	0.00
11. Allowing suppliers and customers to use the cloud leads to access to important and necessary data and increases the efficiency of the performance of the	4.25	85%	0.1 0	7.96	0.00

accounting information system.					
12. The expansion of storage capacity in the cloud increases the ability of the accounting information system to store the riskiest information.	4.69	94%	0.9 6	9.01	0.00
The arithmetic mean (test value) of the total items related to the elements of cloud widespread access in improving AIS.	4.35	87%	0.1 1	8.22	0.00
Source: Result Output from SPSS Statics Analysis.					

Table 2 shows that all features related to the role of cloud widespread access in improving the accounting information systems of Jordanian SMEs companies have meant higher than the test value (M=3) at a statistical significance level ($\alpha \leq 0.05$), indicating the important role of the cloud widespread access in improving the accounting information systems of Jordanian SMEs companies.

Also table 2 shows, the most important cloud widespread access features roles in improving the accounting information systems related with “Relying on cloud computing services over the internet provides access to system information quickly and easily” and “The ability of the cloud to provide services immediately and continuously increases the efficient performance of the company's information system” with the means are 4.81, 4.75 respectively, and relative importance approximately 96%, 95% respectively at a statistical significance level ($\alpha \leq 0.05$).

Also table 2 shows the least importance cloud widespread access features roles in improving the accounting information systems related to “Available legal and regulatory requirements governing the work of the cloud, improves the performance of the accounting information system” and “Providing software and special applications to facilitate cloud data access, and the speed to access to the information” with the means are 3.51, 3.88 respectively, and relative importance approximately 70%, 78% respectively at a statistical significance level ($\alpha \leq 0.05$).

Table 2 shows One-Sample t-Test results to the overall items related to the second hypothesis have mean score (M=4.35) and relative importance approximately 87%, at a significant level (0.00) which is less than ($\alpha \leq 0.05$), implying a significant importance role to the cloud widespread access features in improving the accounting information systems of Jordanian SMEs companies, and allows accepting the alternative hypothesis, which states “Cloud widespread access features have a role in improving accounting information systems of Jordanian

SMEs companies”. This finding agreed with the results of Grossman's (2009) study who pointed out that widespread feature especially virtualization technology helps companies to use servers more effectively.

Testing the third hypothesis: Cloud pooling resources features have a role in improving accounting information systems of Jordanian SMEs companies. The results were tabulated and presented by the table 3.

Table 3: cloud pooling resources in improving the accounting information systems.

Items	mean	Relative importance	Std Deviation	T - Value	Sig
The degree of importance related to the elements of cloud pooling resources in improving AIS:					
1. Sharing resources with many cloud services providers and linking together through a unified application and computing technology reduces the costs of the accounting information system.	4.03	81%	0.29	6.34	0.00
2. Increasing associated cloud benefits over cloud costs improves the performance of the accounting information system.	3.56	71%	0.8	9.72	0.00
3. The low costs of using cloud computing applications are compared with the establishment of these applications in the company itself.	4.78	96%	0.47	5.33	0.00
4. Effective use of hardware and cloud computing applications without the need to purchase them reduces the cost of processing the accounting information system.	4.63	93%	0.42	8.42	0.00
5. Management and maintenance cloud by the service providers reduce the cost of maintaining and managing the accounting information system in the company.	4.14	83%	0.51	4.23	0.00
6. Tolerance cloud fees on the amount and type of services used by companies reduce the costs of processing the accounting information system.	3.95	79%	0.38	4.21	0.00
7. The companies decide how many services they use in the cloud according to determining the budget they want	4.31	86%	1.07	7.93	0.00

to spend on these services.					
8. If your business needs change, you can incur additional services from cloud other than those you already use with low cost.	3.88	78%	1.11	4.77	0.02
The arithmetic mean (test value) of the total items related to the elements of cloud pooling resources in improving AIS.	4.16	83%	0.74	7.92	0.00
Source: Result Output from SPSS Statics Analysis.					

Table 3 shows that all features related to the role of cloud pooling resources in improving the accounting information systems of Jordanian SMEs companies have meant higher than the test value (M=3) at a statistical significance level ($\alpha \leq 0.05$), indicating the important role of the cloud pooling resources in improving the accounting information systems of Jordanian SMEs companies.

Also table 3 shows, the most important cloud pooling resources feature roles in improving the accounting information systems related with “The low costs of using cloud computing applications are compared with the establishment of these applications in the company itself” and “Effective use of hardware and cloud computing applications without the need to purchase them reduces the cost of processing the accounting information system” with the means are 4.78, 4.63 respectively, and relative importance approximately 96%, 93% respectively at a statistical significance level ($\alpha \leq 0.05$).

Also table 3 shows the least importance cloud pooling resources features roles in improving the accounting information systems related to “Increasing associated cloud benefits over cloud costs improves the performance of the accounting information system” and “If your business needs change, you can incur additional services from cloud other than those you already use with low cost” with the means are 3.56, 3.88 respectively, and relative importance approximately 71%, 78% respectively at a statistical significance level ($\alpha \leq 0.05$).

Table 3 shows One-Sample t-Test results to the overall items related to the third hypothesis have mean score (M=4.16) and relative importance approximately 83%, at a significant level (0.00) which is less than ($\alpha \leq 0.05$), implying a significant importance role to the cloud pooling resources features in improving the accounting information systems of Jordanian SMEs companies, and allows accepting the alternative hypothesis which states, “Cloud pooling resources features have a role in improving accounting information systems of Jordanian SMEs companies”. This finding was agreed with the results of the study of Grossman (2009), Jones et al.

(2017), Kinkela (2013), Adel Alkhalil, et al. (2013), which they found the adoption of cloud computing services will make companies able to access the modern technologies with no need for high resources, and cloud computing seeks to reduce the cost of accounting data processing by pooling of companies resources.

Testing the fourth hypothesis: Cloud safety and security features have a role in improving accounting information systems of Jordanian SMEs companies. The results were tabulated and presented by the table 4.

Table 4: cloud safety and security in improving the accounting information systems.

Items	mean	Relative importance	Std Deviation	T – Value	Sig
The degree of importance related to the elements of cloud safety and security in improving AIS:					
1. Keeping abreast of developments in network security related to cloud computing services increases confidence in the accounting information system outputs.	4.37	87%	0.89	6.37	0.00
2. Using the password when using the cloud with the ability to renew it continuously and permanently, increases the security of the accounting information system.	4.12	82%	0.9	5.95	0.00
3. Determining responsibility access to cloud information reduces competitors' ability to penetrate the accounting information system, either by intent or chance.	4.39	88%	0.98	5.08	0.00
4. Increasing the cloud's ability to store data and retain backups keeps the accounting system information from losing.	4.51	90%	1.01	6.75	0.00
5. The ability of cloud vendors to deliver applications with sufficient and comprehensive security features increases the reliability of the accounting information system.	4.01	80%	1.07	7.88	0.01

6. Treatments related to encryption of digital data in the cloud are sufficient and cannot be compromised, thus maintaining the integrity of the accounting information system.	4.68	94%	1.07	7.63	0.00
7. The existence of an emergency plan that responds to any potential risks in the application of the cloud as partial or total damage, increase the effectiveness of the accounting information system.	4.76	95%	0.95	6.49	0.00
8. Available of intellectual property laws and regulations for the partial or complete ownership of company data on cloud computing improves the performance of the accounting information system.	4.91	98%	1.02	8.12	0.00
9. The updating of continuous antivirus software to cloud computing improves the performance of the accounting information system.	4.93	99%	1.15	9.12	0.00
The arithmetic mean (test value) of the total items related to the elements of cloud safety and security in improving AIS.	4.52	90%	1.01	3.75	0.00
Source: Result Output from SPSS Statics Analysis.					

Table 4 shows that all features related to the role of cloud safety and security in improving the accounting information systems of Jordanian SMEs companies have means higher than the test value (M=3) at a statistical significance level ($\alpha \leq 0.05$), in addition the mean of all safety and security features are higher than 4, indicating a very important role to the cloud safety and security features in improving the accounting information systems of Jordanian SMEs companies.

Also table 4 shows, the most importance cloud safety and security features roles in improving the accounting information systems related with “The updating of continuous antivirus software to cloud computing improves the performance of the accounting information system” and “Available of intellectual property laws and regulations for the partial or complete ownership of company data on cloud computing improves the performance of the accounting information system” with the means are 4.91, 4.76 respectively, and relative importance approximately 98%, 95% respectively at a statistical significance level ($\alpha \leq 0.05$).

Also table 4 shows the least importance cloud safety and security features roles in improving the accounting information systems related to “The ability of cloud

vendors to deliver applications with sufficient and comprehensive security features increases the reliability of the accounting information system” and “Using the password when using the cloud with the ability to renew it continuously and permanently, increases the security of the accounting information system” with the means are 4.01, 4.12 respectively, and relative importance approximately 80%, 82% respectively at a statistical significance level ($\alpha \leq 0.05$).

Table 4 shows One-Sample t-Test results to the overall items related to the fourth hypothesis have mean score ($M=4.52$) and relative importance approximately 90%, at a significant level (0.00) which is less than ($\alpha \leq 0.05$), implying a significant and very importance role of the cloud safety and security features in improving the accounting information systems of Jordanian SMEs companies, and allows accepting the alternative hypothesis which states, “Cloud safety and security features have a role in improving accounting information systems of Jordanian SMEs companies”. This finding agreed with the results of the study of Taha's (2016), Kinkela (2013), Serkan and Cemal (2015), Adel Alkhalil, et al. (2013), which they found that companies consider cloud computing security and safety as a very important factor to maintain their information.

5. Discussion

The study reported the following results:

The importance and the significant role of all cloud computing features (flexibility, widespread access, cloud pooling resources, safety, and security) in improving the accounting information systems of Jordanian SMEs. "This finding was agreed with the results of the Adel Alkhalil, et al. (2013), Jones et al. (2017), Dhali (2015), Dimitriua and Mateia, (2014), Taha's (2016) and Llie and Windekilde (2014) studies, which they found that cloud computing services significantly affect improving accounting information system.

The study found that Safety and security features have the most important roles in improving the accounting information systems, followed by widespread access, flexibility, and cloud pooling resources features that came in the last rank in improving the accounting information systems of Jordanian SMEs.

6. Conclusion

The study concluded that cloud service provider companies must giving more attention to cloud computing features to improve accounting information systems of SMEs companies, especially cloud safety and security features which consider the most important roles in improving the accounting information systems. Also, companies should continue to look for the appropriate model of cloud computing, and cloud service providers can help companies choose the appropriate cloud services according to their needs of accounting information. The researcher recommended corporate governance of Jordanian SMEs activate the role of

regulatory activities under the Committee of Sponsoring Organization (COSO, 2012) instructions which enabling them to develop effective policies to use the cloud computing and develop risks response plan, and take advantages of this new technology to increase the operational efficiency of accounting information systems and thus enhancing accounting information quality. Also, Jordanian SMEs companies must follow all domestic and international applications related to cloud computing technology, and key developments related to it, to enhance their accounting information systems. Finally study recommended researchers to expand study subjects related to cloud computing, such as the obstacles face SMEs to deal with cloud computing services.

7. Limitation

The main limitation being the results of the study depend on the answers of the sample respondents, specially the variables of this study cannot measure in quantitative measures, however, taking into account the nature of the variables and the target respondents, there is an issue regarding generalization of the conclusions drawn, especially in developing countries. In addition, this study verifies the features of cloud computing to improve AIS in the context of SMEs. However, it cannot be expected this paper covers all features of cloud computing hence, other features of AIS should be analysed. Despite the limitations discussed, they didn't limit the importance of the study to demonstrate the role of cloud computing features in improving and enhancing the accounting information systems in Jordanian SMEs.

References

- Adel, A.; Reza, S.; Justice, O.; (2013): Cloud Computing from SMEs Perspective: A Survey-Based Investigation. *Journal of Information Technology Management*, Xxiv no1:1-12: Retrieved from aalkhalil@bournemouth.ac.uk
- AL – Alimi, T.; (2014): Ways to Benefit from Cloud Computing Applications in Information Services in the United Arab Emirates, 20th Conference of the Private Libraries Association, March 25-27, Doha, Qatar.
- AL- Mutairi, A.; (2012): The Role of Electronic Accounting Information Systems in Improving the Measurement of Credit Risk in Kuwaiti Banks: a Field Study. Unpublished Master Thesis, Middle East University, Amman, Jordan.
- AL- Rashidi, T.:(2012): The Extent to Which Computerized Accounting Information Systems Comply with the Disclosure and Measurement Rules Related to the Fair Value of Financial Instruments, Unpublished Master Thesis, Middle East University, Amman, Jordan.

Azadi, A.; Marand, E.; Dashtebayaz, M. (2013): Investigating the Effects of Cloud Computing on Accounting and Its Comparison with Traditional Models. *Advances in Environmental Biology*, vol.7, n.10: 664-689. Retrieved from: <https://aensiweb.com/old/aeb/2013/2836-2846.pdf>.

Cloud Computing Institute CAI (2013): Cloud Solutions Best Practices - Benchmark Study. Retrieved from: <https://www.slideshare.net/.../cloud-best-practices-2013studycloudaccountinginstitute>.

Dhali, S.; (2015): A study on Cloud Computing Adoption of Small and Medium Enterprises, Unpublished Master Thesis, Malmö University, Malmö, Sweden. Retrieved from: <http://hdl.handle.net/2043/19738>.

Dimitriu, Otilia.; Matei, Marian.; (2014): Emerging Markets Queries in Finance and Business. A New Paradigm for Accounting through Cloud Computing. *Procedia Economics and Finance*, vol. 15, n.1: 22-33. DOI: [10.1016/S2212-5671\(14\)00541-3](https://doi.org/10.1016/S2212-5671(14)00541-3)

El- Helou, S.; (2008): The Effect of Use IT Systems on Integrated Banking Services in Jordanian Banks from the Perspective of Banking Leaders. Unpublished Master Thesis, Al-Bayt University, Mafrq, Jordan.

Gartner, A.; (2009): Highlights Five Attributes of Cloud Computing. Is the World's Leading Research and Advisory Company? Gartner, Inc. (NYSE: IT). Retrieved from: <http://www.gartner.com/newsroom/id/1035013>.

Grabinski, K; Kedzior, M; Krasodomska, J; (2014): The Polish Accounting system and IFRS Implementation Process in the View of Empirical Research, *Accounting and Management Information Systems*, vol. 13, n.2: 12-30. Retrieved from: www.cig.ase.ro/articles/13_2_5.pdf.

Grossman, R. L. (2009). `The Case for Cloud Computing, *IT Professional*, vol.11, no.2: 23-48: DOI: [10.1109/MITP.2009.40](https://doi.org/10.1109/MITP.2009.40).

Jones, S.; Irani, Z.; Sivarajah, U.; Love, P.; (2017): Risks and Rewards of Cloud Computing in the UK Public Sector: A reflection on three Organizational Case Studies. Springer International Publishing, DOI [10.1007/s10796-017-9756-0](https://doi.org/10.1007/s10796-017-9756-0).

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

Kinkela, Katherine, (2015): Practical and Ethical Considerations on the Use of Cloud Computing in Accounting, *Journal of Finance and Accountancy*, Iona College, Retrieved from <http://www.aabri.com/manuscripts/131534.pdf>.

Llie, S.; Windekilde, I.; (2014). Cloud computing - Impact on Business. Unpublished Master Thesis. Aalborg University, Copenhagen, Denmark. Retrieved from: https://projekter.aau.dk/projekter/files/207512928/4.4_Cloud_Computing.pdf.

Romney, Marshall, B.; & Steinbart, Pall, J.(2012): Accounting Information Systems (12thed.). Upper Saddle River, New Jersey: Pearson, Prentice Hall.<https://trove.nla.gov.au/work/8274388>.

Sacer, I; & Ioluic, A.; (2013): Information Technology and Accounting Information Systems' Quality in Croatian Middle and Large Community. Journal of Information and Organizational Sciences, vol. 37, n.2:1-10: <https://jios.foi.hr> > Home > Vol 37, No 2 (2013) > MamićSačer.

Serkan. O.; Cemal, E.; (2015): The Risks of Cloud Computing in Accounting Field and the Solution Offers: The Case of Turkey, Turkey. Journal of Business Research-Türk, vol.7, no.1: 43-59: Retrieved from:isarder.org/isardercom/2015vol7issue1/vol.7_issue.1_article03_full_text.pdf.

Shihong, Zhang, (2015): Coping Strategies Research on Accounting Information Risks Based on Cloud Computing Environments, Hainan Vocational College of Political Science and Law. China. 4th International Conference on Sensors, Measurement and Intelligent Materials, [DOI:10.2991/icssim-15.2016.82](https://doi.org/10.2991/icssim-15.2016.82).

Taha's, G.; (2016): Improved Enterprise Information System Using Hybrid Cloud Computing, Unpublished Master Thesis, Tishreen University, Syria.

The Committee of Sponsoring Organization "COSO". (2012): Enterprise Risk Management for Cloud Computing, Washington D. C. Retrieved from <https://www.coso.org/Documents/Cloud-Computing-Thought-Paper.pdf>.