Volume 17 Issue 27
Originally issued as D3

Global Journal of Management and Business Research: D
Accounting and Auditing
Volume 17 Issue 3 Version 1.0 Year 2017
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

The Effect of Cloud Computing on Elements of Accounting Information System

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Methodology: The descriptive approach was adopted in this study through the collection of previous literature on cloud computing and information technology and their impact on accounting information systems.
Results: The Cloud Computing lead to Reducing the size of the enterprise in terms of the building and the offices because they allow property anywhere without management commitment to a specific location, Improving operational performance in terms of facilitating the completion of operations and accurate accounting operations, The cloud has become a place for the completion of operations and dialogue between employees or customers with enterprise system, Dispensing the documents to ensure they are self-service to customers, reduce the number of salespeople because it enables customers to check out the established products and offer sales orders electronically from a variety of geographical locations without the need to delegate sales to travel between clients and Finally It allows individuals and firms to use software and physical equipment without the need to buy the software and install it on their computers.

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GJMBR-D Classification: *JEL Code: M41*



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Originality/value: The current research produced its main contribution to keep abreast of technological changes and to identify what this technology reflects on the elements of the systems, especially accounting information systems.

Keywords: cloud computing, accounting information system, elements of the accounting information system.

I. Introduction

The world is rapidly heading at the moment to evolution, technology and an excessive use of modern techniques as a result of imposed requirements of this era upon us. We were obliged to obey them due to what this technology poses as a source of power and authority. In addition, the world is completely dependent on these technologies in the field of education, such as computerized lessons; in the field of communications such as the development of cellular devices and communication networks; in the area of weapons technology to identify its goals and remote-control them, and in the field of business such as the development of information systems that it governs.

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When applied in the field of business, precisely, these technologies will impose some changes in the methods used in the functions of information systems such as methods of data collection, processing and report. It may also affect the elements of these systems by addition, dispensing or modification, especially accounting information systems.

As a result of the technological changes witnessed by the world in recent times, a new notion was introduced in the field of computing known as Cloud Computing, which provided data special for companies on demand anytime and anywhere via the Internet in accordance with the software and security and confidentiality standards of the data. This change did not stop at computer science and its regulations only, but to exceed to the accounting science and its information system by making some changes and adding other elements to its system such as software and hardware. This is especially after the introduction of the computer and its development from a manual to an electronic system.

Now and after the emergence of cloud computing that is ruling the accounting information system due to the nature of the close relationship between that system and the technological changes or information technology (Bagranoff et. al., 2010, P 36), it leads us to question the impact that cloud computing might have on the accounting information system. The researcher will address specifically the elements of the accounting information system so that the purpose of the study will be: *The impact of cloud computing on the elements of the accounting information system.*

This study is an attempt to answer an important research question, which is:- *What is the nature of the impact of cloud computing on the elements of accounting information system?* represented by:

1. Establishment "Accounting Entity."
2. Financial Operations.
3. Documents.
4. Accounting Books.
5. Financial Reporting.
6. Users
7. Procedures.
8. Software.
9. Physical Devices.

Given that cloud computing fall under the information technology, the significance of this study

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comes from the importance of information technology to the accounting information system presented as follows:

1. Compatible Information Technology with and support the other component of an accounting Information System.
2. Information Technology profoundly affects the way they now work and how they will work in the future. (Bagranoff et. al., 2010, P 37).

II. Methodology

The descriptive approach was adopted in this study through the collection of previous literature on cloud computing and information technology and their impact on accounting information systems. Information Technologies were addressed because cloud computing is part of them. It was also referred to some books that talked about accounting information systems and their elements.

III. Accounting Information System

Accounting Information systems "*is a collection of data and processing procedures that creates needs information for its users*"(Bagranoff et. al., 2010, P 5).

Another definition is "a unified structure within an entity, that employs physical resources and other components to transform economic data into accounting information, with the objective of satisfying the information needs of variety of users." (Wilkinson and Cerullo, 1997, P7-8)

Furthermore, AI is "the whole of the related components that are put together to collect information, raw data or ordinary data and transform them into financial data for the purpose of reporting them to decision makers".(Saleh et. al, 2010, 187)

Previous definitions indicate that the Components or Elements of the Accounting Information System play the role of the collection and processing of data to eventually take it out in the form of information and deliver it to users. That is why the components will be introduced, namely:

a) Accounting Entity

It is considered as an established accounting unit which has an independent legal personality of the owners of any entity that the financial activities of the business must be separated from the financial activities of the owner of the facility (Godwin, 2011, 11-12).

To set these activities, there should be system to govern them, and this system is the information system of accounting. This means there is no facility without system and vice versa.

b) Financial Transactions

The processes are known as: "All the activities of internal and external events of the facility, and that they must control it and channel it in order to achieve the objectives which it was created (Kassem, 2012.38).

The events of a financial nature are called financial transactions, which result from the data documented to complete the accounting system work processes.

c) Financial Documents

They are documents that contain a set of basic and important statements of the registration process of financial accounting (Kassem, 2012.215) which is obtained from the operations system (revenue system, expenses, production, finance), and divided into: internal documents, source-tion within the enterprise, such as: and selling bonds, bills receivable, external documents outside the facility, such as purchasing and billing of telephone bills, bank statement. These documents are considered more authoritative and stronger than internal documents.

d) Accounting Books

After the provision of the documentary cycle in the operating system, the documents must be addressed so that all the financial statements are adjusted for the facility. The use of accounting books aims at this treatment in terms of registration and classification, summarization and analysis.

It has committed Jordanian Trade Act No. (12) year (1966) in the article (16) maintenance of general journal as an e mandatory accounting: a book registers its day to day operations of the facility (Jordanian Trade Act, 1966, article (16).

The nature of the financial statements in the accounting system of treatment requires maintenance of other books to complete the process and delivery of financial information to its users, namely: customary books such as General Ledger (General where this book contains all the accounts established that each account has its own page, and combines the effects of financial operations in the Journal in total at the end of each month (rain, 2007.68-69)

And the *Subsidiary Ledger (Debtor & Creditors):* This book contains all accounts receivable which are: people who have property amounts to them, and creditors are: people who have their payments on the facility.

e) Financial Reporting

Is the final product of the accounting system information where:

Preparation of financial reports on the enterprise for use by both internal and external parties.

Internal Reports: Preparation Managerial accounting to communication financial information needed by management to plan, control, and evaluate company.(Delawi and Adnani, 2011, 11)

External Reports: Preparation Financial accounting (Qubaisi ، 2010 ،481) to communication financial information needed by Investors, Creditors and Unions (Delawi and Adnani, 2011, 11), and this Reports as to get to International accounting standards: Statement of

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Comprehensive Income, Financial Position, Statement of change in equity, Statement of cash flow. (Abu Nassar and Hmedate ،2009, 22).

f) Procedures

Are all the steps related to the method of conducting transactions and processing of financial operations and reporting, and the date that must be implemented by (Abdullah et al., 1990.68)

g) User

The ones who are dialoguing with the system through terminals by Application Software. (Kassem, 2012.293)

h) Application Software

The application software is "all of the programs that enable you to use the computer to perform tasks and accomplish work". (laberta, 2011, 157) which is used by users to accomplish specific tasks. (www.openprojects.org/software-definition.htm) such as: Calculation process, recording financial transaction and classification, after that can preparing financial report and communication to users. This software use alternative to manual processes.

i) Hardware

The hardware includes all the physical components of the computer and its related devices, such as: Devices, Servers, CD, DVD, USB, Cable or DSL modem. (laberta, 2011, 6-7).

IV. Cloud Computing

Cloud computing definition "a pay-per-use model for enabling available, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Wang, 2011).

It is "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction". (Mell and Grance, 2011, 2-3)

Cloud computing is also "a computing resource deployment and procurement model that enables an organization to obtain its computing resources and applications from any location via an Internet connection" (Chan et. al, 2012, 2)

Cloud computing is a colloquial term used to describe a way of using computer technology via the internet:

The architecting of cloud computing consists of three cloud services models: Software as a services (SaaS), Platform as a services (PaaS), and Infrastructure as a service (IaaS) as in figure bellow No.(1), Each model provides a level of abstraction that reduces the efforts required by the service consumer to build and deploy systems.(Kavis, 2014, 13-14)

Services Models	Cloud Stack	Stack Components		Who is Responsible		
SAAS	User	Login		Customer	Customer	Customer
		Registration				
		Administration				
	Application	Authentication	Authorization			Vendor
		User Interface	Transaction			
		Reports	Dashboard			
PAAS	Application Stack	OS	Programming Language		Vendor	
		App Svr	Middleware			
		Database	Monitoring			
IAAS	Infrastructure	Data Center	Disk Storage	Vendor		
		Servers	Firewall			
		Network	Load Balancer			

Figure 1: Architecting Cloud Computing

Infrastructure as a Service (IaaS) is the capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. (Mell and Grance, 2011, 2-3),

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and (IaaS) is Cloud service provider provides an entire virtual data center of resources (e.g., network, computing resources, and storage resources) (Chan et. al, 2012, 2)

Platform as a Service (PaaS) is the capability provided to the consumer is to deploy on to the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider. (Mell and Grance, 2011, 2-3), and definition is Development environments for building and deploying applications (Chan et. al, 2012, 2).

Software as a Service (SaaS) is the capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. (Mell and Grance, 2011, 2-3), and definition is Applications organizations use to perform specific functions or processes (Chan et. al, 2012, 2).

V. Literature Review

Previous studies have been divided into two sections:

Section I: Talks about accounting or accounting information systems and cloud computing.

Section II: Talks about accounting or accounting information and information technology systems, and the reason for the review of information technology is that the essence of cloud computing is that some Information Technology processes move from the user's personal computer or the in-house file server, to an external supplier (Page, 2010, 5).

Section I: Literature review Accounting or AIS and cloud computing

Sekar and Maniatis (2011) show that Cloud computing provides users the ability to reduce operating costs and capital expenditures because of the infrastructure provided to them.

Also, Ebenezer et. al. (2014) shows that "cloud computing can still be applied successfully for accounting purposes. Though cloud accounting may seem not too different from a desktop accounting in nature, in practice, cloud computing has a lot of ways by which it can enhance accounting. The goal of every Accounting Information System is to collect and store data about activities and transactions; process data into information that is useful for making decisions; and provide adequate controls to safeguard the organization's assets. With the benefit of cloud computing giving every user the opportunity to be mobile with everything he or she does, financial information can no more be delayed. Accountants on the cloud can do mobile accounting by approving transactions; authorizing payments; entering financial data; preparing financial statement; and what have anywhere without necessarily being in an office where the accounting software package may have been installed on the desktop. This mobility opportunity would afford accountants the benefit of sharing timely information which would enhance the speed of decision making. Moreover, financial data can be stored at a relatively cheaper cost with no need for investment in infrastructure and its maintenance cost".

When financial information is provided with all timeliness and speed through sharing and receiving information on the cloud, decision making is enhanced in the whole organization. All information is stored and all transactions are done in the cloud, in a real-time situation, just a laptop with a modem or a smart phone can still keep business going.

Zhygalova (2013) shows that in "companies that perform selective outsourcing cloud users indicated higher improvement levels in their accounting processes than non-cloud users. This leads to the conclusion that outsourcing service providers may improve perceived value of their services by adopting cloud systems".

The study of Christauskas and Miseviciene (2012) shows "Characteristics of the cloud computing advantages is:

1. Reduces expenses on hardware and software, networking management and overall IT.
2. Adding new software is very simple.
3. Web browser is all needed to access accounting, all users will have the same version of software, offer real-time backup which results in less data loss.
4. Global access: employees, partners and clients can access, and update information wherever they are, rather than having to run back the office"

Section II: Literature review Accounting or AIS and Information Technology

Qatawneh (2012) showed that "e-commerce had a positive impact on the AIS and that e-commerce has a significantly statistical relationship with AIS itself, AIS development, cost reduction aspect in the AIS of the bank, the aspect of improving the operational performance of the bank's AIS and finally with the customer service".

Moorthy et. al (2012) talked about "Application of Information Technology in Management Accounting Decision Making. The study indicate that IT has major impact on the costs, and shows that IT can improve accounting department efficiency and produce result effortlessly, timely and accurately".

Moghaddam et. al. (2012) show that "information technology increase accuracy in accounting process, decrease cost of gathering information, and has affected on accountants they need to acquire new skills like as applied software's of accounting, excel and access. Also as decreasing book keeping and saving time of accountants, it will be provided the better

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background for improving accounting profession and role-creating more suitable accountants in organizations".

Sacer and oluic (2013) show that "IT influence the way how accounting Information System operates, contributes a preparing, Processing, Presenting, and delivering accounting information. It significantly contributes the accuracy and timeliness of accounting information and the quality of accounting information systems".

Dandago and Rufai (2014) argued that "accounting information technology can improve performance by reducing operational cost, facilitating transactions, relevant in simplifying issues and in the provision of quality information, and recommends to should continue to utilize and upgrade their information technology for efficient service delivery and profitability".

VI. Discussion

When we applied cloud computing recommended reviews of infrastructure, software, personnel, procedures and data (Kinkela, 2013, 4). After reviewing the theoretical literature that talked about cloud computing, information technology and accounting information systems, it has been confirmed that cloud computing and information technology have multiple effects which are presented as follows:

a) Accounting Entity

The meaning of accounting unit is that the entity has its own personality dependent from its owners. Cloud accounting means they are dealing with an entity with its own rules and not with individuals. The cloud system helps accomplishing a variety of jobs including accounting, management, and helps employees and stakeholders access to applications through computers and cellular devices (Lobana, 2013).

On the other hand, it is a physical entity of the facility (facility or building site). Upon application of cloud computing, they allow employees, partners and customers access to the system and update data from anywhere without returning to the office (Christauskas and Miseviciene, 2012). This will lead to reduce the size of the business in terms of building and offices because it will make the facility management possible from anywhere without the obligation of a specific place, a so-called *virtual facility.*

b) Financial Transactions

These operations are reflected for all activities of internal and external events of the entity of a financial nature. As shown in Lobana (2013), cloud computing will enable the organization to provide service in a timely manner. In addition, all the studies have shown that cloud computing and information technology improve the performance of operations as follows:

1. Dandago and Rufai (2014): accounting information technology can improve performance by facilitating transactions.
2. Sacer and oluic (2013): IT influence the way how accounting Information System operates, contributes a preparing, Processing.
3. Moghaddam et. al. (2012): information technology increase accuracy in accounting process.
4. Moorthy et. al (2012): IT can improve accounting department efficiency and produce result effortlessly, timely and accurately.
5. Qatawneh (2012): enabling improving the operational performance.
6. Zhygalova (2013): indicated higher improvement levels in their accounting process.

c) Financial Documents

By definition of (Kassem, 2012.215), the financial documents are documents that contain a set of basic and important financial data of the registration process of accounting. The overall objective of the document is to contain important data which can be dispensed in cloud computing because it ensures self-service to the customer. This means that the customer can ask for what they want as products through resources provided by cloud computing over the internet by using the established system applications. These applications are stored within the cloud (Office of the Privacy Commissioner of Canada, 2010, p1-2) on any established system available on the cloud. It was confirmed by Christauskas and Miseviciene (2012,16) that the cloud based accounting system is basically a way to run business accounts entirely online.

Thus, all the business accounting process may be carried out on the cloud and the data stored on are available to the customer and the company. Thus, there is no need for documents to provide data for the accounting register.

d) Accounting Books

They are used regularly as e-accounting books, for example, to record all daily operations of the facility (Jordanian Trade Act, 1966, Article 16).

This means that the financial statements of these transactions in the form of accounting entries associated with the accounts are affected by the financial process recording. The use of cloud computing is similar to an electronic system that dispenses accounting books because cloud computing applications provided by Software as a Services (SAAS) (Mell and Grance, 2011, 2 3) that allows the registration of all financial data entry bonds and bills of exchange and capture other applications that allow perform specific functions or processes (Chan et. al, 2012, 2).

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e) Financial Reporting

The final product is the financial reporting system of accounting information and these reports are the means by which information is communicated to users. It has been shown by Ebenezer et. al. (2014) that cloud computing can still be applied successfully for accounting purposes.

Financial reporting and accounting is one of the three mentioned by Kieso et. al. They defined, recording and communication (Kieso et. Al., 2011, P4).

As the cloud computing allows access to the information that is available on the facility provided Internet accessibility, computing services allow individuals and organizations using the software and hardware (Office of the Privacy Commissioner of Canada, 2010, P1)

Therefore, the users of financial statements have access to all the financial reports provided by the established system at any time according to the powers granted by the company to its users.

f) Procedures

The actions of all the steps involved in the conduct of the transactions and processing of financial operations and reporting of the data (Abdullah et al., 1990.68). The impact of cloud computing on these measures includes the following:

1. Internal processes and procedures: the effect is the transition from the traditional manual system to the electronic system within the enterprise. It gets thus established on the advantages of electronic transactions of speed and accuracy in the completion of operations, processing and issuing reports and tighten oversight (Zubi 2011.60)
2. Foreign Operations procedures: the effect will be to facilitate the display products and provide sales orders by customers self-service procedures (Office of the Privacy Commissioner of Canada, 2010, p2). Thus, the customer can see the products offered through the provision of special applications from which to choose the products they want and submit sales orders. This procedure is reflected on the internal processes that can follow accountant sales request and issue sales invoice which is then recorded and its value rationalized in the customer's account. The client can also follow the movement of his account through the applications provided by the facility available on the cloud within the powers granted by the facility for customers.

g) Users

Kassem (2012.293) explains that they are the ones who are dialoguing with the system through terminals by Application Software. According to Lobana (2013) cloud computing allows employees such as accountants Connects to the central information-sharing resources throughout the facility. It also allows customers to communicate remote access to the information and resources of the computer from any place where there is available Internet (Office of the Privacy Commissioner of Canada, 2010, p6), as well as to access to all of their accounting data (Christauskas & Miseviciene, 2012, 16). The impact that cloud computing might have is to make it easier for all users access the data they want.

On the other hand, the cloud computing has the same impact of electronic systems that may occur when using only a small number of individuals to complete the accounting operations (Zoubi, 2011.60). The number of salespeople is reduced because, as previously stated, foreign operations procedures are presented products and provide sales orders electronically by clients from a variety of geographical locations without the need to delegate sales to travel between clients.

h) Software and hardware or physical components

It was stated formerly that the software are all the programs that enable an individual to use the computer to perform multiple tasks and accomplish a given work. (Laberta, 2011, 157). And that physical devices or hardware are all the physical components of the computer and its related devices. (Laberta, 2011, 6-7)

Here we will review the impact of cloud computing on these two key components (software and physical equipment) in relation to the similarity of the nature of the impact on them in terms of the fact that:

1. Cloud computing allows individuals and firms use software and physical equipments (Office of the Privacy Commissioner of Canada, 2010, P1) without the need to buy the software and install it on their computers. (Christauskas and Miseviciene, 2012, 16) Also, there is no need to buy some equipment, such as physical Server, because cloud computing provides Server for corporate data stored on them which is presented by the Infrastructure as a Service (IAAS).
2. There is no need to spend money on infrastructure, technology or software to buy material and equipment as stated by Sekar and Maniatis (2011), (Office of the Privacy Commissioner of Canada, 2010, p6), which provides the facility of capital expenses.
3. Cloud service provider is responsible for the maintenance and management of hardware and software. (Lobana, 2013).
4. As shown by Dandago & Rufai (2014) and Christauskas & Miseviciene (2012) concerning the software that it adds only new computing software which is simple and easy to use.

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VII. Results

The nature of the impact of cloud computing on the accounting information system when applied is as follows:

a) Reducing the size of the enterprise in terms of the building and the offices because they allow property anywhere without management commitment to a specific location. This is the reason why they allow employees and stakeholders access to applications through computers and cellular devices from anywhere, provided the Internet access.

b) Improving operational performance in terms of:

1. Facilitating the completion of operations in terms of processing and reporting.
2. Timeliness and accurate accounting operations accuracy in accounting process.

c) The cloud has become a place for the completion of operations and dialogue between employees or customers with enterprise system. This includes all business accounting process carried out on the cloud.

d) Dispensing the documents to ensure they are self-service to customers, which is also reflected by allowing them to submit sales orders, and enable staff to issue sell orders and make available processors on the established system of cloud-like system.

e) It is similar to the electronic systems to dispense accounting books and the reason is the availability of applications on the cloud by Software as Services (SAAS).

f) The cloud computing users can get all the financial reports provided by the established system at any time according to the powers granted by the company to its users.

g) Making it easier for all users to access the data they want.

h) Having the same impact as the electronic systems in using only a small number of individuals to complete the accounting operations. It also helps reduce the number of salespeople because it enables customers to check out the established products and offer sales orders electronically from a variety of geographical locations without the need to delegate sales to travel between clients.

i) It allows individuals and firms to use software and physical equipment without the need to buy the software and install it on their computers.

j) It adds new software that is simple and easy to use.

VIII. Recommendations

Through the presentation of the results, many effects of cloud computing on the accounting information system are reflected. Furthermore, it has many advantages from being used. In the light of these conclusions, the researcher recommends that:

1. When applying cloud computing, the infrastructure for information technology must be revised such as software and procedures for operations and other elements of the accounting information system.
2. The cloud computing should be applied by companies since it has many advantages, such as providing expenses of buying hardware and software, reducing the size of the enterprise, reducing the number of staff, speed and accuracy in the completion of the operations and facilitating the procedures.
3. A study should be conducted on the possibility of industrial or commercial companies to apply cloud computing.

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