Cloud Accounting Systems And A Swot Analysis[*]

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ABSTRACT

Internet and information technologies developing in the recent years reveal many opportunities to facilitate the processes in the state, citizen, and business world. One of these opportunities that emerges is also cloud computing systems. While the term cloud is used instead of the word internet, information systems refer to the use of technology. Cloud computing systems present the services, applications, and data through internet. Hence, cloud systems gives working flexibility and opportunity of transmitting data to the users. Accounting information systems having the obligation to work in certain areas make effort to create its own flexibility, utilizing the recent opportunities technology presents. In this context, the aim of the study is to introduce by the method of SWOT analysis the strengths and weaknesses of cloud accounting systems, the opportunities it presents, and threats it forms for evaluating the applicability of accounting systems, which is in effort to integrate into Cloud computing systems, in Cloud computing system. In this study, the opportunities cloud system presents to the users of accounting information system and threats it forms were described together with the strengths and weaknesses of the system.

Keywords: Cloud Computing, Accounting Information Systems, Cloud Accounting Systems, SWOT Analysis.

Jel Classification: L86, M41, M49.

Bulut Muhasebe Sistemleri ve Bir SWOT Analizi

ÖZET

Son yıllarda gelişen internet ve bilişim teknolojileri devlet, vatandaş ve işletme dünyasında işlemleri kolaylaştıracak birçok fırsat ortaya çıkarmaktadır. Ortaya çıkan bu fırsatlardan biri de bulut bilişim sistemleridir. Bulut terimi internet kelimesinin yerine kullanılırken, bilişim sistemleri teknoloji kullanımını ifade etmektedir. Bulut bilişim sistemleri internet üzerinden hizmetler, uygulamalar ve veriler sunmaktadır. Dolayısıyla bulut sistemler kullanıcılar için çalışma esnekliğini ve veriyi taşıma fırsatı vermektedir. Belirli bir alanda çalışmak gibi bağımlılığı olan muhasebe bilgi sistemleri teknolojinin sunduğu son fırsatlardan yararlanarak kendi esnekliğini yaratmak için çaba harcamaktadır. Bu bağlamda çalışmanın amacı bulut bilişim sistemlerine entegre olma çabası içerisinde olan muhasebe sistemlerinin, bulut bilişim sistemleri içerisinde uygulanabilirliğini değerlendirmek için güçlü yönleri, zayıf yönleri, sunduğu fırsatlar ve oluşturduğu tehditleri SWOT analizi yöntemi ile ortaya koymaktır. Bu çalışmada muhasebe bilgi sistemleri kullanıcılarına bulut sisteminin sunduğu fırsatları ve oluşturduğu tehditleri, sistemin güçlü ve zayıf yönleri ile birlikte açıklandı.

Anahtar Kelimeler: Bulut Bilişim, Muhasebe Bilgi Sistemleri, Bulut Muhasebe Sistemleri, SWOT Analizi.

JEL Sınıflandırması: L86, M41, M49.

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1. INTRODUCTION

In the recent years, popularity in business and storage technology, rapid growth, and success of internet made information resources cheaper, stronger, and more reachable than usual (Puthal et al., 2015: 1). This state led the concept of cloud computing process, which is commonly known today, to emerge. According to Armbrust et al. (2010), cloud computing process opened a road that develops to respond in better way to the requirements of the existent and future information communication technologies. Cloud computing process is a strong architectural structure that forms to be able to use the complex and large scale data of today more usefully. Cloud computing processing not only reduces the automation and computerization costs and constraints of the individuals and businesses but also lowers infrastructure maintenance costs and provides effective access of management and user (Li et al., 2013: 463). What is underlying Cloud computing processing is network based applications depending on server or servers rather than programs and applications depending on computer. Thus, these network based applications can be reached by means of any device that has an internet access such as computer, tablet, and smart phone.

At the present days, accounting information systems is a data processing process providing information needed in planning, controlling, and sustaining business activities for information users in businesses (Romney et al., 1997: 2). Nowadays, these data reached huge dimensions for the reasons such as globalization, economic growth, technology development, and increase of product diversity. Thus, accounting systems were obliged to utilize information technologies to process the growing data. Most of accounting information systems consist of computer based applications at the present days. This state forms the obligation to carry out accounting processes at a certain point. This obligation removes the easiness to reach accounting data from any desired place. But, internet age of today, for easiness to reach accounting data, the developed information processing technologies have emerged. Cloud systems, at this point, helping accounting systems, present some opportunities to eliminate the trouble of the users of accounting data to reach these data. Besides that these new systems, termed cloud accounting systems, present many advantages and opportunities for the users, knowing the risks and dangers it forms has a great importance for the institutes and people that will use this system.

In this context, the main aim of the study is to present the strengths, weaknesses, ad opportunities the system presents and threats it forms by the method of SWOT analysis. This study covering cloud accounting systems consists of two sections. In the first section of the study, the literature review related to cloud accounting systems and explanations of the concepts related to this system take place. In the second section, there is analysis of the study.

2. THE CONCEPT OF CLOUD COMPUTING

Today, technological development affects every aspect of human life. The developing technologies also affect the access of organizations to information, speed of processing information, and communication ways. Beginning to use computers and internet enables the data to be formed and stored in digital media and also allows for the information and data kept in data storage area to be shared and used all over the world

(Öz, 2016: 64). Thanks to the developing technology and internet, the users shifts from the infrastructure of classical information technologies, which gives local scale and constricted service opportunities, to cloud information technology, which is flexible and economic and gives opportunity to reach from everywhere. Cloud computing revealed by John McCarthy, a computer specialist, was defined as a technology, which provides remote access by a network and is used by ten thousands of customers (Marešová and Kuča, 2015: 57). Cloud computing is a service getting model through desktop computer, tablet or smart devices by being connected to the other servers via internet without needing any software or storage units (Kavzoğlu, 2012: 2). "Cloud Computing" model is defined as using, storing, and processing data in the computers in a different place, to which will be accessed through internet. This means that users have almost limitless power to process information, which does not require considerable amount of capital investment, to meet their needs and that they can want to be able to access to the data from any place they connect to internet (Wyslocka and Jelonek, 2015: 1). According to the definition made by US National Standards and Technology Institute, cloud computing is a model providing network access to the sharable pool of adjustable information resources, which can be quickly taken and released, when desired and in a compatible way, with low managerial effort or interaction of service provider (Mell and Grance, 2011: 2). The five features of cloud computing is as follows (Stamford, 2009):

     1.   Service-based: It is summarized with an interface well defined by consumer. Interfaces hides the details of application and enables to response by service providers to consumer of service in fully automated way

     2.   Scalability and Flexibility: Service can scale up or down capacity just as customer demands on the basis of full automation (it can take a few seconds for some service and hours for others). Customer has a flexibility to add and take out capacity

     3.   Share: The resources of information technologies can be accessed as a service shared by more customers.

     4.   It is measured according to the use: Service provider has an accounting system that can form different pricing plans and models. Such a system offers pricing options to consumers according to the amount of service they use.

     5.   It uses internet technologies: Service is provided by using internet definers, formats, and protocols such as URLs, http, and IP. Many web technologies can utilize internet – based services such as book selling by Amazon and Gmail by Google.

     Cloud computing uses a service oriented business model. In other words, the resources at the level of equipment and platform are voluntarily provided as a service. Cloud computing consists of three service model as Infrastructure as a Service (IaaS), Platform as a Service (PasS), and Software as a Service (SasS) (Zhang, 2010: 10).

     Infrastructure as a Service – (IaaS): Authority provided for consumer is to supply the resources of processing, storing, and other basic informatics for him/her to distribute and operate a random software, which can contain operation system and applications. Consumer cannot manage or control the basic cloud infrastructure but can supervise operation system, storages, and distributed applications (Mell and Grance, 2011: 3).

Platform as a Service – (PaaS): Service provider presents a media, in which customer can develop and operate his/her own application. This platform also covers media, where application will be developed and operated, as well as definitive services and necessary technologic infrastructure. The user does not have any possibility of any control and management on the components forming infrastructure of platform, other than he/she himself/herself establishes (Yüksel, 2012: 12).

Software as a Services – (SaaS): In this model, software applications are installed to cloud and provided by the service and the final users can access to the software through cloud clients. Service provider is responsible for the maintenance of software. SaaS has many advantages such as easier management, flexibility, worldwide accessibility, and compliance. Final users generally receive service in exchange of a monthly or annual fixed fee (Roomi et al., 2013: 95).
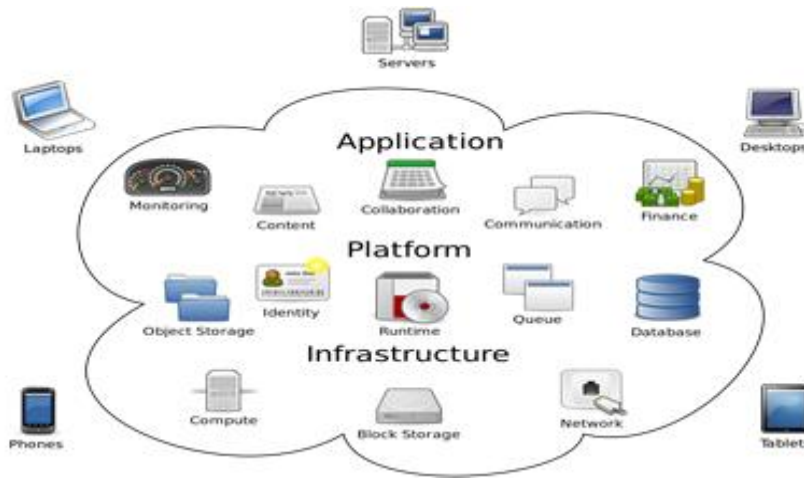

Figure 1. Cloud Computing
Source: https://en.wikipedia.org/wiki/Cloud_computing

Cloud Information; it consists of four distributions method as Public Cloud, Private Cloud, Community Cloud, Hybrid Cloud (Kozan et al., 2014: 3).

Public Cloud: It is a cloud, which can temporally be used by public. Due to the fact that it is public, it can be less safe. Public cloud is an option, which can be possessed in cheaper way. Public clouds require considerable amount of investment and generally are under the ownership of the large companies such as Microsoft, Google or Amazon (Puthal et al., 2015: 3).

Community Cloud: This model makes cloud infrastructure accessible to the various organizations or a group or individual using it. These organizations can share interest area or security policy (Mell and Grance, 2009: 3).

Private Cloud: Cloud infrastructure is operated by only one organization. Data and processes are managed in organization without restrictions of legal requirement in using data and processes, network band width, security risks, and general cloud services in public general networks (Rimal, 2009: 2).

Hybrid Cloud: It is combination of two or more clouds (private, community, or public) (Source Digit, 2017: 4).

Cloud Information has become one of the most popular tools of a rapid transformation, which can be qualified as mobile communication age (Henkoğlu and Külcü, 2013: 81). Without discriminating as public and private sector, with cloud information presenting the new solutions to the previous problem, all institutes will go toward a change in their styles of doing business. In this period, giving a better and high quality service with lower cost, less qualified information staff, and more flexible and less complex will be under consideration (Yıldız, 2009: 6).

3. INTEGRATION OF CLOUD COMPUTING WITH ACCOUNTING INFORMATION SYSTEMS

Throughout ages, the relationship of humankind with the numbers and its desire to solve mathematical problems led it to reveal various inventions. For example, Leonardo da Vinci designed a machine, which he called "Codex Madrid" and which records number and has 13 wheels. The new inventions emerging with mystery of the numbers also the development of financial transactions from the other aspect. This kind of developments facilitated the work of accounting profession and led it to do less mistake, more processes, and faster and more effective works.

In the early 20th Century, accounting making its operations with the trio of calculator, pen, and notebook, together with the emergence of computer technologies after the mid-century, got rid of this trio and, meeting software, turned into a system consisting of input, process, and output. This new concept, called Accounting Information System (AIS) did not change the theoretical structure of accounting but made radical changes on documenting, recording, and reporting processes.

Traditional accounting information systems, besides performing accounting functions, enabling integration with the other processes of enterprises, provide opportunity to present the information that will be necessary in the processes of strategic making decision, planning, control, and production (Christauskas and Miseviciene, 2012: 16). However, the causes such as inadequacy of this support, inefficiency of the technology AIS is connected to, its limited ability, the problem with security, data storage, and data backing, updating, license fees, and restriction of the use of the different stakeholders revealed the fact that the technologies related to accounting information system should show more improvement.

Recently, together with the development of internet technology, the process of traditional accounting information systems has replaced with digital applications, in which information and communication technologies such as electronic data exchange, electronic fund transfer, internet, intranet, extranet, expandable formatting language, expandable business reporting language, relational database management systems, and web tools are used, and the works are carried out in integrated database and web platform in integrated way (Sevim, 2009: 4-5).

The concept "cloud computing" emerged with the development and spread of internet and mobile technologies, nowadays, presents new solutions to the public and private sector and brings an obligation to go toward change in the styles of doing business. Cloud computing, expresses in its simple meaning, the resources and services provided through internet. The reason for using the word cloud is that service is provided through internet that is an invisible network (Aytekin et al., 2016: 48). Cloud computing is a concept that is a basis of the share of information and hardware. Cloud computing, which makes this sharing from the service –oriented architecture, on which virtualizing, network, and web software services are built, includes reduced information technologies for the final user, large flexibility, reduced total cost, services on demand, and many other things (Armutlu and Akçay, 2013: 2). The desire of accounting to utilize the advantages presented by cloud information and desires of especially large companies to move their work areas to internet led cloud computing firms giving service in accounting area to emerge (Öz, 2016: 73). Together with these emerging firms, the integration of accounting with cloud computing has begun and the concept "cloud accounting" entered literature. The concept cloud accounting can be defined as the use of online software, storage of the data rather than stored in physical hard disk of a computer in remote server, and access from any internet connected device to it to manage the records of enterprise.

Cloud accounting is a modern concept processing accounting data with a set of information distribution system and applications in the framework of the concept cloud information without needing for the users to know physical position and system structuring (Mihalache, 2011:786). A cloud based accounting solution enables the possibility to respond numerous and complex demand and activities by means of integrated online system and, in turn, reduces the amount of labor that is necessary for accounting department (Dimitriu and Matei, 2014: 843). Cloud accounting requires to access to the accounting software and data through an internet browser. Software is provided on the basis of subscription and data is stored in a remote server. This is different from the traditional accounting system including to buy software or installation in a work station or local server. Access to cloud accounting applications and data is controlled by access of the user to login access instead of the physical position of the files. This means that data sharing is easier for physically carrying data from a computer to the other (Onyali, 2016: 114).

Some advantages cloud accounting system brings can be put in order as follows (Macquarrıe, 2017: 2):

Access always and from everywhere - Accounting software and business results can be acquired from a browser or a mobile device. This is a thing we cannot manage with today's desktop accounting systems.

Better security - Most cloud accounting software is operated from a data center presenting multiple security systems to protect our data Typical data service has a better security characteristics more than most small enterprises.

Installation or updating is not necessary - Providers of cloud accounting providers protects software and automatically loads updates.

Automated backings - Cloud seller undertakes responsibility for system backups. Our data is generally stored in multiple data centers, which are geographically present in the different places.

There is no starting cost or long term commitments - Applications of cloud accounting are rent without buying. For investing on servers or software, they do not need for a small business.

Platform freedom - Do you prefer Windows PC or Mac? What is your preference, Chrome, Internet Explorer or Firefox? There is no importance of these in the application of cloud accounting application.

Operation structure of cloud information based accounting systems, commonly used, is shown as follows. In a system sample operating on internet, there are two types of user as that consuming information and that entering accounting data. Every user can be connected to the system through any fixed or mobile device with passwords without existing time and space restriction and transact all accounting data belonging to enterprises are stored in servers belonging to service provider. User has possibility to back up their data, when they desire. Responsibility regarding the security of data belongs to service provider and, service provider, in order to prevent the data from catching of sinister third persons, has to take necessary security actions.
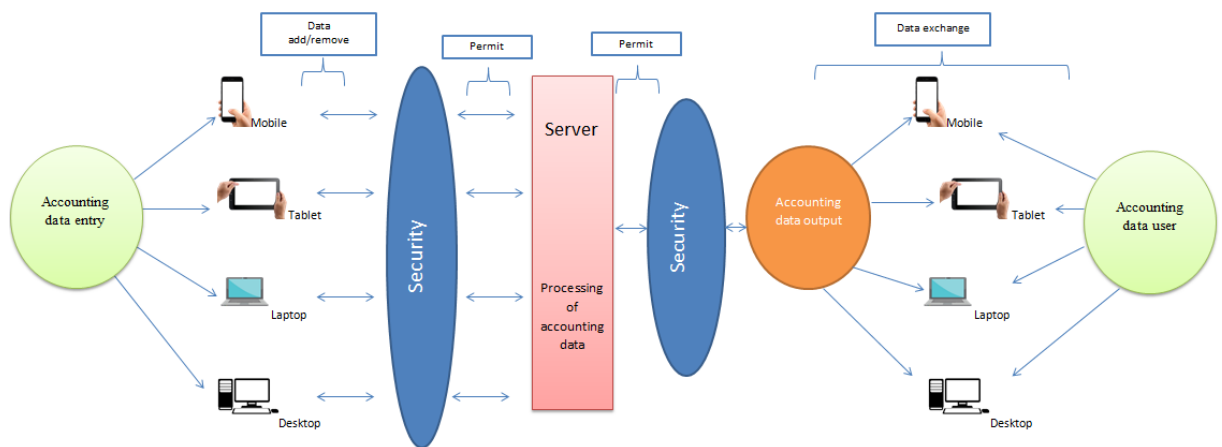

Figure 2. Cloud Accounting System

Although many advantages cloud computing provides, the points such as the problems with security and access problem, and deficiency of legal arrangements being a new technology introduces affects the look of the existing and potential users to this technology and makes slower its becoming widespread (Öz, 2016: 76). The difficulties, risks, and treats to be able to be faced in the selection of cloud accounting systems for especially accounting system that is the heart of enterprises are the subjects that should be studied.

4. METHODOLOGY

In this article, cloud accounting systems were measured by the method of SWOT analysis as seen in Figure 1. The technique of SWOT analysis, developed by Learned, Christensen, Andrews and Guth, the professors of Harvard University, determines strengths and weaknesses of any technique, process, or state and is also a strategic technique used to identify the opportunities and threats resulted from the internal and external environment (Wikipedia, 2017).
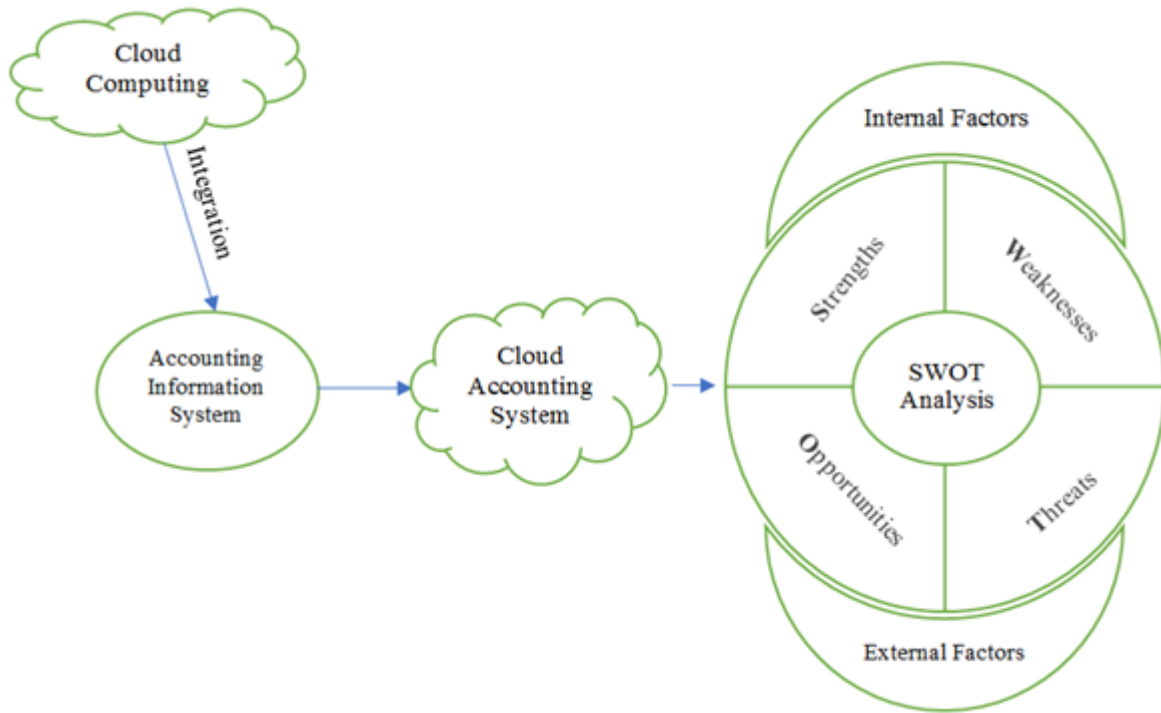
Figure 3. Study Model

In analysis, the strengths and weaknesses consisting of the respective internal factors of cloud accounting system emerging as a result of integration of cloud computing process to accounting information system and opportunities and threats consisting of external factors are tried to be revealed. Here, internal factor shows the features emerging as user originated and external factors emerging in the cases that are not user originated. In introducing this analysis, the contents of literatures seen in the following Table 1 were examined.

Tablo 1. Literatures Examined

Aytekin et al., 2016: 55-58	Huang, 2016: 137-139
Ionescu et al., 2013: 111-112	Ghaffari et al., 2014: 19
Christauskas and Miseviciene, 2012: 15	Ocak, 2015: 62
Dimitriu and Matei, 2014: 843	Boomer, 2013
Cancan, 2014: 90-92	Sands, 2016;
Brandas et al., 2013: 91-92	Macquarrie, 2017
Zhang and Gu, 2013: 142	Nawaz, 2015
Marand et al., 2013: 2840-45	Roebuck, 2012
Özdemir and Elitaş, 2015: 49-57	https://www.xero.com, 2017
Marešová and Kuča, 2015: 69-74	http://www.jvca.co.uk/, 2017
Wyslocka and Jelonek, 2015: 7-8	http://www.arxiscloud.com, 2014

The aim of examining literature is to provide objectivizing the subtitles of the elements of SWOT analysis at the top level that is possible.

5. FINDINGS

According to the findings of the study, while the strengths and weaknesses of cloud accounting systems consist of internal factors, opportunities and threats consist of external factors.

According to the findings obtained in the studies, strengths of cloud accounting systems are collected under the following titles:

1) Low cost
2) Access easiness
3) Use easiness
4) High security standards
5) Data transfer
6) Data storage
7) Backup easiness

Weaknesses of cloud accounting systems consist of the following items according to the findings:

1) Need for online working
2) Constraints in applications
3) Data secrecy
4) Data security
5) Performance

The other findings obtained in the study are the opportunities and threats of cloud accounting systems that emerge, depending on the external factors. These are collected under the following titles:

Opportunities:

1) Real time access to data
2) Integrations
3) Use in mobile applications
4) Action flexibility

Threats:

1) That the system remains offline
2) Security violation
3) Contract originated problems
4) Legal barriers

6. CONCLUSIONS

The rapid development of internet technologies opens new roads changing the form of working and making communication of the societies and industries. In addition, introduction of portable computer devices, which are available everywhere, such as laptop computers, tablets, and smart phones enable the people to enter interaction in any time and from any place. Along with the development of these technologies, emergence of large scale internet services revealed a new resource providing paradigms called cloud computing processing (Lakew, 2015: 1)

Cloud computing processing has become one of the most important developments, recently emerged for accounting information systems. Integration of accounting information systems into cloud systems introduced many advantages and opportunities compared to traditional systems. According to Mahoney (2013), while the cost of traditional information technologies of businesses forms 68% of total general expenditures, in cloud computing processing, this rate is 9%. When examined from this point of view, it cannot be rejected that information systems utilize optimal benefit created by cloud computing processing. But, despite its all potential benefits, that cloud computing system is a developing model emerges several risks and threats.

In this study, strengths and opportunities cloud accounting systems form for the users and risks and threats system create were examined with a conceptual viewpoint. In this context, that users correctly determine their needs, while preferring cloud accounting systems and find the most suitable system for their own sectors are important. On the other hand, it is necessary to know what the preferred system presents about security and service quality and to form the validity of contracts, and legal infrastructure.

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