SOME CONSIDERATIONS ON CLOUD ACCOUNTING

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Abstract
Cloud technologies have developed intensively during the last years. Cloud computing allows the customers to interact with their data and applications at any time, from any location, while the providers host these resources. A client company may choose to run in the cloud a part of its business (sales by agents, payroll, etc.), or even the entire business. The company can get access to a large category of cloud-based software, including accounting software. Cloud solutions are especially recommended for small companies that do not have enough financial resources to invest in the IT infrastructure and in expensive accounting software. However, a special attention is required in the case of sensitive data, which should not be placed in a public cloud. All these aspects need to be discussed with the students, who should acquire the qualifications needed for operating with cloud applications. Our paper considers all the above issues regarding cloud computing for accountants and suggests some possibilities to approach these topics with the students.

Keywords
cloud computing; cloud accounting; accounting services; small companies; Romanian accounting students

JEL Classification
M41; M15

1. Introduction
In the mod 90s, the appearance of multimedia and collaborative software stimulated the ICT companies to create infrastructures which were designed to host complex applications and web pages. After this period, things evolved rapidly and new concepts, such as social networks, appeared. The novelty of cloud computing stands in the way technology and informational services are offered: from distance and only on request. As expected, among the solutions developed by cloud providers we also find accounting applications, whose advantages are numerous and overcome the disadvantages. This is the reason why more and more managers make the shift towards the accounting under cloud. These changes in the business environment also raise new challenges for the teachers who train students in Accounting and Information Systems. Our paper presents some basic concepts related to cloud computing technology and the modifications it implies in organizing and managing an accounting company, and also connects these issues to some approaches that might be considered in the work with the students.

2. Cloud Computing Features

Cloud computing consists in a set of applications, data storage, and computing process services, which are delivered by a provider in remote mode, from locations that the client is not aware of and which are accessed only on request. There are three main cloud delivery models of services:

- Infrastructure as a Service (IaaS) – the provider owns the infrastructure and makes it available to the users, who are allowed to use and configure the resources directly, according to their needs, running on them operation systems and applications;
- Platform as a Service (PaaS) – the provider offers to the developers access to a platform on which they implement and test their applications;
- Software as a Service (SaaS) – the provider delivers final applications that users may access, usually through a web browser, without being allowed to modify them (except some configuring and customizing options).

Among the technologies that made cloud computing possible we count grid computing, server virtualization, and dynamic planning (Mihalache, 2011). As well, the experience gained in management of large infrastructures and service-oriented architectures is fundamental. But cloud computing integrates all these and brings new features such as self-service, dynamic scaling (Vaquero et al, 2011), and pay per use (Youssef, 2012).

Cloud computing advantages include:

- Cost reduction, as long as the computing infrastructure and licenses for OS are no longer required, and neither is the human resource qualified in IT. The users only need to buy ready-to-use services;
- Scalability, allocation and de-allocation of resources made available by the providers are done in accordance with the needs of the users;
- Increased adaptation to new, specific demands such as storage or overload requirements (), or to the need of high computing performance, due to the flexibility of infrastructure and software architecture;
- Flexibility, in case of low availability and experience in exploiting the logistics of web site hosting;
- Improved remote access and collaboration between users (employers, employees and clients as well), who can work wherever they are, on any device with internet connection;
- Quality of services, as far as the provider are experienced companies, with highly qualified personnel and up to date OS and applications;
- Low risk on data storage and the possibility of data recovery in case of unexpected events, as the providers manage the information in specialized data-centers;
- Controlled access of the resources in the cloud, as the user may plan its demands to the provider and therefore minimize its costs (the value of monthly payments depends on what is effectively performed).

However, beside the advantages there are also several aspects that may arise and generate disadvantages for the users. These are mostly related to data security, issues regarding the property and the continuity of services (Du & Cong, 2010).

Data security appears as a problem because data are transmitted, processed and stored in a third location, which is not known by the data owner. There is a fear of the user that its data could be intercepted by those who have access in the data centers. If these fears are motivated or not, it's the time who will validate. For now, the countries which are more advanced in using cloud computing try to protect their users by implementing specific standards (Zissis & Lekkas, 2012; Khan et al, 2013; Ristov et al, 2012). In USA, The National Institute of Standards and Technology

(www.nist.gov) created a workgroup for cloud computing security and published a list of security and authentication protocols, such as: XML Encryption Syntax and Processing, Transport Layer Security, Key Management Interoperability Protocol si Security Content Automation Protocol (Alali & Yeh, 2012). At the EU level, the strategy of the European Commission (European Commission, 2012) also envisages better standards in this field, as well as the broadening of cloud computing use in the private sector, but especially in the public sector, with the aim of making it efficient. Standards are essential in order to achieve a large adoption of the cloud computing services.

The issue regarding the property rights equally concerns data, infrastructure and applications. In the traditional approach, both hardware and software are in-house, while in cloud computing the approach is different. For example, although the data introduced, processed, and stored belong to the user, he does not have an entire control over them, as data are stored in a data center, whose location is unknown. Conversely, although the system and the applications belong to the cloud provider, the user could also come up with claims related to the property rights on the adaptations specific for its business that he may realize in order to customize the cloud services for his own clients.

Looking at the continuity of services, the risk may arise from interruptions in the provider's activity. No matter weather he cuts-off his business or transfers it to another company, there will be a disruption period which may seriously affect the activity of users. Interruptions may also appear if internet connectivity is not available, but this are usually short in duration and cannot be reproached to the provider.

3. Cloud Computing for Business and Accounting

As underlined above, the benefits of cloud computing are important, though recommending this technology as a solution to be considered. For a company, the main convenience would be reducing costs with the IT infrastructure. Instead of making investments, the company could space out the payments while using cloud infrastructure and paying a monthly rent. Due to the flexibility of cloud solutions, the company may use the cloud resources according to its needs, therefore the renting costs would be proportionate to the volume of the transactions done in a certain period, hence with the corresponding income (Alali & Yeh, 2012). Hereby, the financial flow can be improved. However, cost reduction cannot be estimated but after a careful analysis of the prices applied by the providers, which are not very low, for the most part. It is expected that the market will equilibrate these prices, as the number of the cloud services providers grows.

The start-up companies, as well as the SMEs which still do not posses their own infrastructure, are most favoured by the existence of cloud computing services and can easily decide on what to ask for (Gupta et al, 2013). These entities do not need to develop an IT department and its personnel. The companies that have such structures and have already purchased IT systems and software need to run a very careful analysis before leaving the traditional way and dropping out the infrastructure and in-house applications. Besides recovering the investments, they have to consider the issues related to data processing under cloud. An incompatibility between systems is quite possible, making the transfer of the historical data infeasible and thus requiring a disjunctive solution.

Although cloud computing offers three types of resources – infrastructure, data storage and applications – these are interdependent and the clients cannot access them

separately. For instance, the provider cannot render data storage without making available the necessary infrastructure and specific databases applications. Sometimes, several providers cooperate in order to deliver an united solution under cloud. In such cases, compatibility is required between providers, which leads to the necessity of standards. Under any circumstances, cloud computing architecture is essential (Yoo, 2011), because it influences the access to the network and the interconnectivity of data centers.

Cloud computing also allows companies to run supporting applications which can improve the businesses, such as: sales and purchase inventory, launch and tracing routines for the production area, human resources applications, or communication and media solutions (Ruiz-Agundez et al, 2012). A type of business which can highly benefit from cloud computing is that implying sales through agents or through stores spread across a territory. For such cases, applications under cloud allow online communication between any two points, gathering of data and their centralization in real time, regarding stocks, sales, and cashing. Managers may see the whole database at any moment, from any place, and thus may have a better control on the activity of the company (Weinhardt et al, 2009). Practically, the cloud can facilitate the access to an Enterprise Resource Planning with high performances for the company, based on a monthly rate.

As can be easily concluded from the above, through accessing cloud computing as an utility, the companies can highly improve their efficiency and capacity to respond to the demands of the clients. Lately, this quick response capacity can make a big difference in the business environment.

The accountancy of a company may also become much easier to run through cloud computing services. In this case we speak about *cloud accounting*, a modern concept in the processing of the accounting data. The accounting software is made available online for the company and may be accessed from any mobile device. This way, the company benefits from excellent applications, latest modern technologies, and automated updates. But most of the users are interested in the resilience of the service offered by cloud and in data security. Therefore, providers are also concerned by these issues and demand the standardization, which would certainly raise the clients' trust in cloud services. This attitude is shared by the international organizations for standardization, be they involved in delivering standards in IT (such as Cloud Security Alliance, European Network and Information Security Agency, Cloud Standards Customer Council, The European Telecommunications Standards Institute, Distributed Management Task Force, Open Cloud Consortium), or dealing with auditing. It appears that, regarding the audit, the accountants would prefer a model based on assurance (instead of one relying on regulations) and a more important role in the market for the accounting profession (Du & Cong, 2010).

The main issue with the standards is that their development takes too long, when comparing with the evolution of cloud computing services. Anyway, the professionals who must provide services for the companies which use more and more the information technologies, are permanently challenged. Moreover, it is under question if the accountability standards still respond the present-day requirements. The accounting standards have developed based on the traditional, manually operated processes (Vasarhelyi, 2012).

Nowadays, there are new possibilities to measure and inventory the economic values, and to access the information online, while managers may get data and explicit reports in real time, without needing accountability knowledge for understanding them. The novel concepts of continuous reporting, continuous monitoring, and continuous assurance () question the problem of usefulness of professional standards.

4. The Education for Accounting

The graduates of the *Accounting Study Programmes* have to acquire the competencies that they need in order to deal with the main challenges raised by their profession:

- Modifications of the accounting regulations, but especially those in the field of taxation. As for Romania, the amendments of the taxation legislation are very frequent and cause difficulties both to the managers of the economic entities and to the specialists in accounting;

- The rapid changes that information technology brings in the clients' business and, consequently, in accountability. If the shift from the manual processes in accounting to the computerized stage has been more easy to understand and accept, the current evolutions in IT lead to thorough modifications in accounting.

The study programmes in *Accounting* usually include, in their curricula, courses in informatics and ICT. Those in *Accounting and Information Systems* in Romania include several disciplines in this field, such as: Basics of Information Technology, Databases, Programming Languages, Office Automation, Design and Audit of Information Systems, Management Information Systems, etc. There is a permanent concern regarding the necessity to update the content of these disciplines. In line with the current trends, the courses should include information regarding cloud computing technologies, cloud architecture, data security, and other related issues. The students are very much opened to new ideas and approaches and can easily adapt to the new requirements, if they are given the basic information and skills. The use of mobile devices and technologies should be extended to the teaching and learning processes, and they would certainly be successful.

The challenges that the accounting profession arises require a permanent training effort from the students, both during the faculty period and after. It is important that teachers lead their students towards individual learning and research, thus helping them to get used to search for information on their own. After graduation, the study must continue because the knowledge acquired in school may become outdated very soon, due to the overall evolution of science and technology, and to the specific progress in accounting. That is why both universities and professional bodies invite practitioners to attend modern, up-to-date courses. A well trained, open-minded graduate will manage to adapt and comply with the new conditions, no matter the modifications that may emerge and affect the accounting profession.

Conclusions

The accounting applications implemented under cloud allow the accountants to work with and for their clients from any time and any place, which is an essential need in the actual framework of globalization. But it seems that the trends in Information and Communication Technologies and the rapid evolution of this leading field have a greater impact on accounting, than it may look at a first sight. The post-factual character of the traditional accounting, which still holds today, will no longer be accepted when the cloud solutions will provide managers and employees with information and reports in real time. The role of the specialist in accounting could be somehow restricted, therefore he needs to bring its participation and input in supporting management with the interpretation of synthetic information, with financial analyses, as well as with other services that require a high qualification.

Under these circumstances, the students in Accounting must be trained to be prepared to cope with new challenges of the accounting profession, besides those linked to the frequent changes in the accounting and tax regulations. This facet could be improved if the disciplines in the field of informatics will receive proper attention, and the

mobile devices will be intensively used in education, in regular learning activities. The competencies that the students acquire have to offer them the possibility to deal with the challenges arising from business internationalization and, inferentially, from the internationalization of accounting.

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