CONSIDERATIONS FOR USING CLOUD COMPUTING TECHNOLOGY IN THE ACCOUNTING OF ECONOMIC ENTITIES

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Abstract: *Cloud Computing technology has entered the business environment strongly where entities are motivated by the cost and efficiency advantages of the new technology. On the Romanian market, gradually, Cloud applications are gaining ground to the detriment of applications that operate locally. The advantages of Cloud technology are numerous and cannot be overlooked, especially by small and medium-sized entities. Cloud Computing is slowly but surely transforming. The accounting industry by offering the possibility of streamlining accounting processes, in order to reduce costs and adopt services that add value in a system that operates on a subscription basis.*

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1. Introduction

Given that information technology has evolved extremely rapidly in the last decade, there is a need for a new approach to computerization of accounting, which can have a positive impact on the business. For many of the entities, accounting is a cumbersome and time consuming process. Collecting and recording data, organizing information, reconciling accounts, and generating reports can be difficult, costly, and error-prone activities. This is often due to the use of outdated accounting systems in terms of information technology, which prevent information from being provided in real time, affecting the entity's ability to react to the competitive business environment and causing business to operate below an optimal level. Traditional accounting systems are proving to be inefficient in relation to technological alternatives in the market (Arslana and Karanb, 2009). According to a survey conducted by Deloitte Global in the second half of 2012, "CFO Signals", almost half of the financial executives interviewed answered that the IT systems they use do not adapt to changes in business strategy and only 40% answered positive in their ability to provide information in a way that provides a relevant and accurate picture of the business and facilitates decision-making. An online accounting software in the Cloud offers managers and employees the possibility of global data access, being able to update the information whenever they want, regardless of location. The Cloud is also defined as a simple way to capture meaningful data content and account management. The most motivated option in choosing the Cloud deployment is to reduce costs. Expert Group (2012) stated in a European Commission report that Cloud technology promises users easy access to resources through a self-service subscription, thus reducing the cost of administering the system. Cloud technology requires minimal investment in hardware and maintenance (installation of upgrades, troubleshooting, back-up) is provided by the vendor, at no additional cost. Large accounting firms and organizations in the accounting profession have responded to the growing phenomenon of using Cloud-based technologies in accounting by providing guidance on adapting Cloud services.

2. Literature review

A December 2012 study by KPMG on global cloud trends reveals that more and more managers are prepared and opting to migrate the financial and accounting process to the Cloud. The study "Cloud Adoption 2012", conducted by Consult Blue, at the request of CIO Council (Association of Directors of Information and Communication Technology in Romania), shows that 55% of large companies in Romania use, in various forms,

technologies in the category Cloud Computing . As a rule, the costs involved in using Cloud applications are lower than those running applications locally, on own equipment (Beckham J., 2010). A report by Harshman Phillips, which provides accounting services in the United States, provides a deeper picture of the benefits that Cloud brings to the operational level of a business in its financial-accounting business. In this way, the financial relationship of the business partners can be greatly improved in the sense that it can give up time and resource consuming activities, such as the physical exchange of data and information between the client and the accountant. Thus, organizations in the accounting profession such as the American Institute of Certified Public Accountants (AICPA) consider Cloud Computing technology as one of the viable forms of business operation. An article published in the Journal of Accounting in 2010, "Cloud Computing: what accountants need to know", indicates a number of ways to use Cloud-based applications in works such as confirmations required for auditing, payment of invoices, customer relationship management (CRM), preparation of financial statements, salaries, sales or taxes.

3. Research methodology

The elaboration of the study is based on the deductive theoretical research that allowed the formulation of individual conclusions regarding the use of Cloud technology in the accounting of entities. This was complemented by an inductive type of research based on particular judgments that were the source of some general conclusions regarding the use of accounting software in the Cloud. The main methods used in the research and which were the basis of this study were documentation, observation, deductive and inductive reasoning, analysis, synthesis.

The categories of documentation sources were obtained based on bibliographic documentation and webographic documentation.

Of the two types of observation (external observation and participatory observation), external observation was mainly used, which led to generalizations and interpretations summarized in pertinent conclusions and comments on the possibilities of using Cloud Computing technology in the accounting of economic entities.

4. The advantages of Cloud technology in accounting

4.1. Automate the process of data collection and processing

An important part of Cloud services is the integration of the document scanning process. Invoices can be scanned and posted automatically in the accounting system, after which the accountant can verify and validate the record. By scanning the documents the processing cost decreases as the invoices can be scanned in a large volume or by each individual customer. Through Cloud Accounting, accounting firms can compete with those that provide accounting services at a much lower cost. By encouraging clients to scan related invoices on a daily basis, the accountant can have real-time information that can be used to generate adjacent services to add value. Cloud Computing can provide new classes of applications and provide services that were not possible before. Thus, compared to traditional accounting, the Cloud accounting system can make the transition from basic accounting records to real-time business analysis, using large amounts of resources to understand customer needs, buyer behavior, supply chains. Process automation allows the financial department to collaborate with the other internal functions of an entity by facilitating access to data and provides business units with analysis tools. This improves the decision-making process and enables managers and executives to perform their tasks more efficiently, with the help of real-time information, without compromising data integrity. Similar to how the browser-based version and the mobile version of cloud

accounting software can connect to each other, these applications can also connect to other third-party Internet-based applications. Connecting to different applications can simply mean transactions automatically related to basic accounting software or even adding and improving features in basic accounting software. Some applications, such as Expensify, have taken a step further by incorporating OCR (Optical Character Recognition) technology that interfaces with cloud-based accounting services. Optical Character Recognition (OCR) is software that converts document images into editable computer text files. This allows users to scan forms, such as physical invoices and other images, such as PDFs, to make them searchable and fillable. This allows the program to identify key information on a form (eg seller name, date and amount) and automatically send it to the system.

Another technology that could increase the transmission of data retrieved from OCR is artificial intelligence (AI). AI is a computer-based expert system that attempts to mimic human behavior (Laudon and Laudon, 2018). By automatically learning what is the process of improving computer programs without explicit programming (Laudon, 2018), software can be "learned" to perform tasks and even improve them. As the AI program becomes more familiar with how expenses and other transactions are entered into the accounting software, the AI becomes better at automatically classifying and entering transactions. QuickBooks Online already has AI in place with the self-ranking feature and expense finder ("Machine Learning: Unlocking the Power of Millions for Prosperity One," 2017). Together, AI and OCR have the potential to reduce manual data entry time and errors for users of cloud-based accounting applications.

4.2. Improving the accountant-client relationship

Clients can access the accounting firm's portal and have access to information for understanding and analyzing the entity's financial position at any given time. They can also analyze the impact of currency fluctuations or track the cash flow that is useful in the decision-making process. The accounting profession can offer new services such as business analysis or cash flow forecasts, in the sense of providing a deeper financial expertise that entities will find essential in maintaining or increasing the level of business. Cloud Accounting technology brings advantages that support the improvement of the relationship client-accountant, through the following two interface components:

- The customer-oriented interface of the Cloud Accounting software simplifies the way of approaching the data, all the data necessary at a given moment for the analysis of the financial status being arranged in the form of dashboards in an easy to follow format. They become very easy to check, for example, the bank account, the balance of receivables and debts from the current month or from a previous month.
- Single user interface - no matter who is accessing certain information and from which location, the same data is available. This makes the interaction between different users much more flexible and efficient, as they can track the same information in real time.

At the macroeconomic level, Cloud Accounting enables the financial service provider to provide higher value-added services than to affect the time spent collecting data. We believe that a thorough knowledge of the clients' business puts accountants in a position to act as true business advisors. The main difference and the most widespread advantage of cloud accounting, compared to accounting in a classic technology is its ease of access. Thanks to internet-connected cloud accounting, users can access the software from any location with internet access and from any device with internet browsing functions. This can be a major advantage for business owners and accountants. Traditionally, accountants receive information from their clients only once a week, if not

monthly. The information is often transported in batches via physical files or USB drives. The accountant has access to transaction information a few days after it has taken place. Incorrect records and inadmissible transactions will not be noticed by the accounting officer until long after the transaction has taken place. With this new degree of access, accountants can now have instant access to customer records. Questions can be answered at any time, errors can be detected earlier, and timely entries and reports can be created.

Cloud accounting software also offers a great deal of convenience through its connectivity. The main focus has been on accessing cloud software via laptop, but many entities have mobile applications that connect to their browser-based counterpart. It is not easy to track business expenses on a trip. Instead of withholding receipts and transforming at the end of a trip, mobile apps will allow you to upload a picture of the receipt with the expense incurred. This way there is no difficulty in tracking the source document. These applications may not offer as many features as the browser-based version, but they still allow for easy accounting work on the go. Most applications (ie QuickBooks, NetSuite, and Xero) will allow the user to create and track estimates, invoices, expenses, and payments.

4.3. Eliminate duplicate information, prevent errors and increase data accuracy

Data accuracy is a key feature in financial management. Manual processing is prone to errors, time consuming and unjustifiably expensive. For example, an entity that extracts its data from one system to manually enter it into another system is at risk of entering the data incorrectly. Software as a Service (SaaS) based accounting systems have implemented controls that automatically identify duplicate records and can prevent other errors. For example, goods and services purchased or rented are automatically assigned to invoices received or payments made, and expenses are correctly recorded in the accounting period to which they relate.

4.4. Secure access, control and authorization

The most common concern among users or potential users of Cloud Computing technology is related to trust, security and privacy, issues that are frequently raised in the context of using Internet services and outsourcing. There is a general distrust of data outsourcing - especially if the data processing is beyond the control of the entity. The greatest attention in terms of security in accounting is given to the management of money and sensitive information, such as bank accounts (Beckham, 2010). For these reasons, Cloud application providers offer high levels of security. Web-based systems are actually just as or more secure and have equal or better internal controls than in-house softwear. Cloud technology includes strong authorization and authentication mechanisms and communications between the Cloud Computing provider and the client, as well as those between data centers can be encrypted (Data Protection Working Group established under Article 29, Opinion No. 05/2012 on Cloud Computing). Moreover, logging tools can detect possible attacks or vulnerabilities in the system.

5. Challenges in implementing Cloud Accounting technology

Although the benefits of Cloud Accounting technology are recognized at the entity level, the implementation of Cloud applications is quite slow due to the management's uncertainty regarding the control and ownership of information. According to a KPMG study (Lee, 2016), data security and confidentiality are among the main concerns of users regarding the use of cloud-based services. Security concerns are based on the fact that the confidential information of the entity is stored on a server that can be accessed via the

Internet and not on its own computer. In an interview with Intacct, Bob Scott, executive editor of The Progressive Accountant, said that Cloud Accounting applications are changing the way people work, but at the same time this shift is quite slow as accountants are generally more focused on a business perspective than a technological one. Thus, they must look at this system of work as an opportunity, understand the changes and how they can benefit from these applications. According to the study, the adoption rate of Cloud in Romanian entities is increasing, only 39% of the interviewed entities not using Cloud Computing in any form (public or private). Moreover, the study shows that in 4 years, by 2020, all large entities will use at least one form of Cloud Computing. In terms of the notoriety of cloud providers in Romania, Microsoft is the brand most often mentioned by study participants, followed by Amazon, Google, VMWare, IBM, Cisco, HP, Oracle and Apple. However, we believe that there is still a reluctance on the part of the entities regarding Cloud Computing. The reason is the lack of full awareness of the concept of Cloud, which many consider to be a major change that requires significant resources, thus becoming reluctant to this technology and content with the current state of affairs, as stated by Michal Golebiewski, the marketing director of Microsoft Romania, in an interview given to Wall-Street magazine. The main concern of accountants for the transfer to a new system is justifiable. A successful business must be efficient and knowledgeable about what it offers. The transfer to a new system requires not only time for implementation but also for employees to become familiar with the software. The impact and complexity of moving to the cloud is related to the software, size, business style and technological experience of the entity trying to implement it. The size and culture of the business will also have an impact on ease of integration. Larger businesses are harder to initially transfer to the cloud because there are many more people to train on the new system and many more files to transfer. If there is a substantial inventory and a large amount of transactional data it would mean that more files would have to be converted or even manually entered into the new system. If a business relies on an interwoven software system, cloud system integration can be difficult and time consuming. The entities that are best suited for a rapid transition to the cloud are the small, young, technologically experienced ("Moving your Practice to the Cloud", 2017). They will have fewer people to be trained, will have less financial information to transfer and will be more comfortable and familiar with how the new technology works.

6. Data security in the use of Cloud technology in accounting

Not having the physical possession of the entity's data and the thought of data security breaches are concerns that make managers uneasy. However, what entities do not notice is that cloud service providers often offer security measures that are superior to the security that many entities have on their internal servers. To the detriment of security issues, many people have no problem using a cloud service known as mobile banking. An internet connection is all that is needed to access your bank account and personal financial information. Despite the amount of personal data that can be accessed via the internet, consumers use mobile banking because they trust the cloud security that the bank has implemented. The banking and financial industries are some of the most regulated when it comes to security, due to the amount of sensitive and private data they manage.

The technology that provides some of the best security for your data is encryption. Encryption is the use of algorithms to turn data into a cipher that can only be decoded by the appropriate key. By using Secure Sockets Layer (SSL) and Transport Layer Security (TSL), data can be encrypted while being transported over a secure connection between client and server computers (Laudon, 2018). The aspect that makes the encryption of the bank level ideal is its resistance. Banks are regulated to have Standard Encryption

Advanced (AES), a popular encryption algorithm, 128-bit or larger encryption. When it comes to bits in encryption, it is the number of bits that are the key to encryption and decryption. Simply put, the more bits, the longer and better the key.

Similar to banks, cloud accounting providers use a high level of encryption. The servers in the data centers of cloud-based accounting providers offer a minimum of 128-bit encryption, and some offer encryption of up to 256 bits. By making additional use of firewalls and intrusion detection software, providers ensure that data is secure because it is transported to data centers and stored indoors. Although encryption provides safeguards against direct access through hacking, such measures are unnecessary if a hacker guesses or gains access to the user's login information (i.e., user ID and password). Fortunately, security measures have also been implemented.

When signing a contract with a cloud service provider, it is important to know the controls that the application provider has put in place to protect your data. The American Institute of Certified Public Accountants (AICPA) has created a service that CPAs can provide to clients who certify the controls applied by an application. These documents are known as Service Organization Reports (SOCs). There are three types of SOC reports that CPAs can provide, SOC 2 and 3 refer to security checks. The SOC 2 report is intended for users who have a comprehensive understanding of internal controls on security, availability, processing integrity, confidentiality and confidentiality. The SOC 3 report, also known as the SysTrust report, is a more general SOC 2 report and is intended for users who do not have the sophistication to understand the SOC 2 report. Users can request these forms from service providers to verify the controls that operations perform. -implemented to protect their data. Some cloud providers provide dedicated web pages where users can access and / or request these security-related SOC reports. The CPA's views on SOC reports generally state that the security provided by the cloud provider is "... likely to meet the security and reporting needs of most users of cloud services" ("AICPA Cloud Computing Controls andorsed Security Group"), ”2013, paragraph 4) of the Cloud Security Alliance.

When thinking about cloud computing and security, most people worry about information security on the web. They worry about data security and the online security measures that are being implemented to protect it. One safety factor that seems forgotten is physical safety. While most people worry about hackers, they sometimes forget about the physical dangers of their data. Not only does a business owner have to worry about accessing his data via the internet, but he also has to reflect on the protection and security that information is provided to them due to physical theft, loss and natural disasters.

Many entities are concerned about the lack of features offered by cloud computing providers. In our opinion, this concern is less valid as time goes on. As with any technology, the software is constantly updated and improved. Functions that were not present in one version of a software will find their way into the next version. Over the last decade, cloud accounting has continuously improved and is now comparable to desktop applications. To illustrate this, just take a look at the development and growth of QuickBooks Online (QBO). QBO was launched in 2001. A 2006 chart comparing all versions of QuickBooks (desktop and cloud services) showed that QBO was just a snippet of what QuickBooks desktop versions were. It did not have the ability to track inventory, only three users could use the service at a time, there were no customer or vendor tracking, you could not download banking and credit cards, and there was a limited ability to integrate QBO with other applications. The limitations of the first generation of QBOs led the American financial services company INTUIT to decide to build the next generation of QBOs starting in 2013, in order to solve these problems. The new version of QBO focused on providing higher levels of functionality, greater integration with other Intuit and third-

party software programs, and a more streamlined user interface across all QuickBooks products ("Press Releases," 2013). As improvements continued, the online version of QuickBooks became more comparable to desktop versions (Table 1):

Tabel 1. Comparative situation of QuickBooks Online – Desktop products

intuit quickbooks Compare QuickBooks® Products	Online			Desktop		
	EasyStart	Essentials	Plus	Pro	Premier	Enterprise Solutions
	$13.00/mo	$27.00/mo	$40.00/mo	$52.00/mo	$136.00/mo	$300.00/mo
Save time tracking finances						
Number of users included in the price[1] (additional charges may apply)	1	3	5	3	4	30
Easily print cheques & track expenses	✓	✓	✓	✓	✓	✓
Track sales, sales taxes & customer payments	✓	✓	✓	✓	✓	✓
Manage payroll & payroll taxes[2] (sold separately)	✓	✓	✓	✓	✓	✓
Accept credit card payments right in QuickBooks[3]				✓	✓	✓
Invoice multiple customers at once with Batch Invoicing				✓	✓	✓
Track time and expenses to bill clients			✓	✓	✓	✓
Access to product experts and unlimited technical support[4]	✓	✓	✓	✓	✓	✓
Get access to the latest version (when and if updates become available)	✓	✓	✓	✓	✓	✓
Online backup and protection of your QuickBooks data	✓	✓	✓			
Work in two company files at the same time[5]						✓
Get the insights to make better decisions						
One-click financial, sales & tax reports	✓	40+	65+	100+	150+ Industry	150+ Industry
Import data from Excel, Google contacts, and prior QuickBooks versions	✓	Excel & QuickBooks	Excel & QuickBooks	✓	✓	✓
Download or import your bank & credit transactions into QuickBooks[7]	✓	✓	✓	✓	✓	✓
Track inventory, set re-order points & create purchase orders			✓	✓	✓	✓
Track international sales & expenses in multiple currencies			✓	✓	✓	✓
Easily create a business plan					✓	✓
Track your balance sheet by class			✓		✓	✓
Forecast sales & expenses			✓		✓	✓
Industry-specific reports, sample files, menus & chart of accounts	Limited	Limited	Limited		✓	✓
Consolidate reports from multiple company files[8]						✓
Create custom reports with ODBC-compliant applications using a direct connection to the QuickBooks database[9]						✓
Manage inventory using bin location tracking, barcode scanning, serial number, or lot tracking, FIFO costing, and multiple location inventory[10]			FIFO			With Advanced Inventory
Control, customize, and automate your pricing right inside QuickBooks[10]						With Advanced Inventory

This is how the comparison between QuickBooks Online Plus and QuickBooks Premier looks like. Both models are the top of the line applications for cloud-based and desktop applications, respectively. According to the Intuit product comparison chart, QBO Plus lacks only three of the features that QuickBooks Premier has and is limited to three others. The three features that are completely missing are forecast creation, inventory reorganization point management, and customizable inventory reports. The three limitations are given by the number of activity-specific reports that QBO Plus offers, the fact that QBO Plus can only import data from Excel and QuickBooks, and that QBO Plus has 65+ reports compared to QuickBooks Premier's 150+ reports. However, QBO Plus offers automatic online backup, multi-user access and remote access that Premier does not offer. Although the chart on Intuit's website does not provide all the differences between the two software products, it does provide a reasonable overview of the functions for comparison purposes. Intuit has made significant progress in generating QBOs as the primary option for QuickBooks accountants. We believe that Intuit, as with many other developers of cloud accounting applications, is confident in the developments made with cloud solutions, aiming (and succeeding in large part) for the cloud solution to be comparable to desktop applications.

7. Conclusions

Cloud accounting software has come a long way since its inception. A software solution that was seen a few years ago as inferior to its desktop counterpart has taken big steps to be a desktop application replacement solution. Although there are still issues with cloud computing, most of them have been addressed in recent years. Cloud accounting can be seen as a secure option, both digitally and physically, that offers cost savings, convenience and a user-friendly interface. We believe that the entities that can benefit the most from cloud accounting software, at this moment, are the small and medium ones. We also believe that most cloud solutions on the market today do not have the depth of inventory systems and the specific and necessary characteristics for these solutions to excel in a larger, inventory-based entity, or in entities that require specific solutions. fields of activity. The users who receive the most benefits are service-based or limited inventory entities that are looking for convenient and affordable accounting software. With the new technology, an accountant can provide real-time reporting and business profitability consulting services, cost analysis, or decision support. Accounting processes are to be highly automated, supporting transparent information, which makes professional accountants reconsider their position and perceive analysis and consulting as the basis of the role they play.

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