Cloud - Computing Based Accounting for Small to Medium Sized Business

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Small to medium sized business enterprises are young and constantly changing their sphere of activities depending on fluctuations of the market. The enterprises daily use accounting information, which is used in enterprise's financial situation evaluation, correct decisions making, enterprise's financial situation analysis according to the results received, making plans for future and controlling the whole enterprise.

Accounting information systems play a significant role in providing the financial information for decision making within an organization. The systems are simultaneously providing information for a variety of other decision makers in production, human resources, finance, management, marketing, and supply chain logistics.

Unfortunately, accounting systems often do not support business properly. The causes may be: systems mostly are too large and complex to comprehend them in entirety and traditional information technologies are not efficient. There is a need to adopt the newest technologies in small to medium sized business.

In the paper investigated study showed the newest trends in accounting information systems for small to medium sized business. One of the newest trends in the information technologies world is cloud computing based technology. Accounting transfer to "cloud" is a new and innovative solution that can help save significant funds small and medium-sized enterprises. Small to medium businesses can get a lot of advantages with the newest technology. However, it has its own risks too. The paper indicates advantages and dangers of the newest technology within the business.

Investigation of accounting systems for small and medium sized enterprises in Lithuania in the cloud-computing context is a part of the research. Lithuanian companies have a great opportunity to use cloud computing capabilities. But only one developer of accounting systems offered the cloud based accounting program. Results of the research summarized only by main accounting software.

Investigation was carried out by using systematic and comparable literature review of accounting information systems faced to small to medium sized business.

The investigation also shows that there are not so many scientific papers on the newest cloud computing trends in Lithuania. Accordingly, this research was mostly based on literature review sourced from the internet.

Keywords: *small to medium business, cloud computing, accounting information systems, modeling, information technology.*

Introduction

Small to medium sized business (SMB) enterprises are young and constantly changing their sphere of activities depending on influence of the market. Their activities were influenced by rapidly developing economy during the past decade. The constant change of environment requires adjusting strategy of organization in line with the global changes of science, business and technologies, which can influence business performance. The work under new conditions has not only advantages, but also causes certain challenges and new conflicts within the organization (Belinskaja, *et al* 2010; Christauskas, 2005; Davidaviciene, 2008; Diskiene, *et al.,* 2008; Galiniene, *et al.,* 2007; Gatautis, 2008a; Gatautis, *et al*., 2009; Khouri, *et al.,* 2009; Mackevicius *et al.,* 2010; Salehi *et al.,* 2010).

In these tough economic times global organizations are actively looking for effective methods to improve the efficiency and profitability of their business. Digital technologies (remote network systems, Internet and mobile technologies) are used to facilitate the process of decision-making for business and other institutions (Gatautis, *et al.,* 2009; Melnikas, 2008; Zavadskas, *et al.,* 2010,).

Economic efficiency of business is determined by objective and timely information, which must be supplied by the accounting system. The main objective of the accounting system is collection and recording of data and information regarding events that have an economic impact upon organizations and the maintenance, processing and communication of information to internal and external stakeholders (Christauskas, *et al.,* 2002; Christauskas, *et al.,* 2004; Jovarauskiene, *et al.,* 2009; Girdzijauskas, *et al.,* 2008; Kundeliene, 2011). The system plays a key role in providing the financial information for decision making within the organization (Butkevicius, 2009; Kalcinskaite, 2009, Kazlauskiene, *et al.,* 2008). Information technologies have changed the nature of business significantly. Accounting is not an exception (Burinskiene, *et al.,* 2010; Consoli, 2010).

As information technologies are quickly developing, unfortunately, often the accounting systems do not support the business properly. The traditional accounting information systems (or in some circumstances accounting software) are not efficient (Arslana, *et al*., 2009; Miseviciene, 2009; Miseviciene, *et al.,* 2011; Misevicius, *et al.,* 2004; Morenoa, *et al*., 2010). To be more competitive

there is need for adoption of the newest IT in the small to medium sized business.

One of the newest trends in the information technologies world is cloud based systems. Accounting transfer to "cloud" is a new and innovative solution that can help to save significant funds to small and medium-sized enterprises. 'Cloud' works on this basis: business does not invest in funds, its information technology infrastructure, but only pays to specialized companies for the services used during a particular time. Cloud may be placed in everything from e-mail, company website, online store, and ending with the company accounting.

Small to medium businesses can get a lot of advantages with the new cloud based technology. It has its risks however too.

The research object: accounting software for small to medium sized business.

The aim of the paper is to analyze the newest technologies in accounting software for small to medium sized enterprises.

To achieve this aim, the following *research tasks* are:

- To investigate the newest trends in accounting software technologies for small to medium sized enterprises;
- To detect the advantages and dangers of the newest technologies within the business;
- To analyze the current state of accounting software in Lithuania.

The research is formed by systemic and comparable literature analysis of scientific publications and publications from Internet. The analysis is acknowledged by the accounting software for small to medium sized business.

Impact of cloud computing for SMBs

Cloud computing is currently one of the most hot topics in the IT world, and it's no wonder—Gartner projects in this sector's revenues will exceed $150 billion by 2013. This innovation is associated with a new Internet era, the technology through which the information will be stored in the servers and provided on line as a service to clients in a pay-as-you-need manner (Taylor, *et al.,* 2010).

In the papers (Avni, *et.al* , 2010, Alama, *et.al*, 2011; Burinskienė *et al.,*2010; Bressler *et.al*, 2006; Gatautis, *et al.,*2008c, Etro, 2009; Syed, *et al.*, 2011) the investigated study showed the economic impact of the information technology which is going to have a great effect on the market structure of many sectors and on the global macroeconomic in the next years. This will have a large impact on the cost structure and on the production possibilities of all firms, especially small and medium size enterprises as well. Companies should build up their technological capabilities to gain competitive advantage by offering value to their customers.

As small to medium sized businesses can respond fast to changes in demand of technologies they have been the most impetuous segment to adopt the cloud computing services. They typically have less-complex IT needs and support than larger enterprises. Small and medium sized businesses are often happy to hand over the delivery and operation of IT to third parties, freeing SMBs to focus on

running their businesses (Bose *et al.,* 2006;Taylor, 2010; Vijeikis, *et al.,* 2009).

Small to medium businesses can get a lot of profit with the cloud computing. Many papers mark the benefits and challenges of cloud computing (Beckham, 2010; White, 2010; Hoffman, 2011, Taylor, 2010). We have summarized only the main characteristics. The characteristics of the advantages are defined in Table 1.

Table 1

Characteristics of the cloud computing advantages

Advantages	Explanation and characteristics
Reduced costs	* reduces expenses on hardware and software, networking management and overall IT; * enterprises pay a monthly subscription fee only for the exact number of users who need the application.
Security	* major clouds application providers offer higher levels of security; * web based systems are actually as or more secure and have equal or better internal controls than similar in-house based software.
Respond to business	* adding new software is very simple; * providers upgrade their applications more frequently than most small companies can afford to; * companies can quickly access more resources if they need to expand business and can do it quickly.
Easier administration	* 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.
Compliance	* compliant with a variety of requirements including accounting standards and internal controls.
Global access	* employees, partners and clients can access, and update information wherever they are, rather than having to run back the office.
Try before buy	* many business applications are available in the cloud, and providers frequently offer free trials and extensive demos; * this allows to see if the application is right for company.

Source: created by the authors using the references (Beckham, 2010; White, 2010; Hoffman, 2011, Taylor, 2010)

Along with the advantages of using cloud computing in business there are some risks (Table 2).

Table 2

Risks of cloud computing to business

Risks	Explanation and characteristics
Fear for safety	* cloud computing can also bring substantial risks in the privacy and confidentiality areas. * main concentration in accounting is money managing; so cloud computing would not be an ideal because some of the most important information, such as bank accounts, are less secure.
Internet failures	* if internet is down then the accountant can not access information directly. * in the accounting profession, accountants want to have access to their information at any or every given time.
Control loss	* company loses control over the software application and become dependent on the provider to maintain, update and manage it.
Dependency	* company becomes dependent on a cloud-based software application.

Source: created by the authors using (Beckham, 2010; White, 2010; Hoffman, 2011, Taylor, 2010)

Types of accounting software

Generally, accounting system gives the business a way to view and analyze financial information and provides main basic functions presented in Table 3 (Bressler, *et al.,* 2006; Chytilova, *et al.,* 2011, Gaidiene, 2006; Wiley, 2010).

Table 3

Main functions of accounting systems

Function	Explanation
Collect and store data	Systems collect and store data about business activities and transactions. The systems capture transaction data on source documents, record transaction data in journals, and post data from journals to ledgers that sort the data by account type.
Provide Information	Systems provide information useful for decision making. This information usually involves reports in the form of financial statements and managerial reports.
Provide Controls	Systems incorporate controls to ensure the accurate recording and processing of data. The system must make certain that the information that comes out of the system is reliable and keep business assets safe.
Forecasts of future	Some accounting systems also produce forecasts of future conditions such as projected financial statements and financial budgets. So firm's financial performance is measured against such forecasts by other analytical accounting reports.

Source: created by the authors using (Wiley, 2010; Bressler, et al., 2006; Chytilova, et al., 2011, Gaidiene, 2006)

Well-designed systems must meet multiple accounting needs for transaction processing, control specification, and financial statement preparation. The accounting systems are simultaneously providing information for a variety of other decision makers in production, human resources, finance, management, marketing, and supply chain logistics. Parts of the accounting system might include financial reporting, cost accounting, management accounting and enterprise resource planning. This information helps managers to plan and control operations and provides reports to such outside parties as stockholders, creditors and government agencies (Strumickas, *et al.,* 2010; Stabingis, *et al.,* 2010).

Unfortunately, often the traditional accounting systems do not support business properly. The causes may be: they do not always administer records precisely or present detailed information, which corresponds to the requirements of constantly changing laws. There is a need of optimization of business processes for small and medium enterprises (Miseviciene, 2009; Valanciene, *et al.,* 2007).

Traditionally two types of accounting systems are known:
a) accounting system locally installed on company's computers;
b) Web based accounting software installed on a server.

Today web based accounting systems are closely related with the new cloud computing approach. A term 'cloud computing' is one of the newest trends in the world of information technologies. Cloud computing is a method by which applications and data are hosted and delivered. Instead of dealing with locally stored software and data, the places where they reside are in the cloud. The cloud computing was created to eliminate the need for people to buy and install software on their computer. The service allows people to login and access their information from any computer or site. In this model, the applications are maintained in the service provider's datacenter, and every time users launch their browsers and log on, they get the latest version (Kim, 2009).

Some authors have wrongly assumed that cloud computing refers only to services provided over the Internet which is not hosted by their company. Cloud computing services are generally divided into three separate categories or levels (defined by Sclater, 2010):

- Infrastructure as a Service (*IaaS*) is the lowest level. Here customers can rent basic computing resources such as processors and storage, and use them to run operating systems and applications.
- Platform as a service (*PaaS*) is the next level up. It enables customers to install their own applications using a platform specified by the service provider.
- Software as a Service (SaaS) is the highest level of the cloud computing service. It is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet.

So, today the web based accounting software is internet-based technology where the information is stored on the server or in the cloud (Figure 1). The *cloud based accounting system* is basically a way to run business accounts entirely online and provided as a service (Software as a Service) on-demand to clients (from the "clouds" indeed) It is also known as online accounting, or in some circumstances SaaS (software as a service) accounting software. Its impact will be on both consumers and firms. On one side, consumers will be able to access all of their accounting data from any device like the personal laptop or the mobile phone (Nesbit, 2009; Walsh, 2011). On the other side, firms will be able to rent the software from a service provider and to pay on demand.

Figure 1. Web based accounting systems location

Source: http://www.acumatica.com/

As difference to cloud based accounting software the traditional accounting system is locally installed in-house copies of accounting software. The essential difference between the two platforms is that, while traditional platforms are designed to support enterprise-scale applications, cloud platforms can potentially support multiple users at a wider scale, namely at Internet scale (Etro, 2009, Damaskopoulos, *et al.,* 2008).

The web based accounting software can be purchased as traditional software license or bundled with an operating environment and services as the cloud based solution. Differences of the two possibilities are presented in Table 4 (Acumatica, 2011).

Table 4

Buying a license versus purchasing cloud based solution

	License only	Cloud based solution (Saas)
Accounting software license	Company's own	Company rent it
System location	Where company want it	In the cloud
Hardware	Provided by company	Included
Windows & SQL Server	Provided by company	Included
Maintenance fees	Purchased	Included
IT Resources	Company team or a provider	None required
Support	Purchased from a provider	Purchased from a service provider
Number of users	Limited by license	Unlimited

Source: modified by the authors using Acumatica, 2011

We have summarized accounting software types and proposed framework in Table 5. The accounting systems types are explained in Table 6.

Table 5

Accounting software framework

Accounting software	Location	License	SaaS service
Stand alone	Locally on company computer	Purchasing license or open source, cost free	-
Web based	On a company server	Purchasing license/open source cost free	-
	In the cloud	-	Included

Source: created by the authors

Table 6

Explanation of the accounting systems types

Type	Explanation
Stand alone	Stand alone software is software installed on personal computer, vs. online software which runs via Internet browser accounting software
Web-based	The computing method allows people to login and access their information from any computer of web site.
Free and open-source	The software is liberally licensed to grant the right of users to use, study, change, and improve its design. Free software is generally available without charge.
License	The software is licensed to grant the right of users to use.
SaaS service	Cloud based accounting software is basically a way to run business accounts entirely online and provided as a service (Software as a Service) on-demand to clients from the 'clouds'

Source: created by the authors using web sites sources (lt.wikipedia.org)

Cloud based accounting in Lithuania

Small to medium size enterprise is one of the most important economics growth factors having the basic impact on the general development of the country's economy (Banyte, *et al.,* 2008; Balezentis, *et al.,* 2011; Navickas, *et al.,* 2009; Tamosiunas, 2009; Vijeikis, *et al.,* 2009). The definition of the concept of small and medium sized business is provided by the Republic of Lithuania Law. By the definition SMB entity shall be a micro, small or medium-sized enterprise (Ministry, 2011).

Companies in Lithuania are predominantly small and medium size. According to the data of the Statistics Department there were more than 66,500 small and medium size enterprises on 1st January 2011.

Even the enterprises with limited resources must administer records and organize financial management properly, so the demand for implementation of the accounting information systems is still growing.

Web based accounting systems can help to increase processing capacity, produce more work, engage more customers, and grow business. The systems enable to maintain the books of accounts using the National Chart of Accounts and the client corporate chart of accounts simultaneously.

However, SMBs are slower than large firms to adopt new technologies. SMEs also face generic barriers to adoption including trust and transaction security (Gatautis, *et al.,* 2008a,c, Mickaitis, 2009; Brauers, *et al.,* 2009).

Small and medium-sized companies do not always have the opportunity to use professional services in the IT sector. The main limiting factor is finance. Maintenance of high quality and professionally configured, consistent and tailored to the work servers is expensive. Acquirement of all the software necessary, especially small business entity, is quite complicated and expensive. Local market-specific accounting programs are also expensive; they are having problems in installing the open source operating systems such as Linux. There are other unforeseen problems, especially when the computer crashes.

Ideal decision offers the cloud computing technology. The enterprise does not care for any physical device. It is performed by the 'cloud' company. Hiring a virtual server in the cloud offers great opportunities, enterprises want to use both platforms and software, and organize work effectively. And providing of just high-speed Internet access is simple, easily maintained and does not require much financial investment in personal computers.

Lithuanian companies have an ample opportunity to use the cloud computing capabilities. Lithuania is one of the leading countries in the world by developing Internet technologies and installation of computer networks, mobile telephone network is being expanded.

Based on the cloud computing impact on the country economic analysis and forecasts for the next few years in Lithuania should build from 460 to 2,378 new small and medium businesses, as well as from 6118 up to 30,806 new jobs. Study showed that successful economic growth will largely depend on cloud-based computing solutions speed deployment. Even the slowest scenario, Lithuania should be two times ahead of Estonia and Latvia by the emergence of new companies and more than four times - according to the new job rate. Cloud computing is the impact on business, jobs and productivity in European countries. The study was conducted at the University of Milan - Bicocca, Faculty of Economics, 2009 under the guidance of Professor Federico Etro (Babinskas, 2010).

The migration to the cloud computing in Lithuania has already started. The cloud computing technology gains the popularity in the commercial sector as well as in government (Giedrimas, *et al.,* 2010).

Up to now there is a major barrier - critical approach to web technology innovation as well as lack of information about the benefits of technology and security (Gatautis, *et al.,* 2009).

Results of investigation of accounting systems for SMBs in Lithuania

The paper concludes with summarizing of accounting systems for small to middle business. A growing number of accounting information systems for small businesses is being released on to Lithuanian market. They can range from very simple and easy-to-use to extremely complex.

Our investigation is based on the proposed accounting systems framework (see Table 5). We differentiated the accounting information system by two properties a) where are they installed and b) the cost. The cost is one of the important drivers in the selection of the accounting information system.

As there are many accounting information systems in Lithuania, in Table 7 we presented only the most used accounting systems for small to medium business in Lithuania.

Table 7

Accounting systems for small to medium business in Lithuania

Manufacture	Software package	Location/ License/SaaS
1. UAB "Rivilė"	Rivilė Solo	Stand alone/ Licensed
2. UAB "Rivilė"	Rivilė GAMA	Web based/ Licensed
3. UAB "Protas ir logika"	AGNUM	Stand alone/ Licensed
4. UAB "Protas ir logika"	eLit	Stand alone/ Licensed
5. UAB "Proringas"	Pragma	Stand alone/ Licensed
6. UAB "Stekas"	Stekas	Stand alone/ Licensed
7. UAB "EDRANA"	Profit-Web® SQL	Web based/ Licensed
8. UAB "EDRANA"	PROFIT-W® SQL	Stand alone/ Licensed
9. UAB "Būtenta"	Būtent	Stand alone/ Licensed
10. UAB "Būtenta"	B-NET Solutions	Web based/ Licensed
11. UAB "Prototechnika"	EuroSkaita	Stand alone/ Licensed
12. UAB "Prototechnika"	WEBSkaita solution	Web based/ Licensed
13. UAB "Prototechnika"	NetSkaita	Web based/ Cloud based SaaS.
14. UAB "Epicor software Lietuva"	Scala	Stand alone/ Licensed
15. UAB "Finansų valdymo sistemos"	FINVALDA	Stand alone/ Licensed
16. UAB "Finansų valdymo sistemos"	Fin_Web_Service	Web based/ Licensed
17. Microsoft	„Microsoft Dynamics™ NAV"	Stand alone/ Licensed
18. UAB "DB Topas"	DB Apskaita	Stand alone/ Licensed
19. IĮ "Paulita"	PauLita	Stand alone/ Licensed
20. UAB "Contour Lab"	Contour Enterprise	Stand alone/ Free
21. UAB "AUNET"	Apskaita5	Stand alone/ Free
22. Sandas	Tiny ERP	Stand alone/ Free
23. DWS Systems Inc.	SQL Ledger	Web based/ Free
24. UAB "Informacinės konsultacijos"	Apskaita 1.1	Stand alone/ Free

Source: created by authors using web sites sources

The summary of the analyzed accounting systems is presented in Figure 2 (here *No* indicates number and *%* percents of used accounting systems).

In the research we highlighted the importance of use of such accounting software that can be accessed via the web and are hosted elsewhere.

As Figure 2 indicates, Lithuanian companies prefer locally developed stand alone accounting systems (71 %). Web based accounting software are just starting their first steps (only 29 %). On the market accounting systems currently dominated by commercial products (79 %). There are not so many open source and cost free solutions (21 %), especially for small and medium-sized businesses.
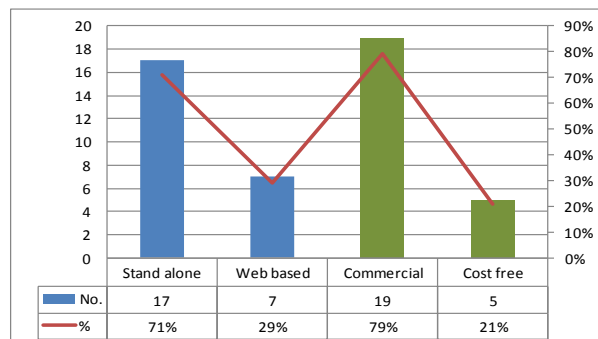

Figure 2. Summary of analyzed accounting systems.

Source: created by the authors

Only business management and accounting systems developer JSC Prototechnika offered the cloud based accounting program on the internet "NetSkaita-account". The accounting program allows companies to manage all customer accounts online and is provided as the service (Software as a Service) on-demand to clients.

Conclusions

Small to medium sized business enterprises are young and constantly changing their sphere of activities depending on influence of the market. The constant change of environment requires adjusting strategy of organization in line with the global changes of science, business and technologies, which can influence the business performance. Digital technologies (remote network systems, Internet and mobile technologies) can be used to facilitate the process of decision-making for business and other institutions.

Accounting information systems plays a significant role in providing the financial information for decision making within the organization. A growing number of accounting information systems for small businesses is being released on to the Lithuanian market, but the traditional information technologies are not efficient.

In the paper the investigation showed the newest trends in accounting software for small to medium enterprises. Lithuanian companies have a great opportunity to use the cloud computing capabilities. Lithuania is one of the leading countries in the world by developing Internet technologies and installation of computer networks, mobile telephone network is being expanded.

Cloud based accounting software is one of the newest method in the information technologies world. Small to medium businesses can get a lot of advantages with the cloud accounting. However, it has its risks too. The paper summarized main characteristics of cloud computing advantages and risks.

Analysis of accounting systems on Lithuania market showed that Lithuanian companies prefer locally

developed stand alone accounting systems (71 %). There is a major barrier - critical approach to web technology innovation as well as lack of information about the benefits of technology and security. Web based accounting software are just starting their first steps (only 29 %). On the market accounting systems currently dominated by commercial products (79 %). There are not so many open source and cost free solutions (21 %), especially for small and medium-sized businesses.

But the cloud based accounting system in Lithuania are just starting now. Only one business management and accounting systems developer JSC Prototechnika offered the cloud based accounting program on the internet "NetSkaita-account". The accounting program allows companies to manage all customer accounts online and is provided as a service (Software as a Service) on-demand to clients.

Scientific literature overview of the cloud based accounting software has shown that there is a lack of scientific papers on the newest trends in Lithuania.

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„Debesų kompiuterija" pagrįsta apskaita mažoms ir vidutinėms Lietuvos įmonėms

Santrauka

Mažos ir vidutinės įmonės Lietuvoje yra dar gana jaunos, todėl, priklausomai nuo rinkos poreikių, jos dažnai keičia savo veiklos sritį. Jų veiklą taip pat lemia ir sparti ekonomikos plėtra. Šiais sunkiais ekonomikai laikais, įmonės aktyviai ieško efektyvių metodų, taip norėdamos pagerinti verslo efektyvumą ir pelningumą. Mokslo, verslo, ir technologijų pokyčiai pasaulyje, darantys įtaką verslo rezultatams, taip pat nuolatinė kaita lemia, kad reikia nuolat koreguoti organizacijos strategiją. Mažos ir vidutinės įmonės Lietuvoje, norėdamos įvertinti įmonės finansinę situaciją priimant tinkamus sprendimus, taip pat siekdamos valdyti ir prognozuoti įmonės veiklą ateityje, kasdienėje savo veikloje naudoja apskaitos informaciją.

Apskaitos informacijos sistema yra labai svarbi, nes ji teikia naudingą informaciją visiems organizacijos padaliniams. Šiuo metu rinkoje siūloma gana daug apskaitos informacijos sistemų smulkiam ir vidutiniam verslui, tačiau šios tradicinės apskaitos sistemos neduoda reikiamo efekto. Dabartiniu laiku reikia tokių apskaitos informacinių sistemų, kurios būtų geriausios ir susijusios su naujausiomis technologijomis. Naujausios informacinės technologijos (nuotolinio tinklo sistemų, interneto ir mobiliųjų technologijų) jau yra naudojamos siekiant palengvinti verslo ir kitų institucijų sprendimų priėmimo procesą.

Pagrindinis atlikto tyrimo *probleminis klausimas*: išsiaiškinti, kokios naujausios apskaitos informacinės sistemos šiandien egzistuoja pasaulyje ir kurios iš jų būtų efektyvesnės ir pigiau leistų aprūpinti informacija įmonės padalinius.

Tyrimo tikslas – išanalizuoti naujausias apskaitos informacines technologijas smulkaus ir vidutinio dydžio įmonėms. Tikslui pasiekti suformuluoti *uždaviniai*: ištirti naujausias tendencijas pasaulyje, išanalizuoti naujausių apskaitos technologijų galimybes ir problemas verslui bei išsiaiškinti esamą padėtį Lietuvoje.

Pastaruoju metu pasaulio informacinių technologijų specialistų dėmesys prikaustytas prie naujos revoliucingos kompiuterių naudojimosi galimybės – „debesų kompiuterijos" (angliškai vadinama „cloud computing"). Tai pažangiausias paslaugų, naudojančių informacines technologijas, teikimo būdas, atskiriantis šių paslaugų naudotoją nuo rūpinimosi pačiomis informacinėmis technologijomis.

„Debesų kompiuterija" veikia tokiu principu – verslas neinvestuoja lėšų į savo informacinių technologijų infrastruktūrą, o tik specializuotoms kompanijoms moka tik už tas paslaugas, kuriomis naudojasi konkrečiu metu. Taigi vartotojui nebereikia įsigyti kompiuterinės ar programinės įrangos bei užtikrinti nuolatinio informacijos prieinamumo. Mokesčiai už naudojimasi paslaugomis skaičiuojami tik už tam tikrą laiką, todėl išlaidas tampa ne tik geriau valdyti, bet ir pavyksta jas efektyviai sumažinti.

Yra trys „debesų kompiuterijos" verslo modeliai: a) programa kaip paslauga, b) platforma kaip paslauga ir c) infrastruktūra kaip paslauga.

Pagal pirmąjį modelį klientas gauna prieigą internete prie konkrečios programos (pvz. elektroninis paštas ar apskaitos programa) ir moka dažniausiai už jos licenzijas. Pagal antrąjį modelį vartotojui suteikiama operacinė sistema ir su ja susijusios paslaugos per internetą. Trečiasis modelis užtikrina serverio, duomenų saugyklos bei interneto kanalo resursų nuomą. Lietuvos įmonės turi daug galimybių naudotis „debesų kompiuterijos" skaičiavimo galimybėmis, nes Lietuva yra viena iš pirmaujančių šalių pasaulyje, sparčiausiai plečianti mobiliojo ryšio tinklą, kurianti įvairiausias interneto technologijas.

Remiantis Milano universiteto „debesų kompiuterijos" poveikio verslui, darbo vietoms ir produktyvumui tyrimu, per ateinančius kelerius metus Lietuvoje turėtų būti įkurta nuo 460 iki 2378 naujų smulkaus ir vidutinio verslo įmonių, taip pat sukurta nuo 6118 iki 30806 naujų darbo vietų. Tyrimo duomenimis, sėkmingesnis ekonomikos augimas labai priklausys nuo „debesų kompiuterija" grįstų sprendimų diegimo greičio. Net ir lėčiausio scenarijaus atveju Lietuva turėtų 2 kartus aplenkti Estiją ir Latviją pagal naujų įmonių susikūrimą ir daugiau nei 4 kartus – pagal naujų darbo vietų rodiklį.

Straipsnyje ištirtos su „debesų kompiuterijos" technologijomis glaudžiai susijusios apskaitos informacijos sistemos. Šios sistemos suteikia naujų galimybių mažoms ir vidutinėms įmonėms, tačiau yra ir tam tikrų grėsmių. Straipsnyje aptariamos galimybės (privalumai) ir problemos (trūkumai), kurie atsiranda taikant naujausias „debesų kompiuterijos" technologijas. Straipsnyje atskleisti tokie pagrindiniai „debesų kompiuterijos" privalumai: kaštų sumažinimas įsigyjant IT techninę ir programinę įrangą; lengvesnis apskaitos sistemų administravimas; pasiekiamumas iš bet kurios pasaulio vietos (kur yra internetas); duomenų saugumas; galimybės išbandyti programą prieš užsisakant paslaugas. Aprašytos ir pagrindinės grėsmės (baimės): duomenų apsaugos perdavimas trečiosioms šalims; interneto ryšio nestabilumas; priklausomybė nuo paslaugos teikėjo bei valdymo kontrolės praradimas.

Straipsnyje taip pat ištirta, kokios apskaitos sistemos labiausiai paplitusios Lietuvoje mažose ir vidutinėse įmonėse. Tyrimo rezultatai apibendrinti tik dažniausiai naudojamoms apskaitos sistemoms. Nagrinėtos keturių tipų apskaitos sistemos: stacionarios (kompiuteryje įdiegtos) apskaitos programos, per interneto ryšį pasiekiamos programos, komercinės (licenzijuotos) ir nemokamos programos. Tyrimo rezultatai parodė, kad Lietuvoje šiuo metu daugiau naudojamos lokaliai įdiegtos ir komercinės programos. Internetinės apskaitos sistemos naudojamos rečiau. Nemokamos, t.y. atviro kodo programos naudojamos retai. Taigi galima teigti, kad nors „debesų kompiuterijos" galimybės Lietuvoje sudaro palankias sąlygas technologijų naudojimui, tačiau naujausios apskaitos sistemos, pagrįstos „debesų kompiuterija", Lietuvoje dar tik pradeda skintis savo kelią.

Atliekant tyrimą buvo pasigendama mokslinių straipsnių „debesų kompiuterijos" taikymo apskaitoje tema Lietuvoje, todėl tyrimas buvo atliekamas daugiausia remiantis autorių komentarais arba informacija iš internetinių šaltinių.

Raktažodžiai: *mažos ir vidutinės įmonės, debesų kompiuterija, apskaitos programos, modeliavimas, informacinės technologijos.*