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BUSINESS AND MEDIA SCHOOL

EGLĖ MARKŪNAITĖ

(Electronic business management)

CLOUD-BASED FINANCIAL MANAGEMENT SYSTEMS PERSPECTIVES IN SMALL AND MEDIUM-SIZED ENTERPRISES

Master Thesis

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ABBREVIATIONS

API - Application Programming Interface

CRM – Customer Relationship Management

ERP - Enterprise Resource Planning

EU – European Union

IaaS - Infrastructure as a Service

IT – Information Technology

JSC - Joint-stock Company

NIST - National Institute of Standards and Technology

PaaS - Platform as a Service

POS – Point of Sale

SaaS - Software as a Service

SLAs - Service Level Agreements

SMEs - Small and Medium-sized Enterprises

SQL - Structured Query Language

VAT – Value Added Tax

INTRODUCTION

Relevance: Nowadays, the technologies are one of the most important things in our lives. So companies start to focus on the newest technologies, which help them to cut their costs and to be more productive or more competitive. The Cloud Computing is one of that technology. In simply words, it can be described as an innovative Information Technology (IT) service delivery mode, which requires only the Internet connection. The Cloud Computing has a lot of benefits for different enterprises of all sizes. One of the main benefits is that enterprises do not have to maintain, develop or take care of the IT infrastructure by spending time and money. In the wake of this, many enterprises start to use the cloud-based financial management systems, which increasingly replace old traditional financial systems.

Financial management systems can be defined as the programs, which are very effective in accounting management and fostering budgeting. As it is known, these systems allow enterprises to manage easily the manual processes: general accounting and financial reporting. Financial management systems are needed to share the same information, to give the real time data and so on. The Cloud Computing makes it easier to accomplish.

The cloud-based financial management systems are becoming more and more popular, because they allow to hold the competitive position and to increase the efficiency in the enterprises. However, not all enterprises hurry to use them replacing their old financial systems. Especially the small and medium sized companies are very carefully considering the implementation of the cloud-based financial management systems.

According one analysis, the small and medium enterprises (SMEs) are young and they are regularly changing their sphere of activities because they depend on influence of the market. The regular change of environment needs adjusting strategy of organization in order to be in line with the global changes of business, science and technologies, that can influence the performance of business. Digital technologies such as the Internet, remote network systems and mobile technologies can be used to make the decision-making process for business and other institutions easier. There is a great opportunity for Lithuanian companies to use the Cloud Computing capabilities because Lithuania is known as one of the leading countries in the whole world for its development of the Internet technologies, installation of computer networks and expansion of mobile telephone network. (Christauskas and Miseviciene, 2012) So the Lithuanian SMEs can exploit the opportunities to use the cloud-based financial management systems and become more competitive.

The problem - the small and medium-sized companies do not know about the cloud-based financial management systems and do not take the opportunity to use them.

The object of the master thesis – the cloud-based financial management systems.

The purpose of the master thesis – to evaluate cloud-based financial management systems functionality and their perspectives in Lithuanian SMEs.

The objectives of master thesis:

1. To overview the main characteristics of the Cloud Computing (the concept, structure, advantages and disadvantages) and the financial management systems (the concept, benefits and drawbacks).
2. To present the current cloud-based financial management systems and compare them to each other.
3. To perform the empirical research to find out why enterprises choose the cloud-based financial management systems and to identify the reasons why the enterprises avoid to use this new technology.

The methods used in master thesis:

1. Analytical method. Different articles, various reports were analysed in order to overview the main characteristics of the Cloud Computing and financial management systems. Also, some online sources were used.
2. Comparative method. The current cloud-based financial management systems were compared with each other trying to find similarities and superiorities and to ascertain benefits and drawback in certain systems.
3. Questionnaire method. By using the questionnaire, the quantitative research was conducted. The aim was to find out why Lithuanian SMEs choose the cloud-based financial management systems and to identify the reasons why the enterprises avoid to use this new technology.
4. Descriptive statistical method. The results are systematized, described in detail and graphically visualized. This allows to make preliminary conclusions about the theme.
5. Method of the generalization. All used literature, various reports and other documents were summarized. Also, conclusions and recommendations were formulated.

The structure of the master thesis:

The master thesis consists of an introduction, three chapters, which were divided into smaller parts, conclusions and recommendations. In the first chapter the main characteristics of The Cloud Computing (the concept, structure, advantages and disadvantages) and the financial management systems (the concept, benefits and drawbacks) are discussed. In the second chapter the current cloud-based financial management systems are presented and compared to each other. In the third chapter a description of the methodology of the empirical study is described and there are the analysis of questionnaire survey results of the perspectives of the usage of the cloud-based financial management systems in Lithuanian SMEs. The results, got after a questionnaire survey, were processed in the

following programs: the statistical software package SPPS (17 version) and Microsoft Excel software. In the end of the master thesis there are formulated conclusions and recommendations.

1. OVERVIEW OF THE MAIN CHARACTERISTICS OF THE CLOUD COMPUTING AND THE FINANCIAL MANAGEMENT SYSTEMS

The aim of this chapter is to provide a holistic view on the concept and the structure of Cloud Computing and the financial management systems. Also, it will be presented the main advantages and disadvantages of the Cloud Computing and financial management systems, which are one of the most important and relevant aspects of the literature study.

1.1. The Cloud Computing

1.1.1. The Concept and the Structure of the Cloud Computing

There are various definitions of the Cloud Computing, which have changed significantly in recent years. The Cloud Computing can be understood as the combination of many pre-existing technologies. These technologies have matured in various contexts and at various rates. Also, they were not designed as a coherent whole. However, these technologies have come together to create a technical ecosystem for the Cloud Computing. New advances in processors, disk storage, broadband Internet connection, virtualization technology and fast servers have combined to create the cloud a more compelling solution (Avram, 2014)

One of the most popular definitions of the Cloud Computing is presented by National Institute of Standards and Technology (NIST): "*Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction*" (Mell and Grance, 2011, 2 p.) Also, Cloud Computing can be defined as a service, which is offered by a company to persons or other companies upon an atypical contract. This contract has its object, services, for example, storage, processing and backup content, providing customized applications and others on the server contractor, which allow the user to have secure access anytime and from anywhere. (Rohrmann and Rocha Cunha, 2015) So, it can be stated that the Cloud Computing is the new technology, which is created to make the easier work for companies saving costs.

According NIST, the cloud computing structure is composed from essential characteristics, deployment models and service models. (Mell and Grance, 2011) All these components are presented in the 1 table.

1 Table. The Cloud Computing Structure.

Essential Characteristics	Deployment Models	Service Models
· On-demand self-service · Broad network access · Resource pooling · Rapid elasticity · Measured service	· Private Cloud · Community Cloud · Public Cloud · Hybrid Cloud	· Software as a Service (SaaS) · Platform as a Service (PaaS) · Infrastructure as a Service (IaaS)

Source: made by the author using P. Mell and T. Grance (2011)

The above table shows that there are five Essential Characteristics. NIST describes them as follows (Mell and Grance, 2011):

- **On-demand self-service.** The user can provide computing capabilities, for example, server time and network storage, if it is required it could be done automatically with no human interaction with each service provider.
- **Broad network access**. There are capabilities, which are available over the network. They are accessed through standard mechanisms, which use is promoted by heterogeneous thick or thin customer platforms, such as tablets, laptops, mobile phones, workstations.
- **Resource pooling**. The computing resources of a provider are pooled to serve multiple users using a multi-tenant model, with different resources (physical and virtual) which are dynamically assigned and reassigned according to users' demand. It is sensible to have independent location as the user generally has not got any knowledge or control of the exact location of the provided resources but the location can be defined at a higher level of abstraction (country or datacentre). Storage, processing, memory and network bandwidth are the examples of resources.
- **Rapid elasticity.** Provision and release of capabilities can be done elastically, in several cases automatically, because of scaling rapidly outward and inward commensurate with determined request. The user mostly has unlimited capabilities with availability for provisioning and they can immediately be appropriated in any quantity.
- **Measured service.** Resource use is automatically controlled and optimized by cloud systems which leverage a metering capability at some level of abstraction which is appropriate to the type of certain service (for instance, storage, processing, bandwidth and active user accounts). The usage of resource can be controlled, monitored and reported and the transparency can be provided for both the provider and user of the utilized service.

From the 1 table, also it is seen that there are four different Deployment Models. They are categorised as follows (Mell and Grance, 2011):

- **Private Cloud.** This cloud infrastructure is provided for exclusive use by a single organization, but it comprises multiple consumers, for example, business units. The organization, a third party or combination of them can own, manage and operate it. The Private Cloud may exist on or off premises.
- **Community Cloud**. The cloud infrastructure is provided for use by a unique community of consumers from enterprises, which have shared concerns such as security requirements, policy, compliance considerations and so on. The third party, one or more of the organizations in the community or combination of them can own, manage and operate it. Also the Community Cloud may exist on or off premises.
- **Public Cloud**. This cloud infrastructure is provided for open use by the public. The business, academic or government organization, or maybe some combination of them can own, manage and operate it. The Public Cloud exists on the premises of the provider of the cloud.
- **Hybrid Cloud**. It is the combination of two or more distinct cloud infrastructures, which are mentioned above.

Moreover, there three service models, which are submitted in the 1 table. These models are different in their purpose and can be termed (Bhatt, 2012):

- **Infrastructure as a Service (IaaS).** It is the hardware delivery (for example servers, storage, networking technology, data center space) as a service by the Cloud Computing such as operating systems and virtualization technology manages the resources and after installing of resources in their own data center. This center are paid services as per usage.
- **Platform as a Service (PaaS)**. An integrated set of software is delivered to a developer who is in need to have everything for building an application and it might be viewed as a kind of an evolution of Web hosting. A standard platform for operating system as a base of provisioning, related services, database and query processing is also provided by the PaaS. The PaaS keeps backup services on high node to manage disaster recovery. That means that the software should be developed for clients' needs. The main focus of the developers must be taken on designing the application instead of server's compatibility, networking and storage. The PaaS will provide these entire infrastructures.
- **The Software as a Service (SaaS)**. It means that the providers host applications of the business and delivered them as a service. The businesses get the immediate advantage of reducing capital expenditures. They gain the flexibility to test the new software on a rental basis. After that organizations can continue to use and adopt the software, if it proves suitable.

In summary, the Cloud Computing structure shows that this technology is very flexible for consumers. It means that Cloud Computing is suitable for specialists from different fields and it easily can satisfy their various needs.

1.1.2. Advantages and Disadvantages of the Cloud Computing

Every new technology has its pros and cons, so the cloud computing is not an exception. Many authors (Han, 2010; Bhatt, 2012; Rohrmann and Rocha Cunha, 2015; Apostu et. Al., 2013; Shayan et. al, 2013; Dial and Moye, 2014) mentioned a lot of benefits and risks of the cloud computing. The main advantages of that technology are listed below:

1. **Lower Costs.** It is obvious that companies, which use the Cloud Computing to run applications, systems and IT infrastructure, save their financial resources or even staff. (Han, 2010) The enterprises do not have to invest a lot of money in these things: hardware, software, maintenance, upgrade, and the management of information technology. (Rohrmann and Rocha Cunha, 2015)
2. **Mobility.** The user has the possibility to connect to the Cloud from any location. (Bhatt, 2012)
3. **The accessibility at any time.** The users of cloud computing can access and modify documents 24/7 (it means 24 hours a day, 7 days a week). (Rohrmann and Rocha Cunha, 2015)
4. **Data safety.** The Cloud Computing service reduces the risk of data loss, because there are many processors at work and there is a specific structure of hardware, which performs periodic backups. (Rohrmann and Rocha Cunha, 2015) So, all data/files are safe unless someone stole the hard drive. (Bhatt, 2012)
5. **Almost Unlimited Storage.** It means that storing information in the cloud give the user almost unlimited storage capacity. (Apostu et. Al., 2013)
6. **Ease of sharing.** It is one of the most important components of Cloud Computing. All resources, information, hardware are shared for instant delivery. (Bhatt, 2012)
7. **The energy efficiency**. The amount of energy expended by several centers of traditional data processing is more higher than the amount of energy expended by a cloud computing service. It is important to mention that the Cloud Computing servers have energy efficiency programs. Also, they seek to consume clean energy or they are installed in locations, in which the temperature is not high, to reduce the use of chiller machines. (Rohrmann and Rocha Cunha, 2015)
8. **Copyright convenience**. „Responsibility for all aspects of licensing, maintenance and authorization” (Bhatt, 2012, 110 p.)

9. **Synchronization.** „Different experts from different issues, projects and locations" (Bhatt, 2012, 110 p.)

In spite of many advantages of the Cloud Computing, as mentioned above, it also has its disadvantages. The main drawbacks of the Cloud Computing are these:

1. **Technical Issues.** As it was mentioned before the data and information on the Cloud can be accessed any time and from anywhere, but there is a possibility that the system can have some serious malfunction. Enterprises should be aware of the fact that the Cloud Computing technology is always prone to outages and other technical issues. Even the best providers of Cloud service can run into this kind of trouble, in spite of keeping up high standards of supervision (Apostu et. Al., 2013)
2. **The risk of attacks.** The companies, which store information in the cloud, also are vulnerable to external hack attacks and threats. Also, there is a possibility of stealth of sensitive data. (Apostu et. Al., 2013) Moreover, this risk is for stored data and for mishandling of transmitting data over the Clouds. (Bhatt, 2012)
3. **Sharing of documents could be affected by masquerading.** It means that anyone can access your shared data. (Bhatt, 2012)
4. **The accessibility to the cloud.** It was mentioned that the user of the cloud computing can access data wherever and whenever he want, but the cloud computing requires a reliable internet connection. (Shayan et. al, 2013) So, if there is no connection to the internet, the user cannot access information directly.
5. **Protect data.** It means that the software and hardware used to back up data or in other words they protect data against attacks and malware. The providers, who want to protect cloud and data, have to have firewalls, intrusion detection system, intrusion prevention system and antivirus. Without them, they should encounter damages. (Shayan et. Al, 2013)
6. **Long-term viability.** The provider of the cloud computing can become bankrupt or sold to another company. So, it very important to ask the provider, how to catch his data if it happens. (Shayan et. Al, 2013)
7. **Jurisdictional problems.** It means that there is a lack of clarity as to which jurisdiction's laws the user should apply to disclosure of information or an alleged breach. For instance, the data is stored in the cloud server, which is in different country from where the information is being used and the breach occurs from other country, so it may be unclear what jurisdiction's laws should apply. (Dial and Moye, 2014)

In summary, the users should consider carefully all advantages and disadvantages of Cloud Computing before deciding to use it. Especially enterprises have to assess all risks such as technical, organizational and jurisdictional and think how to reduce them.

1.2. The Financial Management Systems

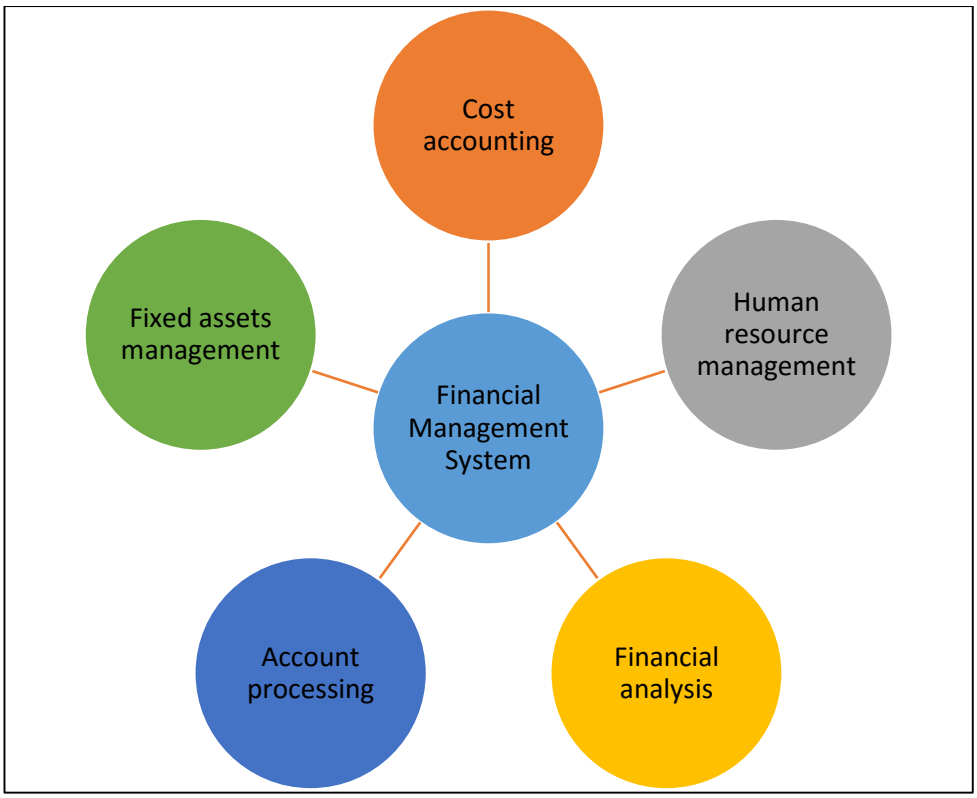
1.2.1. The Concept of the Financial Management Systems

The management of finances is the main priority of all business managements. Information of financial management has become an inevitable trend. Accounting information is asserted to be the core of the financial management. (Ding, 2015) So it could be said that the accounting is the integral part of the financial management.

The financial management system for enterprises is used for planning, supervising, controlling finances and managing the usage of information systems to make certain that a company operates smoothly, financial management is standardized, data analysis and processing is proper. If it is needed, financial management is improved and strong support for enterprise information management leadership and decision-making is provided. (Ding, 2015) Also, the financial management system can be described as the methodology that is used for overseeing and governing its income, expenses and assets with the purposes to maximize profits and ensure sustainability. An effective system of financial management makes improvements for short- and long-term business performance by eliminating accounting errors, streamlining invoicing and bill collection, minimizing redundancy of record-keeping, ensuring compliance with tax and regulations of accountancy, helping personnel in budget planning, and offering expandability and flexibility for accommodating change and growth. There are also other significant features of a good financial management system (Hossain and Saurav, 2014):

- Assets are decreased according to accepted schedules.
- All payments and receivables are kept transparently. Prepaid expenses are amortized.
- Track of liabilities is kept.
- Revenue and expense statements, and balance sheets are coordinated.
- Multiple bank accounts are balanced.
- Data integrity and security are ensured.
- All records are kept up to date.
- A complete and accurate audit trail is maintained.
- Overall paperwork is minimized.

As it is seen, the financial management system has a lot of important features, which help to manage the business. Furthermore, Figure 1 introduces the schematic structure of sub-systems of financial management system.



1 Figure. The Main Sub-systems of Financial Management System

Source: made by an author using X. Zhou and et. al. (2005)

Figure 1 illustrates the main sub-systems of financial management system: Account processing, Fixed asset management, Human Recourse (HR) management, Cost accounting and Financial analysis. They all are very important for the successful financial management system. The basic functions of each sub-systems of the financial management systems are presented in Figure 2.

Account Processing	Fixed Asset Management	Cost Accounting	HR Management	Financial Analysis
•Processing of vouchers •Verifying data •Data query •Account printing •Vouchers collection •System maintenance •Accounting reports forms	•Card catalogue management •Review of fixed assets •Assessment of depreciation •Data query •Reports •System maintenance	•Data management •Data query •Expense allocation •Reports •System maintenance	•Data management •Processing of payroll •Data query •Reports •System maintenance	•Data management •Comprehensive summary •Comprehensive data query •Reports •System maintenance

2 Figure. Functions of Sub-systems of Financial Management System

Source: made by an author using X. Zhou and et. al. (2005)

From Figure 2 it is seen that the sub-systems of financial management system include a lot of functions, such as, expense allocation, account printing, data management, accounting reports forms, system maintenance and etc. So, the enterprises can easily manage their asset, data, accounting, make and analyse different reports and so on.

In summary, the financial management system is the flexible management tool, which includes fully accounting services, reports, forecasting, budgeting and so on. They can be consisted from different sub-systems, which give the information about a lot of functions of the enterprise in a consistently visible way.

1.2.2. Advantages and Disadvantages of the Cloud-based Financial Management Systems

Now enterprises want something easier and more economical, so they start to move their financial management to the cloud. As it was described above, there are three delivery models: SaaS, PaaS and IaaS. So the cloud-based financial management systems apply to the SaaS model. (Hoebler, 2015)

The majority of enterprises, which have decided to use the cloud-based financial management systems in their business, have many questions about the cloud solutions. (Hoebler, 2015) So, they should consider all benefits and risks of the cloud-based financial management systems. It is very important to understand, how these systems can influence or help for their business management. As it is known, the Cloud Computing offers a lot of benefits for the business management, but also it has some drawbacks. So the main benefits and drawbacks of the cloud-based business process management systems are detailed in 2 and 3 table.

2 Table. Benefits of Cloud-based Business Process Management Systems

Benefits	**Specification**
Lower upfront costs	Cloud-based business process management systems reduce expenses for hardware, user licenses and implementation, excluding user training and customization. This benefit is more important for SMEs than for large enterprises.
Lower operating costs	These systems lowers operating costs for energy, maintenance, configuring and etc. This benefit is also very relevance for SMEs.

2 table continued on the next page

2 table continued from previous page

Benefits	Specification
Rapid implementation	Rapid implementation is one of the top benefits of cloud-based systems. Its contribution could help to make easier changes of cloud service providers and also the time of providing new products could be reduced in certain types of business.
Focus on core competencies	Cloud-based business process management systems and other applications of enterprise give permission to focus the resources that would be used for the maintenance of IT department on other essential business areas.
Access to advanced technology	Cloud-based applications constantly enable accessibility to specialized technology and advanced computing resources which otherwise would have been inaccessible to SMEs.
Rapid updates and upgrades	These systems usually get faster updates or new functionality than systems not based in the cloud.
Easier integration with cloud services	The usage of benefits of SaaS shared infrastructure allows companies that adopted cloud-based systems to get relatively inexpensive integration with other cloud services from the time when respective cloud providers' infrastructures have been integrated.
Improved system availability and disaster recovery	In many cases some measures, for instance, conditioned power, backup routines, fall-back and recovery procedures, ensured by SaaS providers are of higher quality than most SMEs do in-house.

Source: made by the author using J. Duan et. al. (2013); N. Grumman (2011); F. Scavo and et. al. (2012); S. Marston and et. al. (2011); N. Castellina (2011); A. Benlian and T. Hess (2011); R. Engebrethson (2012); Saugatuck (2009)

3 Table. Drawbacks of Cloud-based Business Process Management Systems

Drawbacks	Specification
Security and confidentiality risk	These risks are reported to be one of the top concerns about cloud-based systems. Security and confidentiality risks appear to be the most controversial risks. Those risks are usually more important for large companies than for SMEs.
Issues of Service Level Agreements (SLAs)	There are many cases in which it is rather difficult to accurately define SLAs which are negotiated between the providers of cloud service and their corporate clients.

3 table continued on the next page

3 table continued from previous page

Drawbacks	Specification
Performance risks	Leaving out pure problems of integration, performance risks of cloud-based business process management systems essentially relate to network's reliability and threatened speed, risks of outage and limitations on transfer of data.
Customization and integration limitations	The complex integration with some third-party systems and services and extensive customization may not be allowed by cloud-based business process management system. At the same time this problem is referred to be less important for SMEs.
Compliance risks	Additional difficulties, for instance, complying with data, energy and environmental standards, are often faced by Cloud-based applications because these regulations are usually designed with no regard to peculiarities of cloud computing.

Source: made by the author using J. Duan et. al. (2013); S. Marston and et. al. (2011); Engebrethson (2012); F. Scavo and et. al. (2012); S. O. Kuyoro, F. Ibikunle and O. Awodele (2011); Kim W. and et. al. (2009)

According to the information based in 2 and 3 tables, it can be said, that these benefits and drawbacks of the business process management systems are suitable for the cloud-based financial management systems.

The cloud-based financial management systems deliver a faster accessibility to more reliable information in a more mobile- and user-friendly format. (Harvard Business Review, 2015) For example, financial data can be analyzed and reported by business and finance professionals by using in-memory, multi-dimensional analytics anytime and in any place from desktop and mobile devices. In addition, it will be done with little or no intervention from their IT departments. (Bres, 2013) Closer collaboration between the finance and business is encouraged. It is done with less demand on the IT function and at a lower cost. Also, far less time is needed for sapping, error-producing manual interventions are avoided on the part of finance. Finance is allowed to spend more time for delivering actionable information to the business. (Harvard Business Review, 2015)

However, the cloud-based financial management systems are not an exception, they also have the drawbacks. The basic drawbacks of the cloud-based financial management systems are these: security, confidentiality, performance and other risks, which are very important for every enterprises. The main risk of the cloud-based systems is the security of enterprise's data. Many enterprises wonder about providers' actions. For example, if the providers of the cloud-based systems will go out of

business or will not protect sensitive data. It is important to say that some enterprises, especially SMEs, might not be ready to handle these risks.

In summary, the cloud-based financial management systems have some advantages and disadvantages. So, the enterprises should carefully analyse all benefits and drawbacks before choosing one of the cloud-based financial management systems, because they can influence their daily work.

2. THE PRESENTATION AND THE COMPARISON OF THE CURRENT CLOUD-BASED FINANCIAL MANAGEMENT SYSTEMS

This chapter aims are to present and compare the current cloud-based financial management systems, which are created by Lithuanian companies. The offer of such systems is not high, so companies do not have a lot of choices. So, some cloud-based accounting systems also will be presented, because the accounting management is the main core of the financial management. Also, these modern systems are very similar and have the same functions as the financial management systems. Therefore, the comparison of these systems will show the main similarities and differences between them. Also, it will reveal the benefits and drawback in certain systems.

2.1. The Current Cloud–based Financial Management Systems

Lithuanian enterprises have an extensive opportunity for the usage of the cloud computing capabilities. Lithuania is considered to be one of the most successful countries in the world which develops the Internet technologies and installs networks to computers, in addition, the network of mobile telephones is being expanded. (Christauskas and Miseviciene, 2012) Thus, The Cloud Computing should become more and more popular in Lithuania. However, most of enterprises are cautious of IT innovations or do not have a lot of knowledge about cloud computing security and its advantages. The following table indicates the percentage of all Lithuanian enterprises using the cloud computing and what services are namely used by them (4 Table).

4 Table. Use of the Cloud Computing Services in Lithuanian Enterprises

	All Lithuanian enterprises
Buy cloud computing services used over the internet	13
Buy e-mail*	9
Buy office software (word processors, spreadsheets, etc.)*	5
Buy hosting for the enterprises database*	6
Buy storage of files*	7
Buy finance or accounting software applications*	6
Buy Customer Relationship Management software*	6
Buy computing power to run the enterprises own software*	5
Buy high Cloud Computing service	9

*(as a Cloud Computing service) **Source:** made by the author using Eurostat information (2015)

From the table, it is seen that in 2014 only 13 percent of Lithuanian enterprises bought online cloud computing services, and only 6 percent of enterprises used the finance and accounting software as a cloud computing service. It can be said, that only a few Lithuanian enterprises use the cloud-based financial and accounting management systems. In addition, the offer of such Lithuanian systems is not high, so companies do not have a lot of choices. The following sub-chapters will present the major cloud-based financial and accounting management systems, which exist in the market of Lithuania.

2.1.1. “NetSkaita-Account”

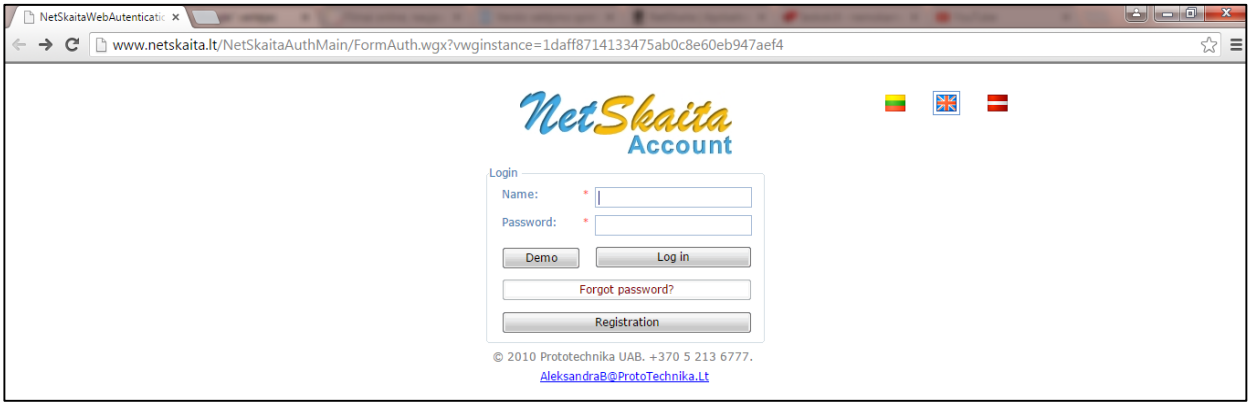
"NetSkaita-Account" - an online financial management system, which is designed for accounting companies and SMEs. (Prototechnika.) This program was developed by JSC “Prototechnika”, that received the support of 300 000 Litas from the European Union (EU) according to the project “Eureka”. From 2007 till 2010 the enterprise invested a total of 1.5 million Litas into this new program. (Gintautaitė, 2010)

"NetSkaita-Account" benefits for companies (Prototechnika.):

- **It saves money** – there is no need in a major investment for purchasing a program and additional investments for purchasing servers and software licenses. Enterprise employees are trained, and the program is installed 5-10 times faster than other accounting programs. Thus, the costs can be reduced by 10-20 times.
- **Operation is cheap** - the applicable monthly fee per user. The expenses for the program’s support and refurbishments are taken by the service provider.
- **Data protection** - a secure HTTPS protocol is used. All data transferred between the user's computer and the server is encrypted and protected. The server manages the interaction with the data servers and other servers exclusively one. Database copies are made and store (for 7 days). All data, which is in "NetSkaita-Account" system, is duplicated. If a malfunction occurs in one of the links the work is still going on smoothly. A server’s maintenance is carried out professionally.
- **Safe** - each clients’ query is checked by the security control centre of the unified server.
- **Availability for 24/7** - the program and data are accessible from any computer. The most important thing is to have an Internet connection.
- **Mobility** - users can work on any computer with their own passwords.
- **Easy maintenance** - questions of software users are addressed without visiting the customers, they are consulted remotely.

- **It corresponds to the record keeping requirements** – version is constantly updated and it is in line with the law.

It is seen, that "NetSkaita-Account" has a lot of pluses for enterprises. Moreover, the client can try the demo version of this system. Figure 3 introduces the preview of "NetSkaita-Account".



3 Figure. The Preview of "NetSkaita-Account"

Source: the print screen was made by an author using the online source: NetSkaita-Account.

From Figure 3 it is seen that everyone can push the button “Demo” and try this system. Also, this figure shows that there is the possibility to choose the languages (Lithuanian, English and Latvian). This is also the advantage of the "NetSkaita-Account". For instance, it is very good for companies, which have their offices in Lithuania and in Latvia. The multilingualism facilitates the cooperation between offices, which are in different countries.

In summary, "NetSkaita-Account" is the online financial management system, which has a lot of benefits such as mobility, data protection, availability 24/7, cost reduction and so on. It is designed for SMEs and accounting companies.

2.1.2. “Optimum”

“Optimum” – a very comfortable financial management system, which has a lot of functions. Also, it can be described as the business and accounting management system, which is reliable and easy to master. This system is one of the first accounting programs in Lithuania, which is based on the Cloud Computing and SaaS solutions. In addition, advanced Microsoft.NET technology was used for its development. This program can be used by both small and large companies of different business enterprises. Lithuanian company JSC “Optimum Software”, that is developing the Cloud and SaaS technology-based solutions, was the first one which has received recognition in foreign countries. In Lithuania the accounting and business management solutions created by this company

are distributed, installed and advised by the partners JSC “Optimum SaaS”. Currently, “Optimum” is used by more than 200 clients in Lithuania and abroad. (Optimum.)

The main pluses of “Optimum” business and accounting management system are these (Optimum.):

- Installation is quick and easy.
- Data is secure.
- No additional investment is needed for hardware and software.
- This system can be easily customized or expanded according to the customer's individual needs and individual business processes.
- Single license includes unlimited number of users.
- Free consultations are granted.
- Service 24/7.
- Free updating of the program.
- Clear pricing, there are no additional hidden fees.
- Special discounts for the companies that keep records.

It should be noted that there a lot of pluses of “Optimum”. They are very similar to "NetSkaita-Account" pluses. Also, it is very important to mention, that this business and accounting management system offers the following standard modules (Optimum.):

1. **General Ledger:** chart of accounts, a journal of operations, balance.
2. **Cash:** bank and cash transactions, payment orders.
3. **Wages:** working time and wage records, notes, personal income tax declarations.
4. **Security:** consumers’ rights, the monitoring of performed actions.
5. **The organization:** the structure, props, staff of a company.
6. **Trade:** purchase, sale and automated orders.
7. **Fixed asset:** asset accounting and its maintenance operations.

Also, there are some additional modules of “Optimum” (Optimum.):

1. **Process management:** execution speed, observation of status and time.
2. **Budget:** enterprise budgeting.
3. **Managing of contacts:** planning and analysis of contacts with customers.
4. **Manufacturing:** planning of mechanisms and employees for the production, counts of products and write-offs of raw materials.
5. **Car service station:** organization and management of work for car service station.
6. **Point of Sale (POS):** coupling with cash registers, interfaces of data exchange.
7. **Online orders:** the possibility for customers to do online orders.

If the enterprises want more functions, they can add these additional modules in their "Optimum". Of course, every model is very important and has a lot of pluses. For example, the module "Budget" helps to plan an effective business activity, develop optimal control mechanisms and respond quickly and flexibly to the changes. It is a very important module for financial management. However, the enterprises should decide what they really need and which models will help to optimise the work.

In summary, "Optimum" is the business and accounting management system, which is based on the Cloud Computing and SaaS solutions. This system has a lot of advantages such as quick installation, security of data, service 24/7 and so on. It has 7 standard and 7 additional modules, which could be added into the "Optimum", if the client requires.

2.1.3. B1.lt

B1.lt is an online accounting management system developed by Profis Group (in the market since 2003). The company took into account the evolving need for simplification of accounting management and reduction of the costs which are incurred by most companies, acquiring expensive accounting software. (B1.lt)

According to B1.lt, the purpose of efficient business is to move book-keeping comfortably and safely into the cloud. Then, the accounts could be managed and data could be reached by the accountants from any computer with any operating system and other employees (the director, the sales' manager, the manager storekeeper) could work using a tablet or a smartphone. Thus, there is an opportunity for the director or shareholder to obtain easily the required reports or data and perform the desired action without interfering the accountants. (B1.lt)

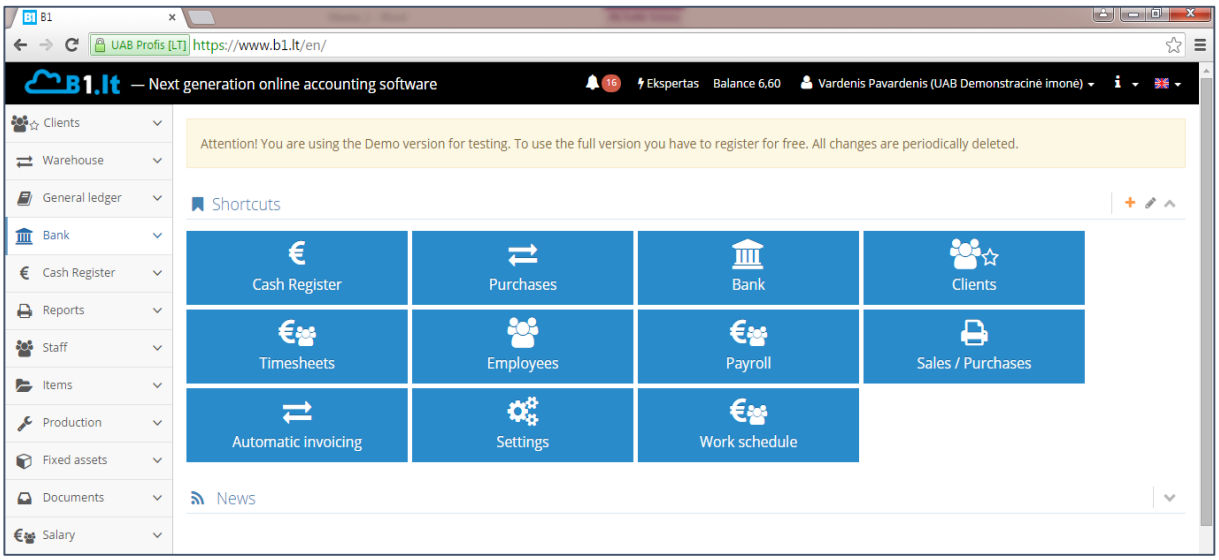
B1.lt has all the necessary modules, which are required for full bookkeeping for both trading and service companies and manufacturing and transport companies. CRM can be found in the system-the module of contact management. Profis Group B1, while developing accounting software, primarily took into consideration the need to simplify and speed up the work done by the accountant and bookkeeper. This system is equipped with automated core accounting features that allow companies to keep records more efficiently and easily. This means that less time costs are incurred. At the same time, an unlimited number of employees can connect to B1.lt and operate. Also, it is very important to mention that SSL certificate is used for the security of B1.lt system. This system can be integrated with different applications and e-shops through the Application Programming Interface (API). (B1.lt) API can be adapted to any e-shop, so this means that (B1.lt For E-shops.):

- All purchases go into the book-keeping: a product is immediately debited from the warehouse, data about the customer is immediately saved in the section, which is called "Customers", the

bank statement immediately gets to the right place and connects with client's purchase and the invoice is at once prepared;

- Goods in the store: the customer can see remains of goods, only those goods that exist at the moment and their prices.
- There is support for different currencies;
- Searching for orders;
- There is a possibility for connection to the POS.

Another interesting fact about B1.lt is that this system can be designed for learning. This system allows to create a company and lead its accountings, so teachers can easily observe all students. An individual settings are created for every teacher, but students can create as many companies as they want because there is no limited quantity for them. The mobility of this system is the biggest advantage for all students, because they can start working at the university, and finish their work at home by using another computer or a tablet. Moreover, there is a possibility to try a demo version of the B1.lt (Figure 4).



4 Figure. The Preview of B1.lt Demo Version

Source: the print screen was made by an author using the online source: B1.lt Demo version.

From the 4 Figure it seen the main functional modules of the system: warehouse, general ledger, bank, reports, documents, fixed assets, productions and etc. The user of the demo version can easily try all functional modules, choose different languages of the system (Lithuanian, English or Russian). After testing the demo version the client can make the decision to use it or not. Moreover, the user can decide what the payment plan to choose. It is important to mention that B1.lt is free, but if the client wants more additional functions of the system, he has to pay. There are some payment plans. Their price depends on the additional functions.

In summary, B1.lt is the online accounting management system, which creates the possibility to move the book-keeping comfortably and safely into the cloud. All accounts and data could be managed or reached by the accountants, directors, sales' managers or storekeepers from any computer, tablet or smartphone. So, they can manage their financial data from anywhere, where is the Internet connection.

2.1.4. APSA

APSA – the online accounting software based on cloud computing basis. It is very easy to use this program so the owners of small companies can lead a full accounting by themselves. APSA is created by JSC "Verslo banga". (APSA) This company of IT software development is based in Vilnius, Lithuania. It was started in 2006 as a natural result of an ongoing project of software. JSC "Verslo banga" creates Intranet/Internet software products which are necessary for integration of information systems in SMEs, which could supply missing parts, add extra functionality, visualization and control. The products are customized according to the customers' needs - as a result, a customer has user-friendly interfaces, processes of data entry and reports are optimized. Simple Internet browsers are accessed sufficiently by using web-server based software products. As much as possible a company tries to use open source software and so its competitiveness is not hindered by the extra costs of licensing. (Verslo baze)

Coming back APSA system, it is very cheap system. It costs only 15 euros plus Value Added Tax (VAT) per month. Moreover, it could be said that the following modules can be discerned in this system (APSA):

- **Personnel:** time sheets, orders, employment contracts, holidays and etc.
- **Warehouse:** record of goods, manufacturing, sales, writings-off by objects, branches and etc.
- **Bookkeeping:** ledger, fixed assets, wages sheets, cash book, accountable to the people, debts and interest, reports, import bank statements and etc.

It is very important to mention, that the first 2 modules are integrated into bookkeeping module. It is worth noting that each module can be used as an independent one if the customer requires.

APSA is designed for three groups of users (APSA. Description):

- **Accountant (a firm of accounting or auditing).** It has full rights to all modules.
- **Director.** He could see all the data, but he can edit only the data that is related to the taxation of customers (invoices, money-making orders).
- **Manager.** The manager can issue invoices which could be seen by him later.

In addition, each of these users can be granted or denied rights. For example, the manager may be able to manage the data of the personnel, or an accountant is refused to visit the warehouse. (APSA. Description)

Each program is constantly updated and improved, APSA is not an exception. For example, since October of 2015 a new feature'' bank'' has appeared in the accounting module. It means that the customer has the ability to export orders to the bank. The user of APSA must establish a desired payment list, from which the program generates the XML file of ISO-20022-format. The file will be uploaded to any Lithuanian bank. All banks are going to support this functionality only from the beginning of the year 2016, but this service can already be operated in some banks. In addition, new Sodra Declarations and the Declarations of State Tax Inspectorate are created. (APSA. News)

Also, several functions are renewed in the personnel module. For example, right now additional related documents can be uploaded into the employee's card next to an employment contract or when a bonus will be given to an employee, a new addition to the monthly payroll will be automatically loaded into the card's section "Bonus". (APSA. News)

In summary, APSA is the online accounting management software based on cloud computing basis. It has three main modules: personnel, warehouse and bookkeeping. They all can be used as an independent one if the client requires. APSA is designed only for small enterprises and it can be managed by the accountant, director or manager.

2.1.5. DINETA.web

DINETA.web - an online accounting program, which is designed for registration of the company's accounting documents and sales. Its main principle of operation is the cloud technology. DINETA.web works in the Internet browser. By acquiring a license a client can perform all accounting functions, using DINETA.web program. It is important to mention that this accounting program is an integral part of the program of the pancreas work DINETA.pos. However, such an accounting program can also work with any other checkout program. (DINETA) The main standard functional modules of the system are these: General Ledger, Fixed asset, Resources, Purchases, Sales, Documents and Orders. (VINS, 2008)

DINETA.web program was developed by JSC "DINETA", which is a company of assembled designers of information technology systems. Earlier this company was named JSC "Reliable accountant", which has been running since 2008 and it has been working in the sphere of accounting solutions development. Specialists of this company design, maintain and develop specialized IT systems, introduce the latest IT technologies to automate customers' business processes, offer effective IT solutions. UAB DINETA has clients not only in Lithuania, but also in Latvia, Estonia,

Denmark and Great Britain. (DINETA, About DINETA) For example, DINETA.web is already used in these trade networks: “Gulbelė”, “Utena trade”, “Silas”, “Apranga” and in stores of JSC Alliance AIBĖ in Lithuania and Latvia. (DINETA)

Moreover, DINETA.web is based on rental basis, so customers purchasing a license receive 100 percent of its functionality (loyalty, price management, periodical invoicing, sending accounts by e-mail and etc.), as it is not divisible into separate modules or features. Also, clients receive free consultations by mail or phone, its hosting and updates. (DINETA) This licence for rent costs 32 euros plus VAT. (DINETA. Prices) This platform gives every employee the opportunity to record their documents, such as purchase, sale or offer, regardless the location of the workplace. Thus, all the results are visible in real time and the workload of bookkeeping is reduced. (DINETA)

DINETA.web program’s accounting cycle is fully automated. Customers do not need to install, configure, and purchase additional hardware (server, database backup hardware, Server of the Structured Query Language (SQL), etc.). It is enough to have a computer with the Internet access. DINETA.web works with all the most popular browsers: Mozilla Firefox, Google Chrome, MS Internet Explorer and others. The client can register for the consultation and get the demo version. Furthermore, there are some more DINETA.web pluses (DINETA):

- **Free automatic updates of the program.**
- **Integration with e-shops.**
- **API integration with the systems.** This means that DINETA.web has a feature that allows its own or third-party software to access the system. There is used a Web service interface.
- **Price label printing.** This means that the system is tailored for retail trade in food prices in the label format set in accordance to the requirements to portray euro price, comparison price (1kg or 1l) and to print barcodes. If goods are in price action, the old price is wiped out automatically and a new one is displayed.
- **Data Import.** This option allows to automate and optimize frequently performed operations such as imports of purchasing or sale prices, trade cards, barcodes.

In summary, DINETA.web is the online accounting management program, which main principle of operation is the cloud technology. It has the main functional modules: General Ledger, fixed asset, resources, sales and etc. Also DINETA.web is an integral part of the program of the pancreas work (DINETA.pos), but it can also work with any other checkout program.

2.2. The Comparison of the Current Cloud–based Financial Management Systems

The comparison of the above mentioned cloud-based financial and accounting management systems will show the main similarities and differences between them. Also the comparison should

reveal the benefits and drawback in certain systems, which are very important deciding what system to use.

First of all, the functional comparison will be made with the table support. Some main functions are chosen from Figure 2. The cloud-based financial and accounting management systems are detailed in horizontal table lists and the functions are detailed in the vertical table list. If the system has the function, it will be marked with plus sign, and if the system does not have that function, it will be marked with minus sign (5 Table).

5 Table. Functional Comparison of the Cloud-based Financial and Accounting Management Systems

	NetSkaita-Account	**Optimum**	**B1.lt**	**APSA**	**DINETA.web**
Accounts receivable and payable	+	-	+	+	+
Asset accounting	+	+	+	+	+
Cash management	+	+	+	+	+
General ledger	+	+	+	+	+
Payroll	-	+	+	+	-
HR management	-	+	+	+	-
Reports	+	+	+	+	+
Financial consolidation	+	+	+	+	-
Profitability analysis	+	+	+	+	+

Source: made by the author

From the functional comparison it is seen that compared systems are very similar. All of them have the most of the functions. As it is known, the financial management system can be described as a computerized accounting management tool, which ensures effective monitoring of the company's financial operations and management. Mostly these systems have four main functions: the management of receivable invoices, the management of payable invoices, the database about customers (contacts) and generation of the financial reports. In addition, the financial management systems can be extended by specific functions, which are needed for the specific company's activities. (Adme) So, it could be said, that these presented modern cloud-based accounting management systems also could be called as cloud-based financial management systems, because have these main

four functions. So, all these presented systems would be called as the cloud-based financial management systems in the further work.

As a result, some criteria, such as price, quantity of users, update of the system, backups, multilingualism of the system and etc., have been chosen to find differences, advantages or disadvantages between these cloud-based accounting systems. Like in the 6 table, the cloud-based financial and accounting management systems are detailed in horizontal table lists and the chosen criteria are detailed in vertical table list. If the system has that criteria, it will be written specific information in the suitable table field. (6 Table).

6 Table. The Comparison of the Cloud-based Financial Management Systems by Selected Criteria

	NetSkaita-Account	**Optimum**	**B1.lt**		**APSA**	**DINETA.web**
Price	14,48 € per month for one user	Contractual price	Free	The Payment plan (from 4,99 € plus VAT)	From 15 € plus VAT per month	32 € plus VAT per month
Quantity of Users	Unlimited	Unlimited	1	Unlimited	Unlimited	Limited
Update of the system	Yes	Yes	Yes	Yes	Yes	Yes
Backups	Yes	Yes	No	Yes	Yes	Yes
Divided into modules	No information	Yes	Yes	Yes	Yes	No
Additional modules	No information	Yes	No	Yes	No	No
Integration with online shops (API)	No	It offers the online orders module	No	Yes	No	Yes
POS	Yes	Yes	No	Yes	No	It is a possibility to combine with DINETA.pos system
Importing the documents	No information	Yes	No	Yes	Yes	Yes

6 table continued on the next page

6 table continued from previous page

	NetSkaita-Account	**Optimum**	**B1.lt**		**APSA**	**DINETA.web**
			Free	The Payment plan		
Multilingualism of the system	Lithuanian, English, Latvian	Lithuanian, English	Lithuanian, English, Russian	Lithuanian, English, Russian	No information	Lithuanian, English, Russian, Latvian
Consultations by telephone or email.	Consultations by E-CRM	Yes	No	Depends on the selected payment plan	Only by email	Yes
Working with tablets and phones	No information	No information	Yes	Yes	No information	No information
For which enterprises	No information	For all sizes enterprises	Enterprises having from 0 to 1000 employees	Enterprises having from 0 to 1000 employees	Small enterprises	For all sizes enterprises

Source: made by the author

Above 6 table presents some differences between the systems. It can be said that the price has very strong influence for other criteria. The price of all systems depends on what and how much functions the client wants to get. For example, B1.lt offers free services or the payment plans of services. Using this system of free charge, the customer will not receive a lot of important advantages such as backups, consultations and so on. If the client chooses one of the payment plans, he will get additional services such as unlimited number of users, extra modules and etc. It could be said that the possibility to use B1.lt for free is one of the greatest advantages of this system.

Besides, B1.lt and Dineta.web have the possibility to be integrated with API. It is one of the best advantages for e-shops management. Furthermore, "NetSkaita-Account", "Optimum" and B1.lt have the possibility to be integrated with POS. DINETA.web also has this possibility ans one of advantage is that the provider of this system offers the other product - DINETA.pos. It is very good for the user, because he can use two systems of one provider. It helps to avoid problems of connection of two different systems. So, it is more efficient.

Moreover, one of the differences is that DINETA.web is translated into more languages than other systems. It is important to mention, that multilingualism of the system shows the target market, in which the producer is focusing. So, it could be said that producers of DINETE.web and "NetSkaita-Account" systems are orienting to Latvian market. Of course, producers of all systems can distribute their systems in other countries, where Russian or English languages are used.

Also, it is very important to mention that not all size enterprises can use these cloud-based accounting systems. For example, only small enterprises can use APSA system. So, it could be said that it is the disadvantage of APSA, because other systems ("Optimum", DINETA.web, B1.lt) give possibility to use them for SMEs and large companies.

Furthermore, some similarities can be noticed in the 7 table. For example, the user of all systems gets the updates of the systems or unlimited quantity of users (excluding the free plan of B1.lt and DINETA.web). Also the majority of the systems is divided into modules. As it is seen, these systems are very similar, but have only some differences. So it is very interesting, why customers choose only that system. It can be said, that the Cloud Computing capabilities, price, additional functions and conduction of staff training are the great importance for the enterprises.

Moreover, it can be asserted that enterprises prefer "Netskaita Account" on the grounds that its creator JSC "Prototechnika" has been creating advanced business management and accounting systems for more than 21 years. In addition, this company has its branches in Vilnius, Kaunas, Klaipeda and Siauliai and representatives in other Lithuanian cities. (Prototechninka. Contacts.)

Furthermore, P. Insoda (JSC "NFQ" group leader) has chosen "Optimum" for the technical realization and flexible architecture. In addition, specific program adjustments and accounts were

created according to the needs of JSC “NFQ”. For example, the manager of JSC “CO Finance” V. Kukrėnė said that she has chosen “Optimum” for the following weighty reasons (Optimum: Clients):

- For the price and quality ratio. In her view, the system is designed according to strict rules, which reduce the probability of making a mistake, and, furthermore, it is focused on quality.
- Due to the extremely satisfactory delivery of the storage module. The manager of JSC “CO Finance” said that this program is an exception in comparison to others.

In summary, the functional comparison of the chosen cloud-based financial and accounting management systems showed that they are very similar. It means that these systems have the same functions. So, they all could be called as the cloud-based financial management systems. Furthermore, the other comparison of the chosen cloud-based financial management systems was done by these criteria: price, quantity of users, update of the system, backups, divided into modules, additional modules, multilingualism of the system and etc. This comparison showed some advantages and disadvantages of the chosen cloud-based financial management systems and differences between them.

3. THE EMPIRICAL RESEARCH OF THE PERSPECTIVES OF THE USAGE OF THE CLOUD-BASED FINANCIAL MANAGEMENT SYSTEMS IN SMEs

The aim of this chapter is to introduce the empirical research of the perspectives of the usage of the cloud-based financial management systems in SMEs. Firstly, the methodology of the research will be presented, further the research data will be analysed and finally the results of the research will be introduced.

3.1. Methodology of the Research

The research is based on the methodology of the quantitative research. The quantitative research could be described as "essentially about collecting numerical data to explain a particular phenomenon" (Sukamolson, (n.d.), p. 3). This research can provide estimates of populations at large or the results, which can be condensed to statistics. Also it indicates the extensiveness of attitudes, which are held by people, and allows for statistical comparison between different groups. These are the main advantages of the quantitative research. (Sukamolson, (n.d.))

The problem of the research – a lot of SMEs do not know about the cloud-based financial management systems and do not take the opportunity to use them.

The object of research - the cloud-based financial management systems.

The purpose of the research - to find out what makes the choice of cloud-based financial management systems and why the usage of new technologies is avoided.

The objectives of the research:

1. To explore some correlations between:

- The number of the enterprise's employees and the hearing about the cloud-based financial management systems;
- The size of the enterprise's employees and the usage of the cloud-based financial management systems;
- The annual revenues of the enterprise and the costs of the cloud-based financial management system per month;
- The integrated models, which are used in the cloud-based financial management systems, and the number of employees and annual revenues of companies;
- The reasons of not using the cloud-based financial management systems and the number of employees and annual revenues of the company.

2. To present the factors, why enterprises choose the cloud-based financial management systems.
3. To present the main reasons, why enterprises do not use the cloud-based financial management systems.

The method of the research. A questionnaire method was chosen for the quantitative research. The questionnaire was held online and was designed in the survey website manoapklausa.lt. The questionnaire consists of 19 questions, 3 of which are designed for deeper learning of a chosen company, 16 questions are designed to find out why SMEs choose the cloud based Financial Management Systems and to identify the reasons why the enterprises avoid to use this new technology (1 appendix). All questions are prepared according to the theoretical part of the work.

Data collection. The questionnaire was distributed from 7 to 15 November by sending an e-mail to companies with the request to fill in the form. Also, the online questionnaire link was placed into Uždarbis.lt where users can share knowledge and ideas, find information on various subjects and so on. Moreover, the online questionnaire link was placed into Facebook group "Accountants join together", in which there are more than 500 members, who share information and ideas about accounting and etc.

The sample size of the research. It is determined by Paniotto formula (Valackienė, 2004):

$$n = \frac{1}{\Delta^2 + \frac{1}{N}}$$

where:

n – sample size;

Δ- allowed error;

N – population size.

The allowed error will be equal 5%. This percentage is the standard allowed error in the social science research. The allowed error is got with confidence level at 0,95.

The population size (N) is 76 427. It is the number of economic Lithuanian enterprises in operation at the beginning of the 2015 year (Statistics Lithuania, 2015). So now, the sample size can be calculated:

$$n = \frac{1}{\Delta^2 + \frac{1}{N}} = \frac{1}{0{,}05^2 + \frac{1}{76427}} = 398$$

The results will be reliable, when 398 respondents will be questioned. In total, 343 respondents completed the survey by answering the questionnaire. So, it is very important to calculate the allowed error and to find out how much it increased.

$$n = \frac{1}{\Delta^2 + \frac{1}{N}} = \frac{1}{\Delta^2 + \frac{1}{76427}} = 343$$

$$\Delta = 0{,}0539$$

Now the allowed error are equal 5,39%. It could be said that the results of the conducted research are fairly accurate.

3.2. Data Analysis

First of all, it is important to mention that the data (the research results) was removed from the portal manoapklausa.lt in SPSS format. The data was analysed through the statistical software package SPPS (17 Version). The graphs were made by Microsoft Excel software. All results were analysed by using a descriptive statistical method.

In order to compare if the results of the different groups of respondents differ statistically significant, the following statistical criteria were calculated (Janilionis, Morkevičius and Rauleckas, 2008):

1. **Pearson compatibility criterion χ^2** („*Chi-square*“) (when the results are expressed in nominal and ordinal scale);
2. **Mann–Whitney U tests** (when there are only two groups of the respondents and when data, which is submitted by an interval scale, does not distribute by the normal distribution);
3. **Kruskal–Wallis H tests** (when there are only two groups of the respondents and when data, which is submitted by an interval scale, does not distribute by the normal distribution);
4. **Spearman's correlation.**

In all cases, the difference will be statistically significant, when its reliability is higher than 95 percent, when $p<0{,}05$ (Janilionis, Morkevičius and Rauleckas, 2008).

As it was mentioned, the first three questions of the questionnaire were designed for deeper learning of the enterprise. The first and the second questions examined the number of employees of the company and the annual revenues. The questions were given with answers, which were created based on the amendment of Law of the Republic of Lithuania on Small and Medium-sized Business

Development (7 October, 2014; Nr. XII-1186). The 7 Table describes, how this law devises the Lithuanian enterprises by the size.

7 Table. The distribution of Lithuanian Enterprises by the Size

	Enterprises		
	Micro	**Small**	**Medium**
The number of employees	Less than 10	Less than 50	Less than 250
Financial data must satisfy at least one of the following conditions:			
1. The annual revenues	Does not exceed 2 million euros	Does not exceed 7 million euros	Does not exceed 40 million euros
2. The value of assets in the company's balance sheet	Does not exceed 1,5 million euros	Does not exceed 5 million euros	Does not exceed 27 million euros

Source: made by the author by using the amendment of Law of the Republic of Lithuania on Small and Medium-sized Business Development (7 October, 2014; Nr. XII-1186)

From 7 Table it is seen that enterprises are divided by the number of employees and by their financial data (the annual revenues and the value of assets in the company's balance sheet), which must satisfy at least one of the conditions. So, SMEs are the companies, which have more than 10 and less than 250 employees and the annual revenues are 2-40 million euros or the value of assets in the company's balance sheet is 1,5–27 million euros.

Furthermore, the answers of first three questions are presented in the following tables (8 Table, 9 Table, 10 Table), from which it could be seen what enterprises answered the questionnaire.

8 Table. The distribution of respondents by the number of employees of the company

		N	**Percentage**
The number of employees of the company	Less than 10	117	34,1%
	Less than 50	121	35,3%
	Less than 250	77	22,4%
	Over 250	28	8,2%
	Total	343	100%

9 Table. The distribution of respondents by the company's annual revenues

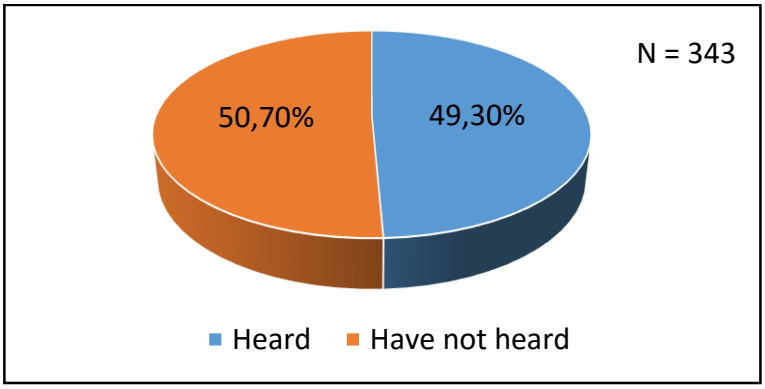
		N	**Percentage**
The company‘s annual revenues	Does not exceed 2 million euros	202	58,9%
	Does not exceed 7 million euros	71	20,7%
	Does not exceed 40 million euros	47	13,7%
	More than 40 million euros	23	6,7%
Total		343	100%

10 Table. The distribution of respondents by the company's fields of activity

		N	**Percentage**
The company's fields of activity	Wholesale and retail trade	89	25,9%
	Manufacturing	22	6,4%
	Building	24	7,0%
	Information and communication	25	7,3%
	Financial and insurance activities	26	7,6%
	Real estate activities	8	2,3%
	Professional, scientific and technical activities	4	1,2%
	Accommodation and food service activities	23	6,7%
	Transportation and storage	10	2,9%
	Arts, entertainment and recreation	30	8,7%
	Administrative and supportive service activities	15	4,4%
	Other activities	67	19,5%
Total		343	100%

As it has already been mentioned, during the study 343 enterprises (their representatives) were surveyed. As it can be seen from the data in the 8 and 9 tables, the majority of the representatives work in small enterprises with up to 50 people (69,4 percent), and whose annual revenues are less than 2 million euros (58,9 percent). It may also be noted that the wholesale and retail trade companies (25,9 percent) dominated according to the activity of represented enterprise.

The fourth question examined how many respondents heard about the cloud-based financial management systems. The 5 figure below shows the results of this question.



5 Figure. Distribution of the respondents by hearing about the cloud-based financial management systems

It is seen that only 49,3 percentage of respondents heard about the cloud-based financial management systems. It is important to mention that during the following study, the respondents, who have not heard about these systems, were asked to respond only to the last survey question (nineteenth).

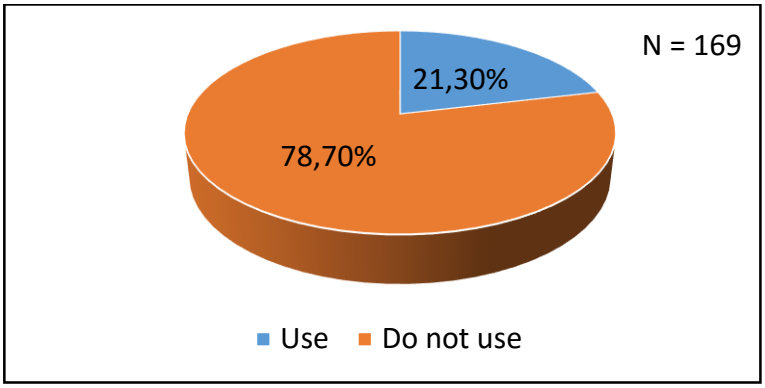
Moreover, the correlation between the number of employees of the company and the hearing about the cloud-based financial management systems was done to find out whether the notoriety of cloud-based financial systems depends on the company's number of employees.

11 Table. The correlation between the number of employees and the hearing about the cloud-based financial management systems

		The number of employees of the company	Hearing about the cloud-based financial management systems
The number of employees of the company	***r***	1,000	0,004
	p	.	0,948
	N	343	343
Hearing about the cloud-based financial management systems	***r***	0,004	1,000
	p	0,948	.
	N	343	343

The fact that the notoriety of cloud-based financial management systems does not depend on the number of company employees and revenues is confirmed by statistically insignificant (p>0,05) correlation.

In the fifth question respondents were asked if they use a cloud-based financial management system. In 6 figure answers of respondents are given.



6 Figure. Distribution of the respondents by using the cloud-based financial management systems

As it can be seen from 6 Figure data, the cloud-based financial management systems are used only by 21,3 percent of respondents, who have heard about these systems. It is a quite large part, but it is very interesting what percentage of all respondents use the system. The following result is that only 10,5 percent of all questioned respondents use these systems. As it was mentioned in the theoretical part, only 6 percent of Lithuanian enterprises used the finance and accounting systems as a cloud computing service in 2014. So, it could be concluded that this research shows very similar results.

It is important to note that during this study the respondents, who do not use these systems, were only asked to reply to the questions, starting with 12 question about the reasons for non-use. Furthermore, the distribution of different enterprises by the usage of the cloud-based financial management systems is presented in Table 12.

12 Table. The distribution of different enterprises by the usage of the cloud-based financial management systems

		The usage of the cloud-based financial management systems				χ^2	*df*	*p*
		Use		**Do not use**				
The number of employees of the company	Less than 10	20	34,5%	38	65,5%	**10,534**	**3**	**0,015**
	Less than 50	11	18,6%	48	81,4%			
	Less than 250	4	10,3%	35	89,7%			
	Over 250	1	7,7%	12	92,3%			
The company‘s annual revenues	Does not exceed 2 million euros	29	31,5%	63	68,5%	**13,236**	**3**	**0,004**
	Does not exceed 7 million euros	2	5,6%	34	94,4%			
	Does not exceed 40 million euros	4	13,8%	25	86,2%			
	More than 40 million euros	1	8,3%	11	91,7%			

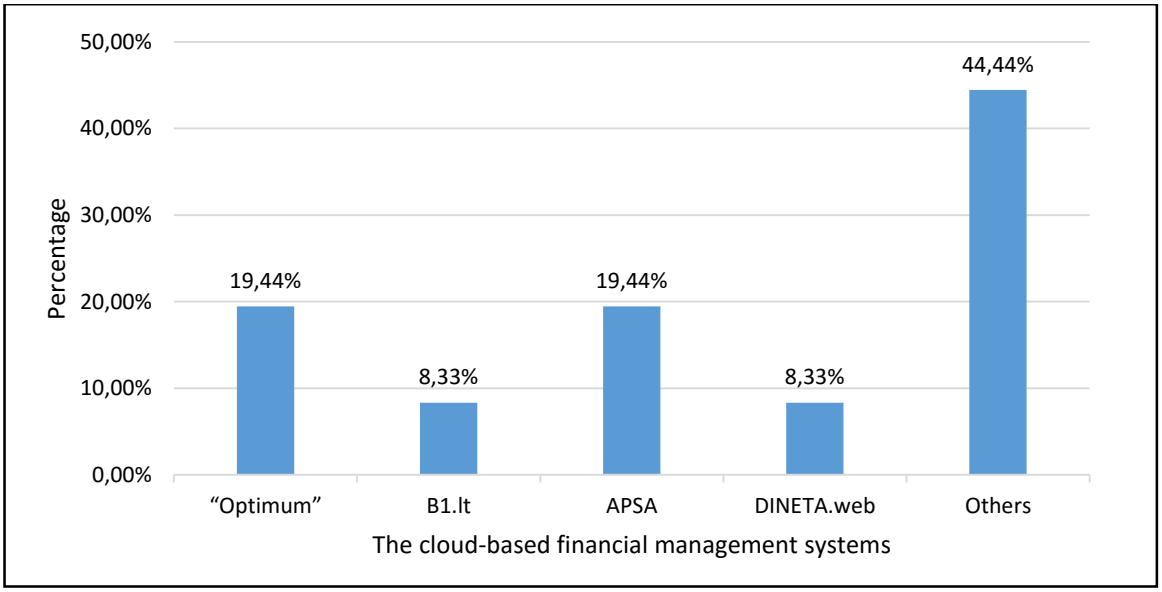
The data in 12 Table shows that the usage of cloud-based accounting management systems was statistically significant ($p < 0,05$) related to the company's number of employees and annual revenues. It was found that these systems significantly and more frequently are used by companies with a smaller number of employees, as well as the companies with annual revenues of less than 2 million euros.

The fact, that the usage of cloud-based financial systems depends on the number of employees of the company, is confirmed by a statistically significant correlation ($p < 0,05$) between these variables. This correlation indicates that the companies with a smaller number of employees use these systems more often (13 Table).

13 Table. The correlation between the number of employees of the company and the usage of the cloud-based financial management systems

		The number of employees of the company	The usage of the cloud-based financial management systems
The number of employees of the company	***r***	1,000	**0,246**
	p	.	**0,001**
	N	343	**169**
The usage of the cloud-based financial management systems	***r***	**0,246**	1,000
	p	**0,001**	.
	N	**169**	169

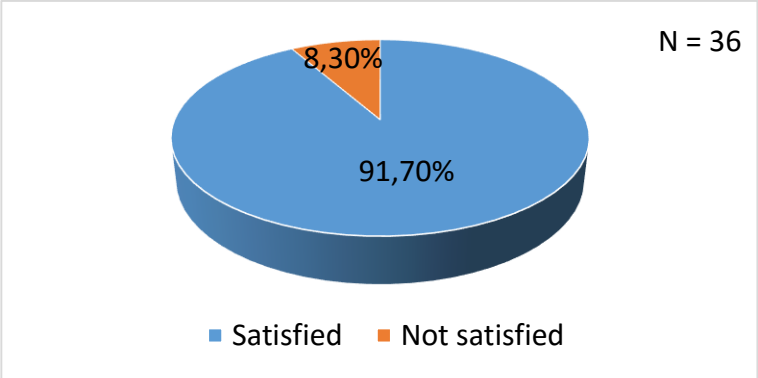
The sixth question aimed to get responses which the cloud-based financial management systems are used by the respondents. The cloud-based financial management systems, which were presented in theoretical part, were given in answers. Also, the respondents could choose the answer "Others". All answers are presented in 7 Figure.



7 Figure. The cloud-based financial management systems, which are used by the respondents

The graph in 7 Figure shows that the cloud-based financial management systems ASPA and "Optimum" and other systems such as Agnum, 1c, Quickbooks, Xero, Directo, Zoho and others, indicated by respondents, are the most commonly used. As it is seen, some respondents use the foreign cloud-based financial management systems such as Quickbooks, Xero and Zoho. Also, it is important to mention that no one of the respondents do not use the "NetSkaita-Account" system.

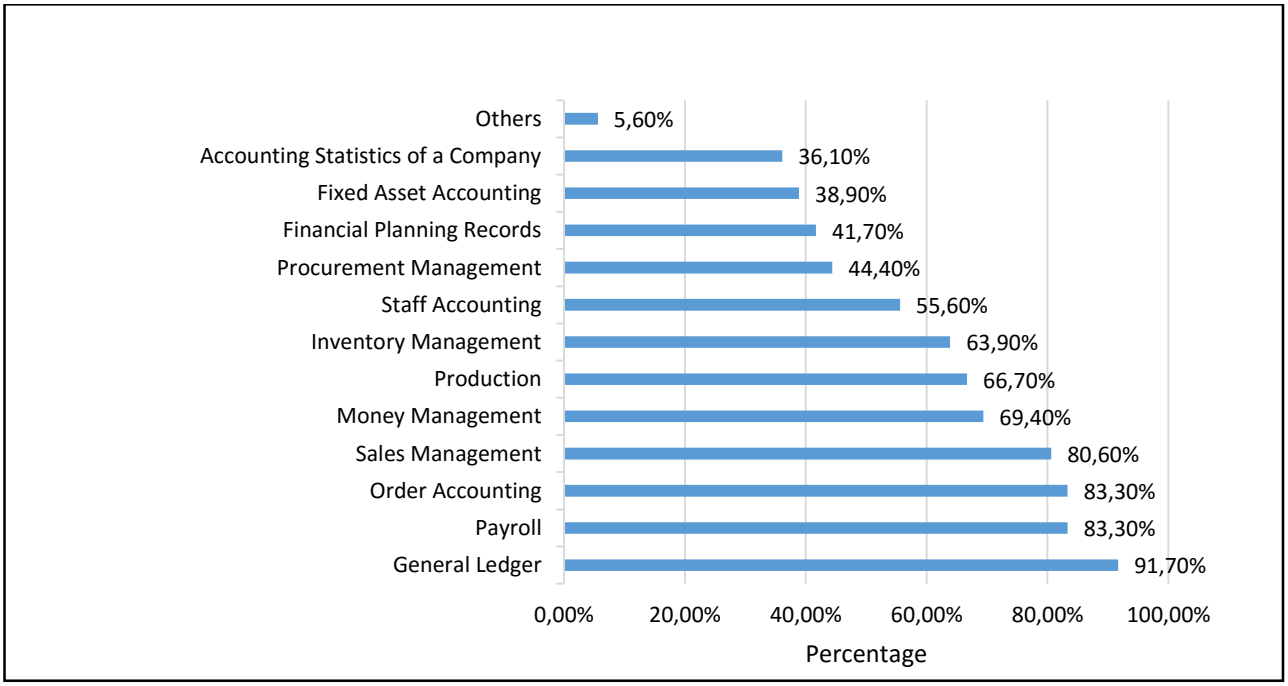
In the seventh question the respondents were asked if they are satisfied with their existing cloud-based system of the financial management. The answers are presented in 8 Figure.



8 Figure. The distribution of the respondents by the satisfaction of using the cloud-based financial management systems

8 Figure shows that even 91,7 percent of the respondents, who use the cloud-based financial management systems, are satisfied with their existing cloud-based system of the financial and accounting management.

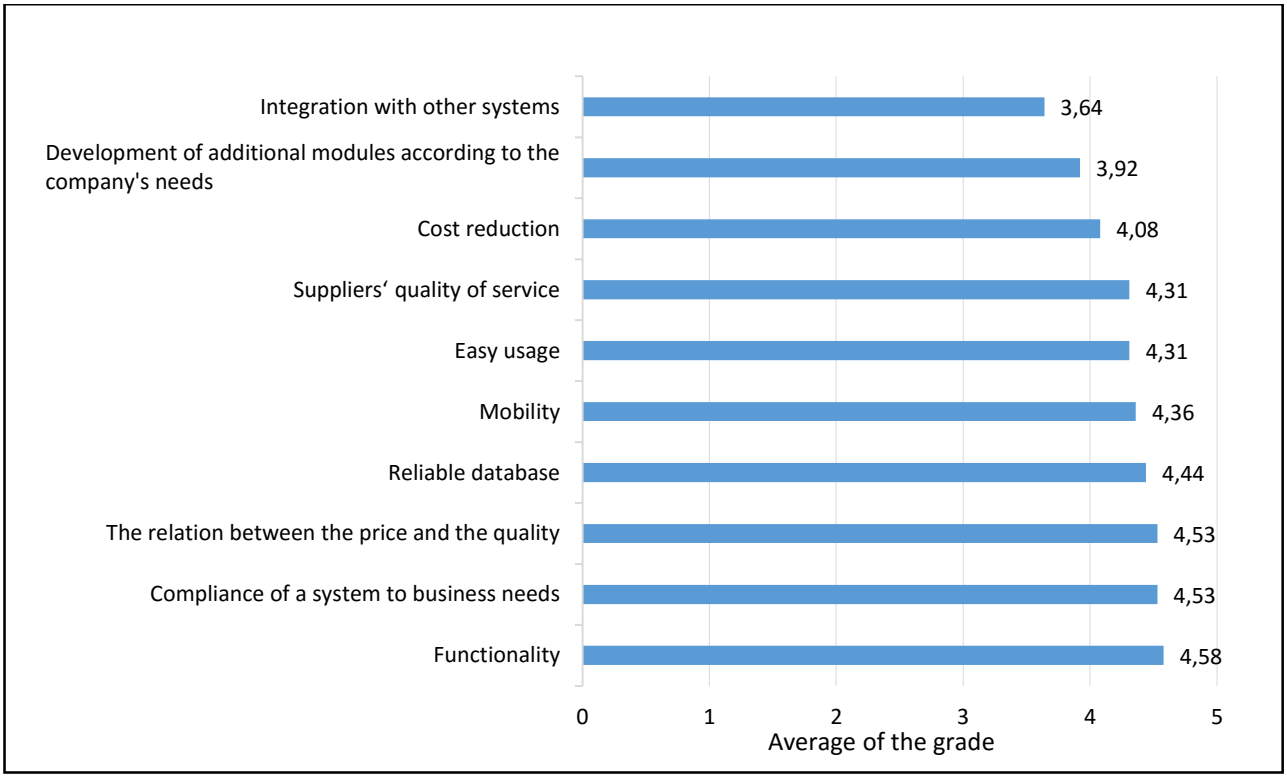
Furthermore, in the 9 Figure, which is below, there are given integrated models which are used in the cloud-based financial management systems.



9 Figure. Integrated models listed by respondents, who use in the cloud-based financial management systems

It was found that the most integrated models are General Ledger, Payroll, Order Accounting, Sales Management, the rarest ones - Accounting Statistics of a Company, Fixed Asset Accounting and Financial Planning Records. In the 2 appendix there is the data table, from which it is seen that only integration of the accounting model of Orders significantly and negatively correlated with the company's number of employees ($p<0,05$), which indicates that companies with a lower number of employees statistically significantly more often have the integrated accounting model of orders. In other cases, the correlation was not statistically significant ($p>0,05$), indicating that the existing integrated models do not significantly depend on the number of companies' employees and annual revenues.

The following, during the research respondents were asked to assess the factors that led to the choice of the cloud-based financial management system by using a five-point Likert scale from "It does not matter at all" (1 point is assigned) to "Very important" (5 points are assigned). Their answers are presented in the 10 Figure.



10 Figure. The evaluation averages of the factors, which led to choose the cloud-based financial management system

10 Figure shows that the choice of functionality, the ratio of price and quality, compliance of a system to business needs, reliability and mobility of database led to choose these systems most, the least - the integration with other systems and the creation of additional modules.

Furthermore, the evaluation averages of the factors that led to choose the cloud-based financial management systems for companies with different number of employees are presented in the 14 Table.

14 Table. Evaluation averages of the factors that led to choose the cloud-based financial management systems for companies with different number of employees

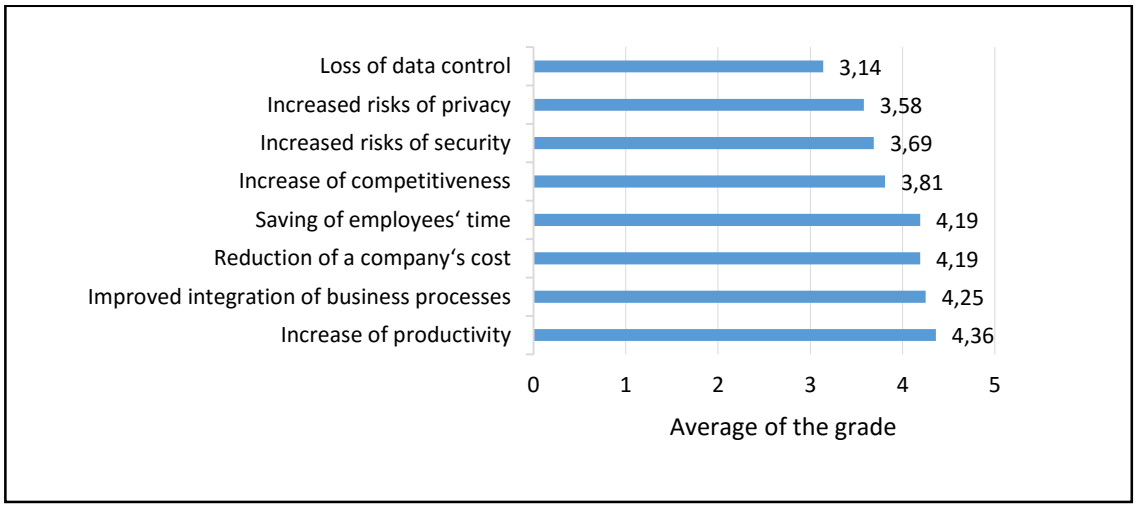
	The number of employees of the company								***H***	***p***
	Less than 10		Less than 50		Less than 250		More than 250			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
Cost reduction	4,10	1,02	3,91	0,94	4,25	0,50	5,00	.	1,996	0,573
Reliable database	4,55	0,60	4,55	0,69	4,50	0,58	1,00	.	3,802	0,284
Functionality	4,75	0,44	4,36	0,50	4,25	0,50	5,00	.	6,818	0,078
Mobility	4,65	0,67	4,36	0,67	3,75	1,26	1,00	.	7,689	0,053
Easy usage	4,60	0,60	4,09	0,70	4,25	0,50	1,00	.	7,952	0,047
Development of additional modules according to the company's needs	4,00	0,92	3,73	1,35	3,75	0,50	5,00	.	2,272	0,518
Integration with other systems	3,80	1,11	3,55	1,04	3,75	1,26	1,00	.	3,475	0,324
Compliance of a system to business needs	4,55	0,60	4,45	0,52	4,50	0,58	5,00	.	1,187	0,756
Suppliers‘ quality of service	4,50	0,69	4,27	0,79	4,25	0,50	1,00	.	4,584	0,205
The relation between the price and the quality	4,55	0,60	4,45	0,52	4,50	0,58	5,00	.	1,187	0,756

As it can be seen in 14 Table given data, showing the factors, that led to choose the cloud-based financial management system, by the estimates of representatives, ranging in companies’ size, it was found that the opinions of representatives of larger and smaller enterprises were statistically significant divided just in a case of simplicity in usage ($p < 0,05$), that indicates that only the smallest

(up to 10 people) companies were statistically more influenced by this factor of choice. Meanwhile, other factors influenced the larger and smaller companies statistically similar (p> 0,05).

The same calculations were also done in order to evaluate whether these factors have different impacts on companies, receiving different revenues. From the data in the table (3 Appendix), it can be seen that representatives of companies with higher and lower income evaluated these factors statistically similar (p>0,05). It comes to the conclusion that these factors affect companies with different income statistically similar.

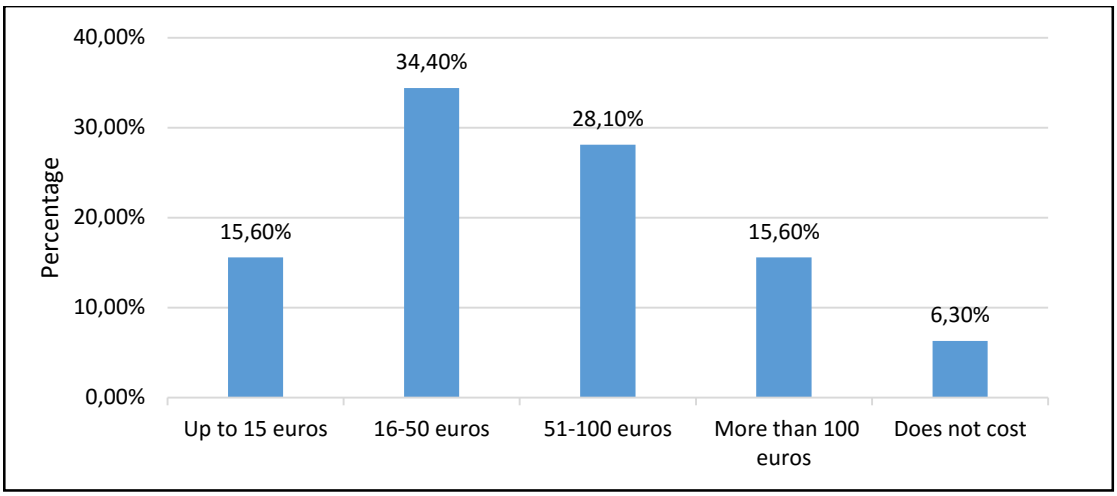
During the research, respondents also were asked in a five-point Likert scale from "Totally disagree" (1 point is assigned) to "Totally agree" (5 points are assigned) to assess the allegations which are related to the usage of the cloud-based financial management systems. The following, the average score of responses for each respondent is given in 11 Figure.



11 Figure. The evaluation averages of the allegations which are related to the usage of the cloud-based financial management systems

As it can be seen from the above graph in the 11 Figure, respondents mostly agree with the fact that these systems allow to increase productivity, better integrate business processes and reduce costs of the company, and they mostly disagree with the fact that these systems are characterized by a loss of data control and increased privacy risks.

The eleventh question aimed to find out, how much money per month respondents spend for the system, which they are using. The answers are presented in the 12 Figure.



12 Figure. The distribution of the respondents by the costs of the cloud-based financial management systems per month

In the above 12 Figure it is given how much the cloud-based financial management systems cost for companies. It is seen that 34,4 percent of enterprises spend 16-50 euros per month, 28,1 percent of them - 51-100 euros, the rest - up to 15 euros (15,6 percent) or more than 100 euros (15,6 percent.).

After the analysis of the allocation of the cloud-based financial management systems' costs between the different companies it was found that these costs did not significantly depend on the company's number of employees and annual revenues ($p>0,05$). This indicates that larger and smaller companies spend similar amounts for the cloud-based financial management systems (the table is given in 4 Appendix).

The fact that the costs of the cloud-based financial management system are unrelated to the company's annual revenues, show a statistically insignificant correlation between these variables ($p>0,05$) (15 Table).

15 Table. The correlation between the company's annual revenues and the costs of the cloud-based financial management system per month

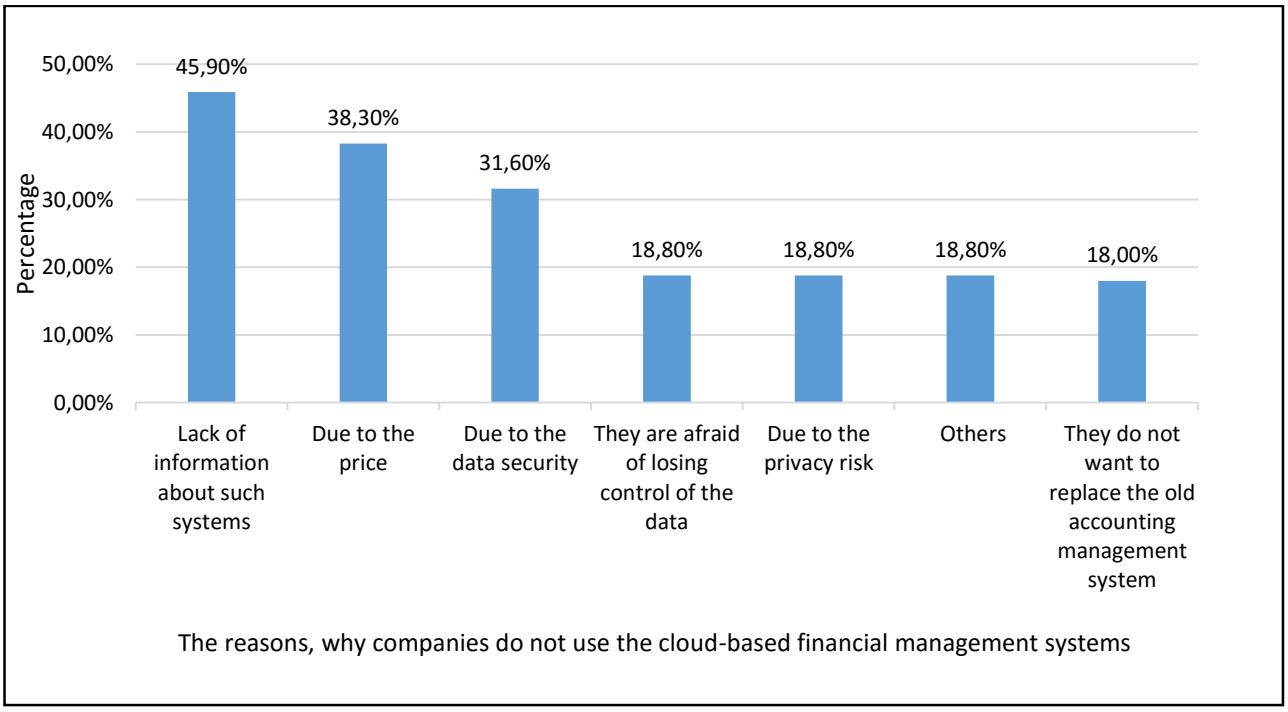
		The company's annual revenues	**The costs of the cloud-based financial management systems per month**
The company's annual revenues	***r***	1,000	-0,006
	p	.	0,973
	N	343	32

15 table continued on the next page

15 table continued from previous page

		The company's annual revenues	**The costs of the cloud-based financial management systems per month**
The costs of the cloud-based financial management systems per month	***r***	-0,006	1,000
	p	0,973	.
	N	32	32

As it has already been mentioned, the respondents who answered that they do not use the cloud-based financial management systems began to answer only from 12 question. The essence of the 12 question was the fact that the respondents had to indicate the reasons for non-use of the cloud-based financial management systems (13 Figure).



13 Figure. The percentage evaluation of the reasons, why companies do not use the cloud-based financial accounting management systems

It is very important to note that the respondents in the answer "Others" indicated these reasons:

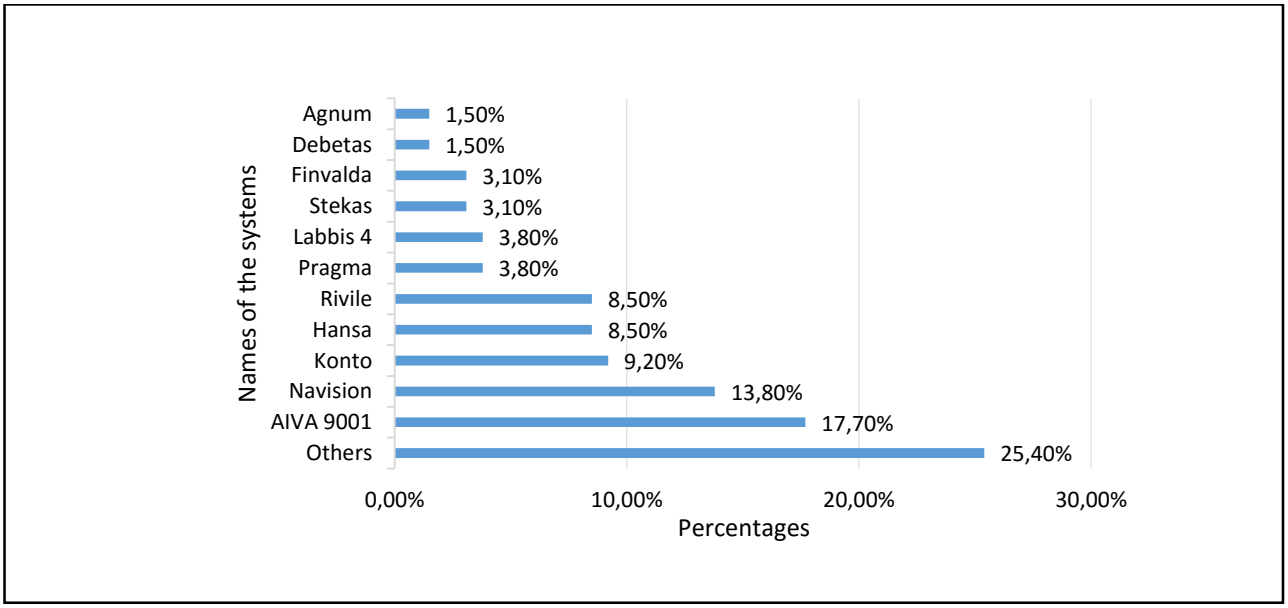
- A group of companies works with the unified financial management system;
- They are satisfied with the current system;
- They are interested in systems, they collect the information, consider the possibilities;

- The financial management system is specifically designed only for companies which belong to a group of an enterprise;
- There is no need;
- Financial management is purchased as a service;
- A very strong factor is habit.

From the table, which is presented in the 5 Appendix, it is seen that especially SMEs, which do not use the cloud-based financial management systems, indicated these reasons: lack of information, due to the price and data security. It could be said that the same reasons remain now, because according one conducted analysis the major barriers of using the cloud-based systems are critical approach to innovations, lack of information about security and advantages. (Christauskas and Miseviciene, 2012)

The following, in the table (6 Appendix) the presented data shows that the correlation between the number of employees and annual revenues as well as non-use of cloud-based systems was not statistically significant (p>0,05). This proves that the reasons for which the companies do not use these systems do not significantly depend on employees and annual revenues of companies.

In the thirteenth question the respondents, who do not use the cloud-based financial systems, have been asked to indicate what systems they are using. They could choose the answers or write their own. The answers are given in the 14 Figure.



14 Figure. The distribution of the respondents, who do not use cloud-based financial management systems, by their used financial/accounting management systems

As it can be seen from the data in 14 Figure, most often there are used such systems as AIVA 9001, Navision, Konto, Hansa and Rivilė. Most of them are the great financial and accounting

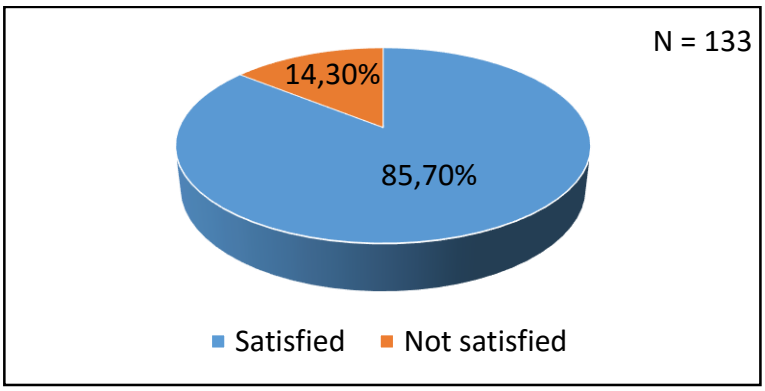
management systems, maybe, only Konto is a simple accounting systems for micro and small enterprises, which does not have special functions, which are usually integrated in the financial management systems.

It is very important to note that the respondents in the answer "Others" indicated these systems: Paulita, Axapta, Edrana, BC Plus, PeopleSoft, Monitor, SAP, Euroskaita and others. It could be noticed that enterprises use a lot of different financial management systems. Also, they use Enterprise Resource Planning (ERP) systems, such as Edrana, BC Plus, Euroskaita, PeopleSoft, Monitor and SAP.

ERP can be described as the software systems for business management, encompassing modules supporting functional areas (planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource or project management, inventory management, service and etc.). The software architecture facilitates transparent integration of modules, giving information flow between all functions within the company in a consistently visible way. (Rashid, Hossain and Patrick, 2002)

Also, it could be said that enterprises use not only Lithuanian financial/ accounting management systems. For example, Axapta, PeopleSoft, Monitor and SAP are systems, created by foreign companies. Paulita, Edrana, BC Plus and Euroskaita are created by Lithuanian companies. It can be assumed that the producer does not have a great importance for selection of a system.

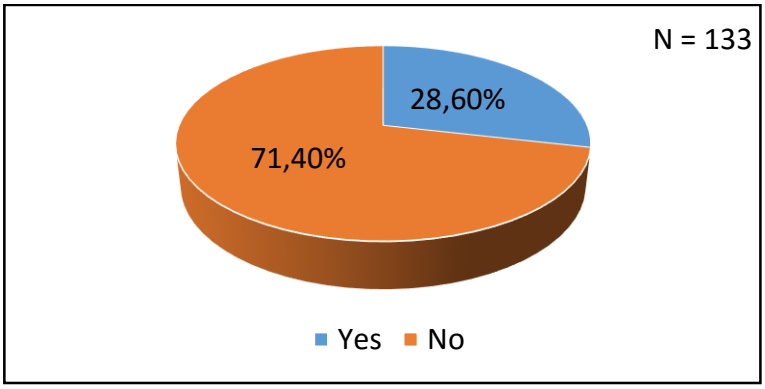
In the fourteenth question respondents were asked if they are satisfied with the current financial or accounting management system. Answers of respondents are given in 15 Figure.



15 Figure. The distribution of the respondents, who do not use the cloud-based financial management systems, by the satisfaction of using their financial or accounting management system

It is seen that even 85,7 percent of representatives of companies that do not use the cloud-based financial management systems are satisfied with the management systems they use for financial and accounting.

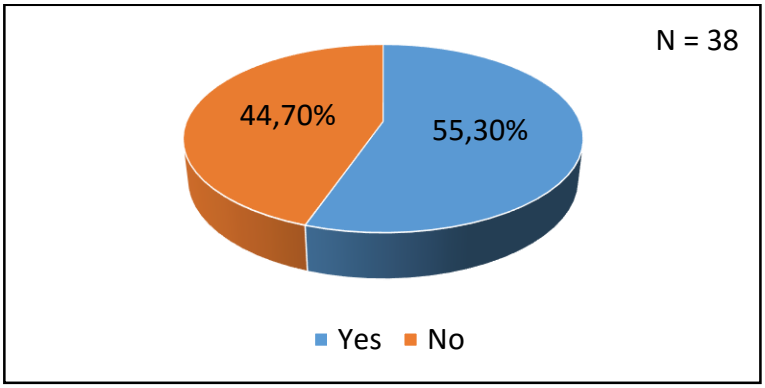
In the fifteenth question respondents were asked if they consider to change their financial/accounting management system in future. Answers of respondents are given in 16 Figure.



16 Figure. The distribution of the respondents, who do not use the cloud-based financial management systems, by the consideration to change the current financial/accounting management system

It should be noted that in the future only 28,6 percent of respondents consider to change the management system they use for financial and accounting, while the vast majority of them does not care about it.

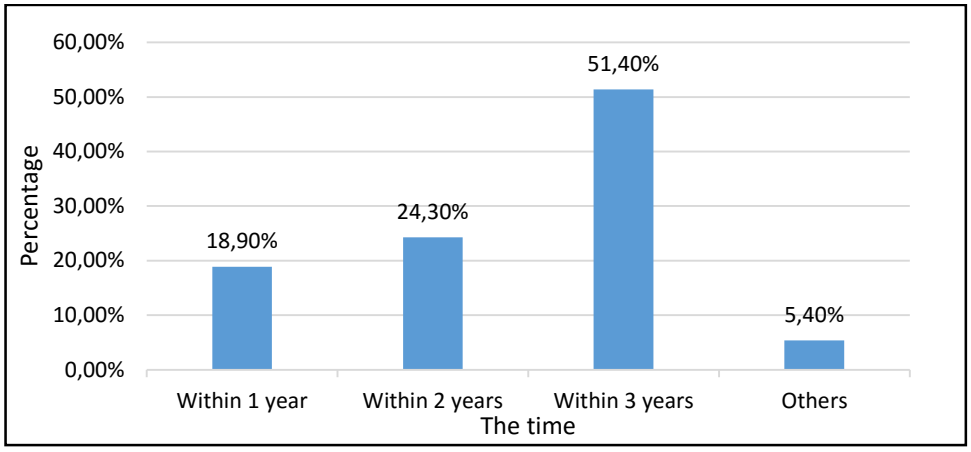
In the sixteenth question respondents were asked if they are going to change their current financial/accounting management system into the cloud-based system. Answers of respondents are given in 17 Figure.



17 Figure. The distribution of the respondents by the plans to change the current financial/accounting management system to the cloud-based system

The respondents, who indicated that they are planning to change their financial management system in the future, were asked to indicate if they are going to change their existing system into the cloud-based computing one. As it can be seen, 55,3 percent of companies' representatives are planning to change their financial systems according to their plans.

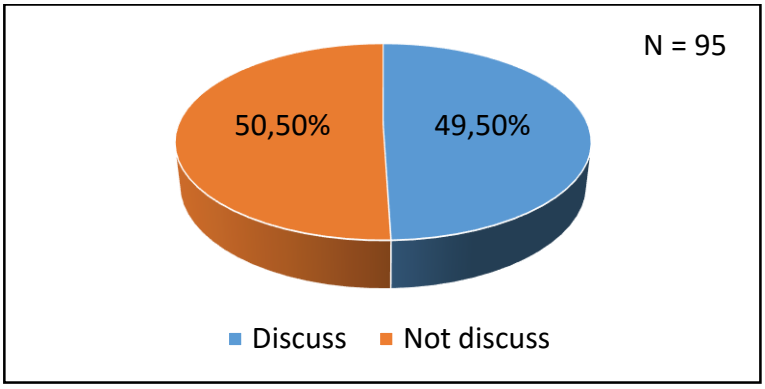
In the seventeenth question respondents were asked when they are planning to change their financial/accounting management system. Answers of respondents are given in 18 Figure.



18 Figure. The distribution of the respondents, who do not use the cloud-based financial management systems, by the time of planning to change their financial/accounting management system

As it can be seen from the following data in the 18 Figure, more than a half of companies (51,4 percent) are planning to do this in just 3 years, while only 18,9 percent of companies, which indicated that they are planning a change of their financial management system, are going to do this over the next year. It is very important to note that the respondents in the answer "Others" indicated this time: within 5 years and 0 years. It means that now the companies are changing their financial management systems.

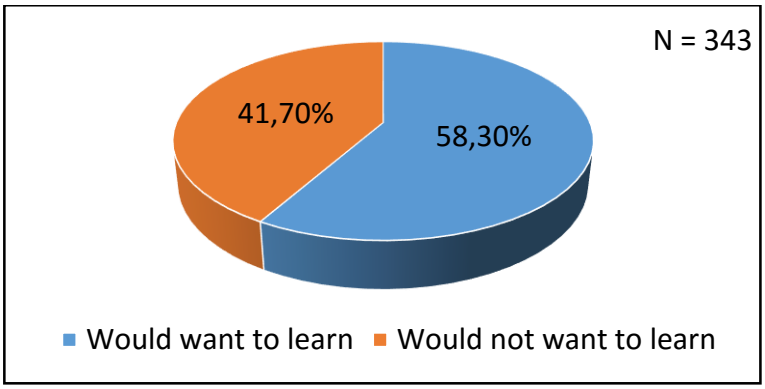
In the next question (eighteenth) respondents, who do not plan to change the used system to operating on cloud-based one, were asked if the examples of best practices of similar companies that use the cloud-based financial management systems were given, whether they would discuss the possibility of changing the current financial/accounting management system into this one. Answers of respondents are given in 19 Figure.



19 Figure. The distribution of the respondents by the reflections on the possibility of changing the financial management system into the cloud-based in accordance with best practices

As it can be seen from the data in 19 Figure, in such cases a nearly half of respondents would discuss it. This shows that the cloud-based financial management systems have perspectives of being used by Lithuanian companies.

The last question (nineteenth) aimed to get responses from all respondents if they would like to learn more about the cloud-based financial management systems. The 20 Figure below shows the results of this question.



20 Figure. The distribution of the respondents wishes to learn more about the cloud-based financial management systems

From the 20 Figure it is seen that 58,3 percent of all respondents would want to learn more about the cloud-based financial management systems. Moreover, 16 Table presents the distribution of different enterprises by the desire to learn more about these systems.

16 Table. The distribution of different enterprises by the desire to learn more about the cloud-based financial management systems

		The desire to learn more about the cloud-based financial management systems				χ^2	*df*	*p*
		Would want to learn		**Would not want to learn**				
The number of employees of the company	Less than 10	62	53,0%	55	47,0%	2,164	3	0,539
	Less than 50	75	62,0%	46	38,0%			
	Less than 250	46	59,7%	31	40,3%			
	Over 250	17	60,7%	11	39,3%			
The company‘s annual revenues	Does not exceed 2 million euros	115	56,9%	87	43,1%	1,397	3	0,706
	Does not exceed 7 million euros	41	57,7%	30	42,3%			
	Does not exceed 40 million euros	28	59,6%	19	40,4%			
	More than 40 million euros	16	69,6%	7	30,4%			

From the data in 16 Table, it is seen that the desire to learn more about the cloud-based financial management systems does not significantly depended on the number of companies' employees and revenues ($p>0,05$), it indicates that the desire of larger and smaller enterprises to find out about these systems is statistically similar.

3.3. The Results of the Data Analysis

Some calculations and correlations of the survey results have been done. So, some conclusions of the results of data analysis could be presented:

- 50,7 percent of all respondents have not heard about the cloud-based financial management systems. This shows that the problem, raised in the beginning of the research, has confirmed. A lot of enterprises, not only SMEs, did not hear about these systems. So, they could not take

the opportunity to use the cloud-based financial management systems. Moreover, the correlation between the number of employees of the company and the hearing about the cloud-based financial management systems was done to find out whether the notoriety of these systems depends on the company's number of employees. The correlation showed that the notoriety of cloud-based financial management systems does not depend on the number of company employees and revenues ($p>0,05$).

- The cloud-based financial management systems are used only by 21,3 percent of respondents, who have heard about these systems. It is a quite large part, but it is very interesting what percentage of all respondents use the system. The following result is that only 10,5 percent of all questioned respondents use these systems. As it was mentioned in the theoretical part, only 6 percent of enterprises used the finance and accounting systems as a cloud computing service in 2014. So, it could be concluded that this research shows very similar results. Also, the correlation between the number of employees of the company and the usage of the cloud-based financial management systems was done. It indicated that the enterprises with a smaller number of employees use these systems more often.
- The results of the questionnaire showed that the cloud-based financial management systems ASPA and "Optimum", which were presented in a theoretical part, are the most commonly used by respondents. Also they indicated that use other systems such as Agnum, 1c, Quickbooks, Xero, Directo, Zoho and others.
- The results of the analysis show that the most integrated models are General Ledger, Payroll, Order Accounting, Sales Management, the rarest ones - Accounting Statistics of a Company, Fixed Asset Accounting and Financial Planning Records. It could be said that enterprises do not take opportunities to use all functions of the system or to use the most important modules for financial management. After some calculations, it was noticed that companies with a lower number of employees statistically significantly more often have the integrated accounting model of orders.
- The enterprises choose the cloud-based financial management systems because of these factors: functionality, the ratio of price and quality, compliance of a system to business needs, reliability and mobility of database. Moreover, respondents mostly agree with the fact that these systems allow to increase productivity, better integrate business processes and reduce costs of the company. Also they less agree with the fact that these systems are characterized by a loss of data control and increased privacy risks. It can be said that these results coincide with the advantages of these systems, which were discussed in the theoretical part.
- The enterprises do not use the cloud-based financial management systems because of these reasons: lack of information about these systems and due to the price and data security. Also,

they indicated that they are satisfied with the current system or the group of their companies working with the unified financial management system. Moreover, some representatives of enterprises said there is no need to use the cloud-based systems. Also, the correlation between the reasons of not using the cloud-based financial management systems and the number of employees and annual revenues of the company was not statistically significant ($p>0,05$). This proves that the reasons for which the companies do not use these systems do not significantly depend on employees and annual revenues of companies.

- Enterprises, which do not use the cloud-based financial management systems, use systems such as AIVA 9001, Navision, Konto, Hansa, Rivilė, Paulita, Axapta, Edrana, BC Plus, PeopleSoft, Monitor, SAP and others. Most of them are the great financial and accounting management or ERP systems for different size enterprises. About, 85,7 percent of these enterprises are satisfied with their used systems and only 28,6 percent consider to change them. Some respondents are planning to change their existing system into the cloud-based computing one. It means that these systems have perspectives in the enterprises and will become more and more popular.
- The results of the analysis showed that some enterprises, which do not use these systems, discuss the possibility of changing the current financial/accounting management system into the cloud-based, if they get more examples of good practice of usage of the cloud-based systems. It shows that the cloud-based financial management systems have perspectives of being used by Lithuanian companies. Moreover, 58,3 percent of all respondents would want to learn more about the cloud-based financial management systems. It means that enterprises of all sizes want to deepen their knowledge about these systems. So, it could be said that there are perspectives for increasing the usage of the cloud-based financial management systems.

CONCLUSIONS AND RECOMMENDATIONS

After the analysis of the scientific literature and the empirical research, some conclusions could be done:

1. The Cloud Computing is a very flexible technology for consumers, because it easily can satisfy different specialists' needs. The main Cloud Computing advantages are these: lower costs for IT, mobility, the accessibility at any time, data safety, almost unlimited storage and etc. However, this technology has some disadvantages: technical issues, the risk of attacks and protecting data, jurisdictional problems and so on. In the wake of the Cloud Computing pluses, many enterprises start to use the cloud-based financial management systems, which are the great management tool for the business. They include fully accounting services, reports, forecasting, budgeting and other functions. However, the cloud-based financial management systems gain almost the same advantages and disadvantages as the Cloud Computing. So the enterprises should carefully consider all benefits and drawbacks before choosing the systems, because they can influence their daily work.
2. Some statistics showed that only 6 percent of enterprises are using the finance and accounting software as a cloud computing service. In addition, the offer of such Lithuanian systems is not high, so companies do not have a lot of choices. Some current cloud-based financial and accounting management systems ("NetSkaita-Account", "Optimum", B1.lt, APSA and DINETA.web), which are created by Lithuanian companies, were presented and compared. As it is known, the accounting management is the main core of the financial management. So, some cloud-based accounting systems also are included in this presentation and comparison. The functional comparison of the chosen systems showed that they are very similar. They have the same functions. Furthermore, they were compared by these criteria: price, quantity of users, update of the system, backups, divided into modules, additional modules, multilingualism of the system and etc. This comparison showed only some differences between them. For example, only B1.lt can offer the free services and the possibility to work by tablets and phones, DINETA.web is translated into more languages than other systems. Also, not all systems can offer the additional models, API, POS or other functions.
3. To sum up, the research, based on the results from questionnaire survey, proved that the cloud-based financial management systems have the potential perspectives in Lithuanian SME's. First of all, the results from the questionnaire demonstrated that a half of the respondents have not heard about the cloud-based financial management systems. This shows that the problem, raised in the beginning of the research, has confirmed. A lot of enterprises, not only SMEs, did not hear about these systems. Moreover, this research showed that only 10,5 percent of all

questioned respondents use these systems because of these factors: functionality, the ratio of price and quality, compliance of a system to business needs, reliability and mobility of database. Furthermore, respondents mostly agree with the fact that these systems allow to increase productivity, better integrate business processes and reduce costs of the company. Also, the research confirmed that the enterprises do not use the cloud-based financial management systems because of these reasons: lack of information about these systems and due to the price and data security. They indicated that they are satisfied with the current system or the group of their companies working with the unified financial management system. Furthermore, some representatives of enterprises said that there is no need to use the cloud-based systems. The research revealed that some enterprises, which do not use these systems, discuss the possibility of changing the current system into the cloud-based one, if they get more examples of good practice of the usage of cloud-based systems. In addition, some respondents would like to learn more about the cloud-based financial management systems. It means that enterprises of all sizes want to deepen their knowledge about these systems.

Recommendations:

- The enterprises, which use the cloud-based financial management systems, should integrate more modules in their systems. It will help to manage finances easier and to increase competitiveness.
- Providers of the cloud-based financial management systems should highlight the uniqueness of their product from another systems and devote more money for the advertising and the dissemination of good practice.

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Markūnaitė E. Cloud-based Financial Management Systems Perspectives in Small and Medium-sized Enterprises / Master Thesis of Electronic Business Management Program. Supervisor: Prof. Dr. Mindaugas Kiškis. - Vilnius: Mykolas Romeris University, Business and Media School, 2015. – 79 p.

ANNOTATION

In this master's thesis functionality of the cloud-based financial management systems was evaluated and there have been determined their perspectives in SMEs. The main characteristics of the Cloud Computing (the concept, structure, advantages and disadvantages) and financial management systems (concept, benefits and drawbacks) are discussed in the first chapter. In the second chapter the current cloud-based financial management systems are presented and compared to each other. In the third chapter a description of the methodology of the empirical study is described and there is the analysis of the perspectives of the usage of the cloud-based financial management systems in SMEs. The results, got after a questionnaire survey, were processed in the following programs: the statistical software package SPPS (17 version) and Microsoft Excel software. In the end of the master thesis there are formulated conclusions and recommendations.

Keywords: Cloud Computing, financial management systems, SMEs.

Markūnaitė E. Debesų kompiuterijos pagrindu veikiančių finansų valdymo sistemų perspektyvos mažose ir vidutinėse įmonėse / Elektroninio verslo vadybos magistro baigiamasis darbas. Vadovas: Prof. Dr. Mindaugas Kiškis. - Vilnius: Mykolo Romerio Universitetas, Verslo ir medijų mokykla, 2015. – 79 p.

ANOTACIJA

Magistro baigiamajame darbe įvertintas debesų kompiuterijos pagrindu veikiančių finansų valdymo sistemų funkcionalumas ir nustatytos jų perspektyvos mažose ir vidutinėse įmonėse. Pagrindines Debesų kompiuterijos (sąvoka, struktūra, privalumai ir trūkumai) ir Finansų valdymo sistemų (sąvoka, privalumai ir trūkumai) bruožai aptarti pirmojoje darbo dalyje. Antroje darbo dalyje pristatytos dabartinės debesų kompiuterijos pagrindu veikiančios finansų valdymo sistemos ir jos palygintos tarpusavyje. Trečioje darbo dalyje pateikta pasirinkto tyrimo metodologija ir atlikta analizė apie debesų kompiuterijos pagrindu veikiančių finansų valdymo sistemų panaudojimo perspektyvas mažose ir vidutinėse įmonėse. Gauti anketinės apklausos rezultatai buvo apdorojami šiomis programomis: SPSS (17 versija) bei Microsoft Excel. Darbo pabaigoje pateiktos išvados ir rekomendacijos.

Raktiniai žodžiai: Debesų kompiuterija, finansų valdymo sistemos, mažos ir vidutinės įmonės.

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SUMMARY

Nowadays, the technologies are one of the most important things in our lives. So companies start to focus on the newest technologies, which help them to cut their costs and to be more productive. The Cloud Computing is one of that technology. In simply words, it can be described as an innovative IT service delivery mode, which requires only the Internet connection. The Cloud Computing has a lot of benefits for different enterprises of all sizes. One of the main benefits is that enterprises do not have to maintain, develop or take care of the IT infrastructure by spending time and money. In the wake of this, many enterprises start to use the cloud-based financial management systems, which increasingly replace old traditional financial and accounting systems. The cloud-based financial management systems allow to hold the competitive position and to increase the efficiency in the enterprises. However, not all enterprises hurry to use them replacing their old financial systems. Especially the SMEs are very carefully considering the implementation of the cloud-based financial management systems.

The problem - the small and medium-sized companies do not take the opportunity to use the cloud-based financial management systems. The object of the master thesis – the cloud-based financial management systems. The purpose of the master thesis – to evaluate cloud-based financial management systems' functionality and their perspectives in SMEs. The objectives of master thesis: 1 .To overview the main characteristics of the Cloud Computing (concept, structure, advantages and disadvantages), financial management systems (concept, benefits and drawbacks). 2. To present the current cloud-based financial management systems and compare them to each other. 3. To perform the empirical research to find out why SMEs choose the cloud based financial management systems and to identify the reasons why the enterprises avoid to use this new technology.

The methods used in master thesis: analytical method, comparative method, questionnaire method, descriptive statistical method and method of the generalization. The master thesis consists of an introduction, three chapters, conclusions and recommendations. Results of the work: the research proved that the cloud-based financial management systems have the potential perspectives in Lithuanian SME's. Also, the research confirmed that the enterprises do not use these systems because of reasons: lack of information about these systems and due to the price and data security.

Markūnaitė E. Debesų kompiuterijos pagrindu veikiančių finansų valdymo sistemų perspektyvos mažose ir vidutinėse įmonėse / Elektroninio verslo vadybos magistro baigiamasis darbas. Vadovas: Prof. Dr. Mindaugas Kiškis. - Vilnius: Mykolo Romerio Universitetas, Verslo ir medijų mokykla, 2015. – 79 p.

SANTRAUKA

Šiandien technologijos yra vienas iš svarbiausių dalykų mūsų gyvenime. Taigi, kompanijos pradeda atkreipti dėmesį į naujausias technologijas, kurios joms padeda sumažinti jų išlaidas ir tapti produktyvesnėmis. Debesų kompiuterija yra viena iš tokių technologijų. Paprastai tariant, ji gali būti apibūdinama kaip novatoriškas IT paslaugų tiekimo režimas, kuriam reikalingas tik interneto ryšys. Debesų Kompiuterija turi daug skirtingų privalumų visų dydžių įmonėms. Vienas iš pagrindinių privalumų yra tai, kad įmonės neprivalo išlaikyti, plėtoti ar rūpintis IT infrastruktūra, leidžiant laiką ir pinigus. Atsižvelgiant į tai, daugelis įmonių pradeda naudotis debesų kompiuterijos pagrindu veikiančiomis finansų valdymo sistemomis, kurios vis labiau pakeičia senas tradicines finansines ir apskaitos sistemas. Debesų kompiuterijos pagrindu veikiančios finansų valdymo sistemos leidžia išlaikyti konkurencingą poziciją ir didinti įmonių efektyvumą. Tačiau ne visos įmonės skuba pasinaudoti jomis, pakeičiant senas finansų valdymo sistemas. Ypač mažos ir vidutinės įmonės labai atsargiai svarsto debesų kompiuterijos pagrindu veikiančių finansų valdymo sistemų įgyvendinimą.

Problema - mažos ir vidutinės įmonės nepasinaudoja galimybe naudoti debesų kompiuterijos pagrindu veikiančiomis finansų valdymo sistemomis. Darbo objektas – debesų kompiuterijos pagrindu veikiančios finansų valdymo sistemos. Darbo tikslas – įvertinti debesų kompiuterijos pagrindu veikiančių finansų valdymo sistemų funkcionalumą ir jų perspektyvas mažose ir vidutinėse įmonėse. Darbo uždaviniai: 1. Apžvelgti pagrindines Debesų kompiuterijos (sąvoką, struktūrą, privalumus ir trūkumus) ir Fiansų valdymo sistemų (sąvoką, privalumus ir trūkumus) bruožus. 2. Pristayti dabartines debesų kompiuterijos pagrindu veikiančias finansų valdymo sistemas ir jas palyginti tarpusavyje. 3. Atlikti empyrinį tyrimą, norint išsiaiškinti, kodėl mažos ir vidutinės įmonės nesirenka debesų kompiuterijos pagrindu veikiančių finansų valdymo sistemų ir nustatyti priežastis, kodėl įmonės vengia naudotis nauja technologija.

Darbo metodai: mokslinės literatūros analizė, palyginimo metodas, apklausos metodas, aprašomosios statistikos metodas, apibendrinimo metodas. Darbą sudaro įvadas, trys skyriai, išvados ir rekomendacijos. Darbo rezultatai: tyrimas parodė, kad debesų kompiuterijos pagrindu veikiančios finansų valdymo sistemos turi potencialias perspektyvas Lietuvos mažose ir vidutinėse įmonėse. Be to, tyrimas parodė, kad įmonės nenaudoja šių sistemų dėl šių priežasčių: informacijos trūkumo, kainos ir duomenų saugumo stokos.

APPENDIXES

1 APPENDIX. QUESTIONNAIRE

I am E. Markūnaitė a student of the II master's course. At this moment I am studying e-business management at Mykolas Romeris University. Using this questionnaire I will try to find out what makes the choice of cloud-based financial management systems and why the usage of new technologies is avoided. The questionnaire is anonymous and it will take 10-15 minutes to complete. The survey data will be used in a master's thesis. Thank you for your participation in the survey!

1. How many employees work for your company?

- 1 - 9 employees
- 10 - 49 employees
- 50 - 249 employees
- More than 250 employees

2. Your company‘s annual revenues:

- Does not exceed 2 million euros
- Does not exceed 7 million euros
- Does not exceed 40 million euros
- More than 40 million euros

3. Your company's fields of activity:

- Wholesale and retail trade
- Manufacturing
- Building
- Information and communication
- Financial and insurance activities
- Real estate activities
- Professional, scientific and technical activities
- Accommodation and food service activities
- Transportation and storage
- Arts, entertainment and recreation
- Administrative and supportive service activities

- Other activities

4. Have you heard about the cloud-based financial management systems?
- Yes (proceed to the next question)
- No (proceed to the last 19 question)

5. Do you use a cloud-based financial management system?
- Yes (proceed to the next question)
- No (proceed to the question 12)

6. Which cloud-based financial management systems do you use?
- "NetSkaita-Account"
- “Optimum“
- B1.lt
- APSA
- DINETA.web
- Another

7. Are you satisfied with your existing system of the financial management?
- Yes
- No

8. What models are integrated into your company's system of the financial management?
- General Ledger
- Money Management
- Inventory management
- Production
- Procurement Management
- Sales Management
- Order Accounting
- Accounting statistics of a company
- Financial planning records
- Fixed asset accounting
- Payroll

- Staff Accounting
- Others

9. Rate the factors that led to the choice of a cloud-based financial management system:

	It does not matter at all	It does not matter	Neither important nor unimportant	Important	Very important
Cost reduction					
Reliable database					
Functionality					
Mobility					
Easy usage					
Development of additional modules according to the company's needs					
Integration with other systems					
Compliance of a system to business needs					
Suppliers‘ quality of service					
The relation between the price and the quality					

10. Evaluate your agreement with the following statements, which are related to the usage of financial management systems based on the cloud computing.

	Totally disagree	Partially disagree	Neither agree nor disagree	Partially agree	Totally agree
Reduction of a company‘s cost					
Increase of productivity					
Increase of competitiveness					
Saving of employees‘ time					

Improved integration of business processes					
Increased risks of security					
Increased risks of privacy					
Loss of data control					

11. How much does the cloud-based financial management system cost (euros) for your company per month?

- Up to 15 euros (proceed to the 19 question)
- 16-50 euros (proceed to the 19 question)
- 51-100 euros (proceed to the 19 question)
- More than 100 euros (proceed to the 19 question)
- Does not cost (proceed to the 19 question)

12. Why don‘t you use the financial management systems operating on the basis of cloud computing?

- Lack of information about such systems
- You do not want to replace the old accounting management system
- You are afraid of losing control of the data
- Due to the data security
- Due to the privacy risk
- Due to the price
- Others

13. Which financial or accounting management system do you use now?

- Navision
- Hansa
- Rivile
- Stekas
- Pragma
- Finvalda
- Debetas
- Konto
- Agnum

- AIVA 9001
- Labbis 4
- Others

14. Are you satisfied with the current financial/accounting management system?

- Yes
- No

15. Are you considering to change your financial/accounting management system in future?

- Yes (proceed to the next question)
- No (proceed to the 18 question)

16. Are you going to change your current financial/accounting management system into the cloud-based system?

- Yes
- No

17. When are you planning to change your financial/accounting management system?

- Within 1 year (proceed to the 19 question)
- Within 2 years (proceed to the 19 question)
- Within 3 years (proceed to the 19 question)
- Others (proceed to the 19 question)

18. If companies that use the cloud-based financial management systems and have the best practices present them to your company, will you discuss a possibility of changing your financial/accounting management system?

- Yes
- No

19. Would you like to learn more about the cloud-based financial management systems?

- Yes
- No

2 APPENDIX. THE CORRELATION BETWEEN THE INTEGRATED MODELS, WHICH ARE USED IN THE CLOUD-BASED FINANCIAL MANAGEMENT SYSTEMS, AND THE NUMBER OF EMPLOYEES AND ANNUAL REVENUES OF COMPANIES

		The number of employees of the company	**The company's annual revenues**
General Ledger	***r***	0,092	0,147
	p	0,594	0,392
	N	36	36
Money Management	***r***	-0,081	0,038
	p	0,638	0,826
	N	36	36
Inventory management	***r***	-0,025	0,069
	p	0,885	0,691
	N	36	36
Production	***r***	-0,127	0,066
	p	0,461	0,703
	N	36	36
Procurement Management	***r***	-0,057	-0,008
	p	0,740	0,964
	N	36	36
Sales Management	***r***	-0,295	-0,147
	p	0,081	0,393
	N	36	36
Order Accounting	***r***	**-0,562**	-0,192
	p	**0,000**	0,261
	N	**36**	36
Accounting statistics of a company	***r***	-0,103	-0,048
	p	0,551	0,779
	N	36	36
Financial planning records	***r***	0,082	0,189
	p	0,635	0,270
	N	36	36
Fixed asset accounting	***r***	0,212	0,298
	p	0,215	0,077
	N	36	36
Payroll	***r***	0,136	0,218
	p	0,428	0,201
	N	36	36
Staff Accounting	***r***	-0,081	0,129
	p	0,638	0,454
	N	36	36
Others	***r***	-0,209	-0,118
	p	0,221	0,491
	N	36	36

3 APPENDIX. EVALUATION AVERAGES OF THE FACTORS THAT LED TO CHOOSE THE CLOUD-BASED FINANCIAL MANAGEMENT SYSTEMS FOR THE RESPONDENTS OF DIFFERENT ANNUAL REVENUES

	The company's annual revenues								***H***	***p***
	Does not exceed 2 million euros		**Does not exceed 7 million euros**		**Does not exceed 40 million euros**		**More than 40 million euros**			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
Cost reduction	4,03	0,98	4,50	0,71	4,00	0,82	5,00	.	1,976	0,577
Reliable database	4,48	0,63	5,00	0,00	4,75	0,50	1,00	.	5,518	0,138
Functionality	4,59	0,50	4,50	0,71	4,50	0,58	5,00	.	0,862	0,835
Mobility	4,52	0,69	4,50	0,71	4,00	1,41	1,00	.	4,100	0,251
Easy usage	4,41	0,68	4,00	0,00	4,50	0,58	1,00	.	4,606	0,203
Development of additional modules according to the company's needs	4,07	0,92	3,00	0,00	3,00	1,41	5,00	.	7,366	0,061
Integration with other systems	3,79	1,05	2,50	0,71	3,75	1,26	1,00	.	5,509	0,138
Compliance of a system to business needs	4,52	0,57	4,00	0,00	4,75	0,50	5,00	.	3,541	0,315
Suppliers‘ quality of service	4,41	0,73	4,50	0,71	4,25	0,50	1,00	.	3,914	0,271
The relation between the price and the quality	4,48	0,57	5,00	0,00	4,50	0,58	5,00	.	2,494	0,476

4 APPENDIX. THE DISTRIBUTION OF THE RESPONDENTS, WHO USE THE CLOUD-BASED FINANCIAL MANAGEMENT SYSTEMS, ACCORDING TO THE COSTS OF THE FINANCIAL MANAGEMENT SYSTEM

		The costs of the cloud-based financial management systems per month										χ^2	*df*	*p*
		Up to 15 eur		**16-50 euros**		**51-100 euros**		**More than 100 euros**		**Does not cost**				
The number of employees of the company	Less than 10	4	21,1%	8	42,1%	3	15,8%	2	10,5%	2	10,5 %	10,196	8	0,252
	Less than 50	1	11,1%	3	33,3%	4	44,4%	1	11,1%	0	0,0%			
	Less than 250	0	0,0%	0	0,0%	2	50,0%	2	50,0%	0	0,0%			
	Over 250	0	0,0%	0	0,0%	0	0,0%	0	0,0%	0	0,0%			
The company‘s annual revenues	Does not exceed 2 million euros	4	15,4%	9	34,6%	7	26,9%	4	15,4%	2	7,7%	4,640	8	0,795
	Does not exceed 7 million euros	1	50,0%	1	50,0%	0	0,0%	0	0,0%	0	0,0%			
	Does not exceed 40 million euros	0	0,0%	1	25,0%	2	50,0%	1	25,0%	0	0,0%			
	More than 40 million euros	0	0,0%	0	0,0%	0	0,0%	0	0,0%	0	0,0%			

5 APPENDIX. THE ANSWERS ABOUT THE REASONS FOR NOT USING THE CLOUD-BASED FINANACIAL MANAGEMENT SYSTEMS

		Lack of information about such systems	You do not want to replace the old accounting management system	You are afraid of losing control of the data	Due to the data security	Due to the privacy risk	Due to the price	Others
The number of employees of the company	Less than 10	15	6	7	13	4	13	7
	Less than 50	20	6	12	13	11	20	11
	Less than 250	24	10	6	13	8	14	4
	Over 250	2	2	0	3	2	4	3
The company's annual revenues	Does not exceed 2 million euros	26	7	12	17	8	20	14
	Does not exceed 7 million euros	18	10	9	11	9	13	5
	Does not exceed 40 million euros	15	6	4	11	7	16	1
	More than 40 million euros	2	1	0	3	1	2	5

6 APPENDIX. THE CORRELATION BETWEEN THE REASONS OF NOT USING THE CLOUD-BASED FINANCIAL MANAGEMENT SYSTEMS AND THE NUMBER OF EMPLOYEES AND ANNUAL REVENUES OF THE COMPANY

		The number of employees of the company	**The company's annual revenues**
Lack of information about such systems	***r***	0,085	0,042
	p	0,330	0,630
	N	133	133
You do not want to replace the old accounting management system	***r***	0,096	0,114
	p	0,274	0,191
	N	133	133
You are afraid of losing control of the data	***r***	-0,086	-0,068
	p	0,323	0,437
	N	133	133
Due to the data security	***r***	-0,006	0,095
	p	0,946	0,279
	N	133	133
Due to the privacy risk	***r***	0,093	0,109
	p	0,286	0,210
	N	133	133
Due to the price	***r***	0,022	0,123
	p	0,800	0,157
	N	133	133
Others	***r***	-0,028	-0,040
	p	0,753	0,647
	N	133	133