

Cloud Computinng and Outsorcing in Bosnia and Herzegovina and the World

Alem Kozar
International University Travnik,
Bunar bb - Dolac 72270
Travnik Bosnia and
Herzegovina

Milica Tešić
University of Business Studies,
Jovana Dučića, 23 a, 78 000
Banja Luka Bosnia and
Herzegovina

Mladen Radivojević
International University Travnik.
Bunar bb - Dolac72270
Travnik Bosnia and
Herzegovina

Abstract - Current global business environment demands day to day contrivance of new ways for improvement of efficiency and competitiveness. This is precisely why companies now days are resorting to outsourcing. Today, outsourcing has been used in IT sector as well. Generally, outsourcing in IT sector in Bosnia and Herzegovina has its boom. This article is focused on a research of concept of outsourcing and cloud computing in Bosnia and Herzegovina. The research will try to determine if and to what extent companies in Bosnia and Herzegovina are using cloud computing and outsourcing as business models.

Keywords: *Efficiency, competitiveness, outsourcing, cloud computing*

I. INTRODUCTION

Cloud computing has been a focus of higher interest in the last few years. Advancements in services oriented architecture (SOA) caused the creation of the virtual business or running business in which certain responsibilities have been designated to the online service providers. Cloud computing offers the implementation SOA where the IT resources have been offered as services that more available, flexible, and more attractive for business. The way of running business through Internet does not present news. Banks were first organizations that have been using the advantages of electronic network capabilities to run their own B2B (business to business) interactions. With the introduction of web and rapid growth of Internet users in the beginning of the 90es, companies such as Amazon and eBay were among the first entrants of the B2C model (business to consumers) of e-commerce. Since Internet presents fast and easy to use media that attract millions of users, today only rare companies are not available on the web and there is also a certain number of medium companies that are placing their services solely online. The main characteristic of the Internet technologies presents the fact that their all background IT systems have been operated mostly by the managers or owners of the companies. Motivated with the business agility, efficiency, costs cuts, and better competitiveness the owner of companies in the last decade have been focused mostly on the exploitation of business process outsourcing possibilities. In this process companies are delegating some of their responsibilities to the outside services' providers that are specialized for that specific kind of business. Namely, it is so much easier to reassign some of companies businesses' to the

companies specialized in that specific line of business instead of hiring people specialized for that specific area. The main outsourcing advantages present: reduction of financial costs, better quality, and availability. Te main risks present: the risk of losing managerial control due to the fact that a third party is taking over control of outsourcing process than hidden costs and data security.

Outsourcing of business activities became very popular with the introduction of SOA especially web technologies and services.

Based on some estimates the organization around the world invested 483 million \$ in 2013. In outsourcing of business activities and IT services. The fact that so many organizations in the world are willing to invest so much money in outsourcing speaks in favor of the efficiency of outsourcing as a service delivery model. It is very important to emphasize that manager that is responsible for planning or currently using outsourcing of IT services will have to consider the effects that outsourcing has on cloud computing. Namely, outsourcing of IT services with using cloud computing is far more cheaper version of outsourcing of IT services for many reasons (the services are paid based on the actual costs-pay per use, fixed monthly costs are lower because the cloud computing networks are using the advantages of shareable information infrastructure, users can increase or decrease costs depending on their own needs etc. Outsourcing of IT service plays the crucial role in the development of technological industry. The statistics from 2016. are supporting the growth of the above-mentioned services:

- 5,31% of IT services have been outsourced, and organizations will continue to do so in the years to come;
- 6. 89% of clients are satisfied with their outsourcing contracts
- IT healthcare outsourcing is expected to grow for additional 7.6% by the year 2018.

The outsourcing of business activities is in its boom in BiH (Porezni savjetnik, 2014). On a daily basis we are witnesses that job advertisements are filled with demands for programmers (software developers). Organizations are fighting for good personnel; they are offering a pleasant

working atmosphere, financial possibilities that are far more beneficial in comparison to the other sectors, and it seems that whole IT sector is in its boom. According to financial magazine Porezni savjetnik (2014) the reason for such a situation lies in a fact that BiH took all the best from the east and the west. Namely, according to them from the west we took the clients, big companies, projects, knowledge, new technologies for the expansion of the business domains. From the east “we took” businesses purely because of the fact that we are cheap and extraordinary capable work force. “We have become “European India”, we have become a state that offers quality personnel, and at the same time we offer European way of thinking” (Porezni Savjetnik, 2014).

Introduction of cloud computing significantly contributed to the further popularity of business process outsourcing. The cloud computing (CC) technology is based on the fact that all the data needed to the users are available at every moment at only one condition, and that is presence of network or Internet. CC presents the delivery of services instead of the product itself. Reduced investment expenditures in the computer infrastructure present the main reason of the CC popularity.

CC development is based on a model everything-as-a-service (XaaS). Virtual machines, infrastructure, and applications are used as services in the cloud. There are three basic models of CC:

- Infrastructure-as-service (IaaS),
- Platform-as-a-service (PaaS),
- Software-as-a-service (SaaS) (Broz, 2016).

The main limitations of CC technology are:

- Safety issues in regards to the confidential data that are available to the service providers,
- Higher demand for connectivity,
- Difficulties in determining who is responsible of losing the data,
- Legislative problems related to the different regional laws related to the data storage hardware.

II METHOD

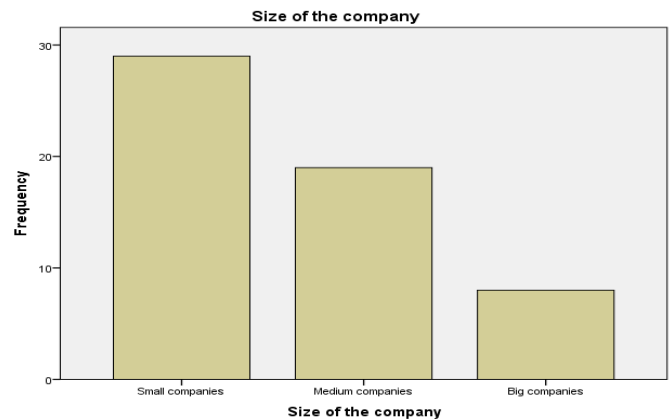
For the purpose of this research a questionnaire has been used that were filled by the companies in BiH. The main aim of this research was to determine to what extent are using CC and outsourcing as business models and to determine the main reasons of their usage or non-usage. The questionnaire was sent to the e-mail addresses of 100 companies in BiH. Out of that number there were 56 responses. The results were presented through frequencies' model of IBM software SPSS 23.

Regarding to outsourcing of IT services using cloud computing below are presented the conclusion from the research conducted by the USA Ministry of Trade/Commerce in April 2016.

III RESULTS

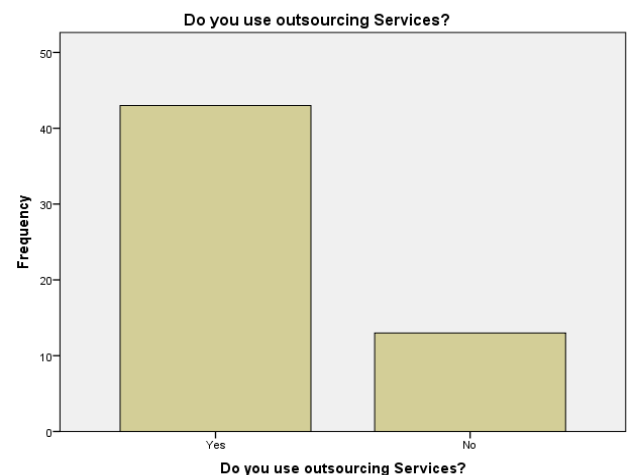
The size of the interviewed companies is presented in Graph 1, from where it is visible that 29 companies or 51,8% comes from the category of small companies. There were 19 or 39,9% of medium companies, and there were 8 or 14,3 big companies.

Graph 1: Companies' size



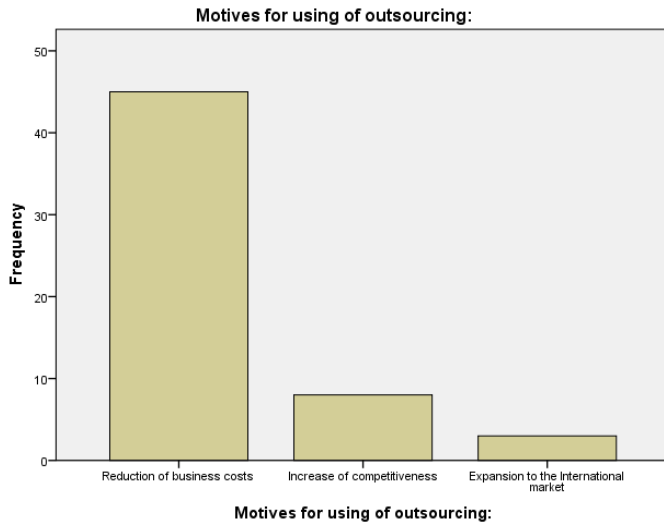
Out of 56 interviewed companies 43 of them or 76,8% are using outsourcing services, while 13 of them or 23,2% doesn't (Graph 2).

Graph2:



As main motives for using outsourcing (all interviewed companies answered this question) most of the companies, 45 of them or 80,4% stated that reduction of costs is the main reason for using outsourcing, 8 of them or 14,3% stated the better the increase of competitiveness is the main reason while 3 companies or 5,4% stated that the expansion to the international market is the main reason for the using of the outsourcing (Graph 3).

Graph 3: Motives for using outsourcing



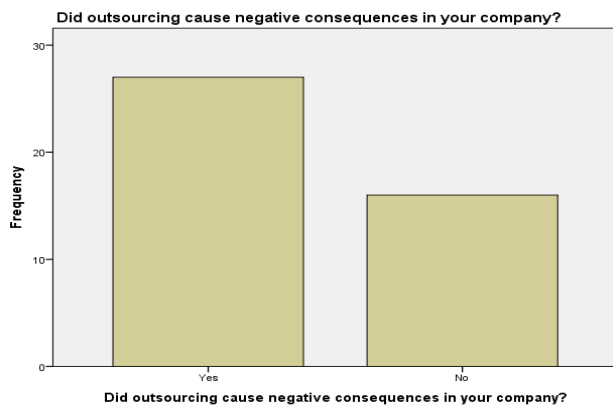
Most of the companies out of those 43 who were using outsourcing to be exact 27 of them or 48,2% stated that outsourcing in their companies resulted in negative consequences as well, while at 16 companies or 28,6% outsourcing didn't cause negative consequences (Graph 4).

At the most of the companies 25 of them or 44,6% of the outsourcing increased competitiveness while 18 of them or 32,1% of them stated that outsourcing did not increase competitiveness of their companies (Graph 5).

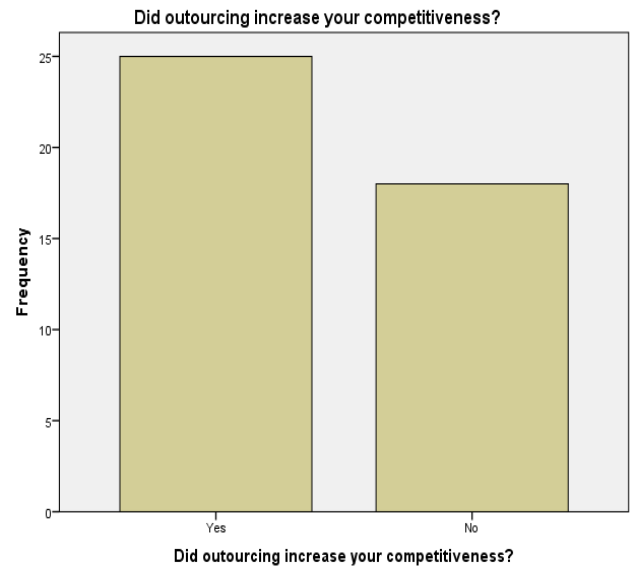
At 22 companies or 39,3% the subject of outsourcing were IT. At 9 companies or 16,1% accounting were subject of outsourcing. Marketing was subject of outsourcing at 7 companies or at 12,5% of them. HR were subject of outsourcing at 3 companies or at 5,4% of them, while finances were subject of outsourcing at 2 companies or at 3,6% of them (Graph 6).

At 20 companies or at 35,7% outsourcing totally met their expectations and goals. At 19 companies or 33,9% outsourcing partially met their expectations and goals while at 4 companies or at 7,1% outsourcing didn't meet their expectations and goals (Graph 7).

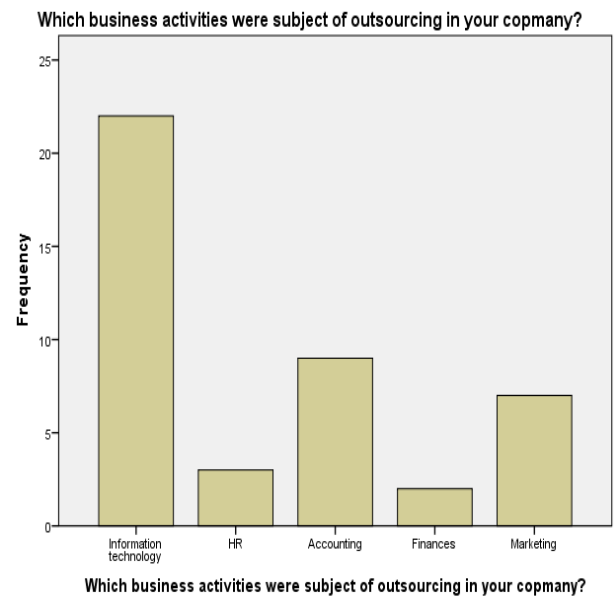
Graph 4: Negative consequences of outsourcing



Graph 5: Competitiveness and outsourcing



Graph 6: Subject of outsourcing



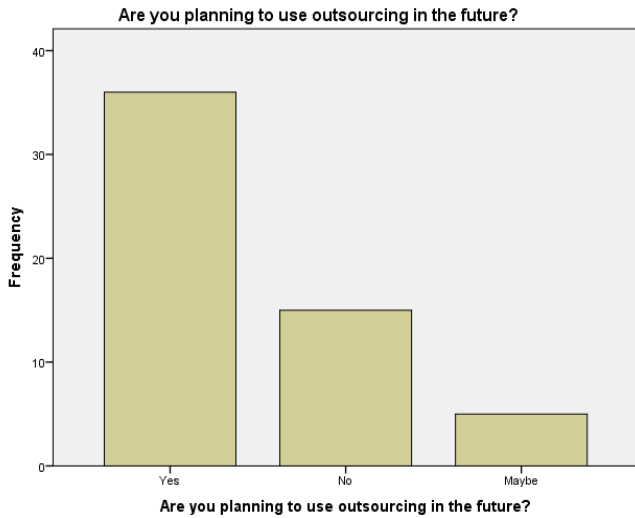
Graph 7: Outsourcing and achieving company's goals



Out of 56 interviewed companies 36 of them or 64,3% are planing to use outsourcing of their business activities in the future. 15 of them or 26,8% does not plan to use it in the

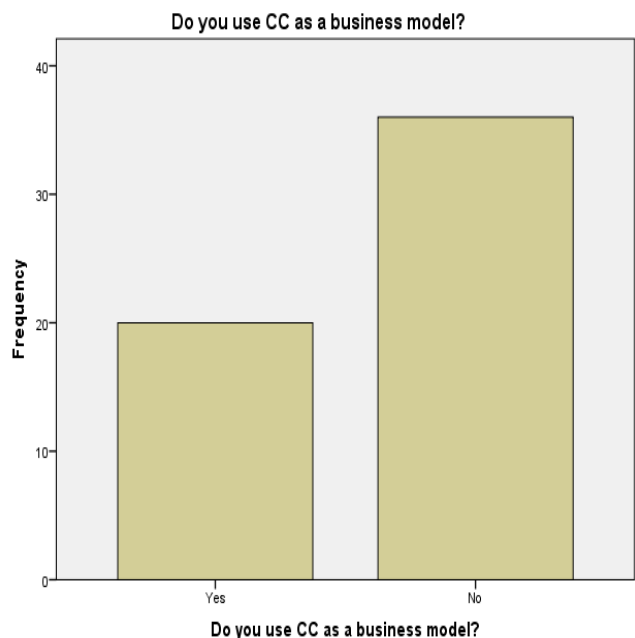
future, while 5 of them or 8,9% stated that they might be using outsourcing in the future (Graph 8).

Graph 8: Plans for using outsourcing in the future



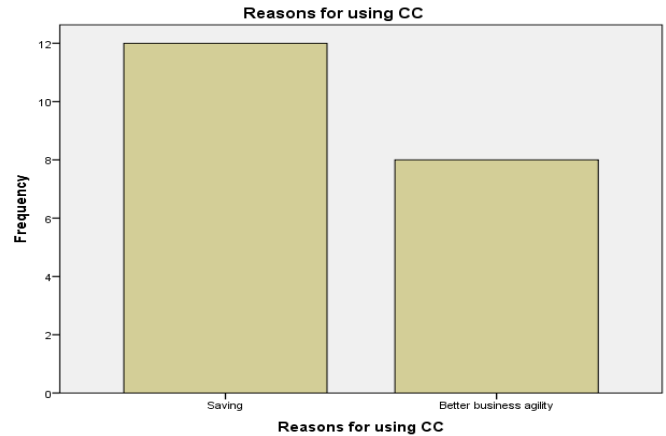
20 companies or 35,7% of them are using CC technology, while 36 of them or 64,3% doesn't use this business model (Graph 9).

Graph 9: Usage of CC as business model



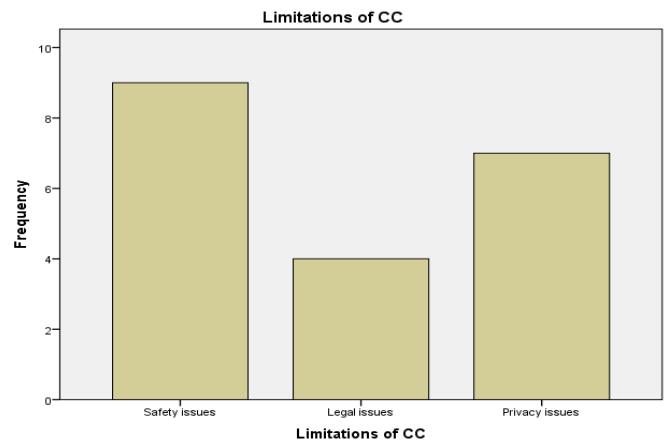
Saving was stated as a main reason for using CC technology by 12 companies or 21,4% of them, while better business agility has been stated as a main reason for using CC technology by 8 companies or 14,3% of them (Graph 10).

Graph 10: Reasons for using CC



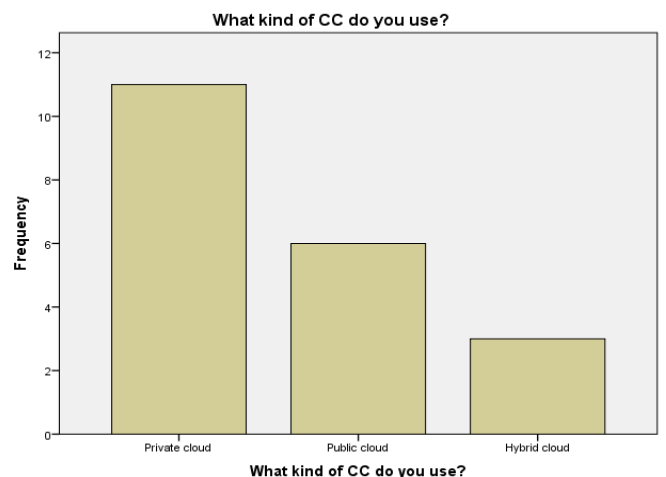
Safety issues were named as main CC model limitations by 9 companies or 16,1% of them. To the 7 of them or 12,5% the main limitation presents privacy issues, while to 4 of them or 7,1% of them legal issues were main limitations of CC model (Graph 11).

Graph 11: Limitations of CC model



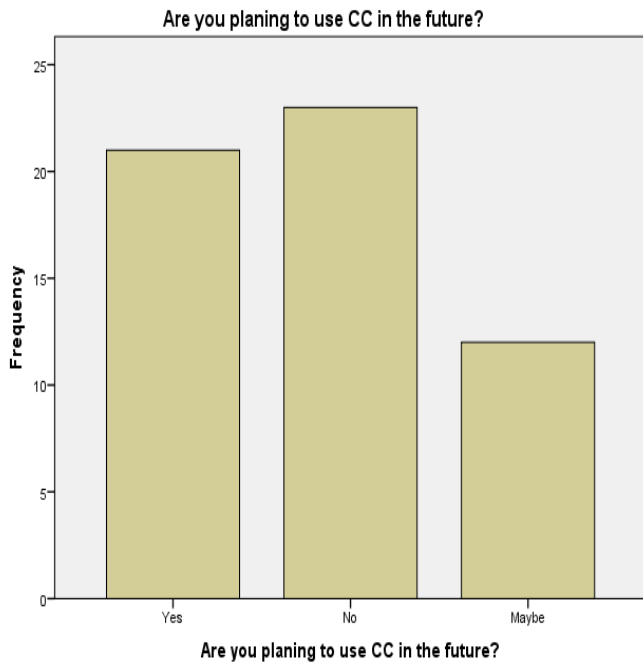
11 companies or 19,6% of them are using private cloud. 6 of them or 10,7% are using public cloud, while 5 of them or 3,4% are using hybrid cloud (Graph 12).

Graph 12: The kind of CC companies are using



Still the majority of companies, 23 or 41,1% of them are not planning to use CC technology in the future. 21 or 37,5% of them is planning to use it, while 12 or 21,4% of them stated that they might be using the CC technology in the future (Graph 13).

Graph 13: Plans for using CC in the future



According to the research conducted by the USA Ministry of Trade in April 2016, Australia presents attractive opportunities for cloud exporters. Australia is a country with reliable and advanced infrastructure, a country with free trade orientation and an affluent consumer base. Market surveys reveal that the Australian cloud services market has plenty of room to grow. Australian market fundamentally remains a strong market for U.S. cloud services providers.

Brazil presents the largest market of computing services in Latin America followed by Mexico, Chile and Argentina. It is a very competitive market for the service providers around the world. Yet, service providers in this market have to keep in mind safety issues, connectivity shortfalls, high costs and a recessive economy throughout 2016.

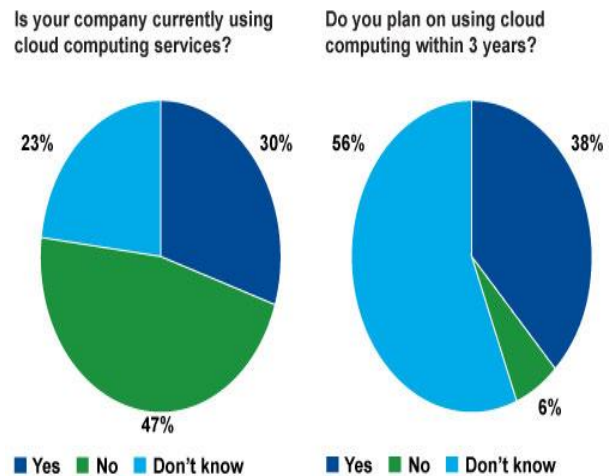
Canada, ranked number one in this report, presents a wide opportunity for various cloud-related services. However, competition is quite fierce as multiple U.S. companies and other international leaders are already in operation there.

Although Germany is the 6th ranked market for cloud services, it has serious limitations for U.S. cloud providers. While Germany offers great potential, there are limitations to market access, particularly among SMEs, for U.S. providers. Big American companies as service providers do not have these problems.

Regarding the number of users that are using cloud computing services in 2012 Deloitte conducted an online questionnaire on 111 respondents (world companies that are using or planning to use outsourcing of IT services by using

cloud computing technologies). Based on the results thirty percent of respondents said their companies currently use cloud computing services, most often for IT and/or telecommunications. Among those not currently using the cloud, about a third (38 percent) indicated they plan to do so within three years. Very few respondents (6 percent) definitively stated that their companies would not adopt cloud computing services within the next three years. The reasons for not using the above-mentioned technology they indicated: data privacy issues and data safety issues (Graph 14).

Graph 14: Usage of cloud computing services in the world in 2012



Source: Deloitte (2012). The Cloud and Outsourcing: The New World Awaits. Available at: <http://deloitte.wsj.com/cio/2013/01/14/the-cloud-and-outsourcing-a-new-world-awaits/>

IV DISCUSSION

The other authors were also involved in researching the CC and outsourcing as well. The implementation of CC technology in BiH is on a very low level. The main reasons for that are: the lack of quality of communication infrastructure and the complexity of legal regulations. Bigger companies in BiH are starting to implement certain IT innovations that are related to the CC. The main reasons for such representation of CC technology are related to mistrust and lack of information of business' entities. The education and legal compliance in BiH can motivate users to implement this management system in companies (Janković & Savić, 2015). On the other hand, based on the research conducted by professional magazine, Porezni savjetnik in 2014 the outsourcing in IT sector is in its boom.

In Croatia, Broz (2016) in her research showed that outsourcing and CC have positive effects. The subject of outsourcing of companies in Croatia is almost all business activities, and as expected the most popular are ancillary activities. Besides saving and the increase of competitiveness outsourcing provides companies with the access to new resources without significant investments. That advantage was recognized by many companies in Croatia, and the access to internally unavailable resources was the common reason for the implementation of outsourcing.

Vindišman (2015) in his research showed that are not familiar enough with the possibilities of CC technology, or to be more exact they are not aware enough of benefits of CC and that they could advance their business and to reduce costs with the assistance of CC. The companies that are just starting doing business should to use CC to avoid costs of construction of their own IT structure. When a user rents services from a cloud he pays exactly what he is using, while at purchasing of infrastructure all resources are not used enough. At the end of his research Vindišman (2015) came to the conclusion that outsourcing and CC have tendency for big growth in the following years, especially on Croatian market. IT is developing more on a daily basis, and companies that don't have IT as their main activity can not follow all the innovations and from those reasons they will be forced to use outsourcing of IT.

Based on the results of a research conducted by USA Ministry of Trade in April 2016., the data privacy and data safety issues still presents the main limitation of the cloud computing technology. Government efforts to maintain national security and address data privacy issues for their citizens remain a central challenge for the industry.

V CONCLUSION

The globalization process influenced big changes in a business world and the phenomenon of bigger and stronger competitiveness. In those circumstances the outsourcing trend is intensified. CC is a business model that is related to the outsourcing of IT. CC is one of the services that have big growth in the area of IT. It is based on the principal that user for his/her business rents computing resources form the service providers instead purchasing them. Users depending on their own needs can rent one of three basic models: infrastructure as a service (IaaS), platform as a service (PaaS), or software as a service (SaaS).

CC provides operators with reduction o operational costs, improvement of working and business processes, and creation of new income sources. The most important limitations are availability and safety. Users are asked to have business located on someone else's infrastructure. If that infrastructure becomes unavailable from some reason that can cause huge loses for users. Besides that the services themselves can contain confidential data that have to be properly secured in the cloud. A cloud provider has to establish relationships with clients that are based on trust and provide them with privacy and data protection (Broz, 2106).

Research results showed that most of the interviewed companies (76,8%) are using outsourcing of their business' processes. The main motives for using this model according to the results are: reduction of business cost, increase of competitiveness and the expansion to the international market.

Most companies stated that outsourcing resulted with some negative consequences in their companies but at the same time it improved competitiveness. In most of the cases IT were the subject of outsourcing 39,3%). Outsourcing totally met the expectations and goals at the 35,% of companies. Most of the interviewed companies, 64,3% of them are planning to use outsourcing in the future.

CC technology has been used by 35,7% of the companies and they are mostly using private cloud. For the majority of interviewed companies the main reasons for using CC technology are savings and better business agility. Safety issues were named as the main limitation of the C model. Interviewed companies are still skeptical regarding CC usage in the future, so 41,1% re not planning to use CC in the future.

The above-mentioned is in accordance to the research conducted by World Economic Fund regarding readiness for using IT on private, business or government level. Namely, based on the findings of that research BiH is on the 64. position regarding readiness of using IT on private level, on 114. position regarding readiness of using IT on business level and on 134. position regarding readiness of using IT on government level (Association for economic development, 2012.).

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