# THE ANALYSIS OF THE KEY DRIVERS AND BARRIERS OF CLOUD MIGRATION IN COMPANIES IN BOSNIA AND HERZEGOVINA

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## Abstract

*The effective use of cloud technology eliminates the barriers and potential IT obstacles that companies face by using a traditional way of developing a platform for the information systems, as a backbone of modern business. Practical application of any technology and innovation produces distinct advantages and risks that need to be carefully analyzed, identified, and managed within the company. Cloud technology will perform an increasing role in the future (primarily in developing countries) because it will be effective to combat certain problems that cause inefficiencies that threaten company's competitiveness, operational flexibility, and thus its existence. The research was conducted between February and September, 2019 in the form of online research. The research was sent to 387 participants, but in total 84 questionnaires were filled in full. According to the research results, the respondents believe the key drivers of cloud migration comprise the following: improving efficiency, enabling more extensive data sharing capabilities, improving security, increasing innovations, reducing costs. The aforementioned research results are correlated with studies conducted by other authors over different time periods. According to the research results, the most significant obstacles of cloud migration include the following: lack of internal experts, privacy, lack of responsibility of cloud providers in case of security incident, costs and complexity of migration to the cloud, etc. The research results point to the conclusion that the use of cloud technology increases the degree of agility, operational flexibility, economic productivity, and competitiveness of companies. An increase in the level of cloud awareness as well as in the education of top managers, with simultaneous internal and external changes within the company, would consequently result in the increase of cloud migration in domestic companies.*

**Keywords:** cloud computing drivers and barriers, productivity, agility, efficiency

**JEL:** L26, C38

## 1. Introduction

Cloud technology can respond to the challenges of business fluctuations and changes in resource and service requirements, which is not the case if a company has its own infra-structure. The decision to migrate to the cloud represents a strategic decision of the company. However, there are certain drivers (triggers) that can influence this decision, which will be presented in the paper. Cloud technology offers a number of benefits, whose proper implementation and day-to-day deployment cause multiple beneficial effects, both in business improvement, costcutting, and productivity-enhancing segments. A digital transformation is a global trend (Sayabek, Suieubayeva & Utegenova, 2020) also present among domestic companies, especially among companies whose business nature requires the application of modern information and telecommunication trends. This additionally includes subsidiaries of large foreign companies, but also modern companies that follow global trends and want to utilize information and telecommunications technologies for innovation and productivity increase. The impact of telecommunication and information technology with the process of digital transformation and application of cloud technology launches certain challenges such as: Integration Across the Ecosystem, Rationalization and Standardization, Building Digital Talent, Securing Digital Adoption, Establishing Value and Return on Investment (ROI) (Aconex, p. 3). The challenges presented can be regarded as an opportunity, but at the same time a threat if not recognized by top management.

The cloud can be presented as a platform, which, depending on the payment model, posse sses the elements and characteristics of leasing in which companies use resources (*e.g.*

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computer resource, storage, networking) and services for the period and amount that the company needs. One of the trends in the use of cloud technology services is analytics, extremely important for the company's business, primarily related to Business Intelligence (BI) or some other advanced tools that enable the company to properly analyze and monitor modern and traditional business indicators. The research in this paper will include an analysis of the key drivers for domestic companies to partially or fully migrate to the cloud technology, as well as an analysis of the key barriers faced by domestic companies that slow down or hinder the successful deployment of cloud technology in domestic companies.

The main goals of the research are set as follows:

- Identification of the key drivers of business migration to the cloud in domestic companies;
- Identification of the key barriers of business migration to the cloud in domestic companies;
- Identification of the cloud impact on the operations of domestic companies.

The hypothesis is postulated as follows:

- In the case of implementing cloud technology, domestic companies have the opportunity to reduce costs, improve business efficiency, become more agile, and depending on needs and requirements (internal and external) they can quickly and easily expand existing and implement new information systems such as analytical and BI tools.

## 2. Literature review

An availability of information and data from anywhere, at any time, represents the basis of modern business of any industry. By applying modern information and telecommunication technologies, companies have the opportunity to easily and efficiently access information systems that represent the backbone of modern business. Increasingly complex markets and increasing stakeholder influence require companies to maintain a more flexible and agile approach to business. Therefore, a significant number of companies are entering the process of digital transformation, which enables them to develop a platform for implementation of modern information systems (FIS, 2019) (CRM - Customer Relationship Management, DMS - Document Management System, *etc*.). This additionally creates preconditions for the implementation of various tools for data processing and analysis (BI - Business Intelligence, ML - Machine Learning, AI - Artificial Intelligence). As companies enter the digital transformation process, they start with the implementation of one or more information systems such as (Oracle, 2018, p. 4) Enterprise Resource Planning (ERP), Enterprise Performance Management (EPM), Customer Experience (CX), Human Capital Management (HCM), and Supply Chain Management (SCM).

The application of cloud technology through migration or implementation of new information systems enhances the capabilities and functionality of companies by making their data and information systems available from anywhere at any time. This is supremely significant for companies with geographically distributed outlets or branch offices, as well as employees whose job descriptions require constant movement (*e.g*. distribution, sales) or constant monitoring that does not imply physical presence (*e.g.* monitoring daily KPIs (key performance indicator)).

Company managers should be aware if the company does not remain competitive, their competitors certainly will (Microsoft Learn, Introduction to Azure solutions), and thus the business of the company would be jeopardized. Increasing competitiveness also means improving and innovating different aspects of the company's business. Business improvement through business process improvement is a way to increase company's competitiveness (Tatić, Haračić & Haračić, 2018, p. 39). However, this is not enough. It is crucial for companies to achieve a synergic effect between business processes, employees and information systems. Therefore, it is necessary to devise a systematic approach analyzing both internal and external requirements, on the basis of which concrete activities will be undertaken to improve or change business processes, technology or information systems, with simultaneous employee involvement (*e.g.* education, redeployment, motivation, *etc*.).

The company's digital transformation equally involves changing business processes where it is possible to transform business processes with the help of technology by adopting recent innovative models (Stuart, 2016, p. 2). Under conditions of global competition, the companies need to be agile to be able to create innovative products and services (Oracle, 2010, pp. 11-14), primarily in response to competition activities, and often in response to customer demands. The application of cloud technology eliminates the barriers and obstacles caused by using the traditional way of developing a platform for information systems as the backbone of modern business, which is about obtaining the resources you need in the amount and time they need.

One of the main obstacles to more significant deployment of cloud technology in companies in Bosnia and Herzegovina (BiH) is the lack of government support. The government does still not have the strategy for SME development. There is no policy and there are no specific goals for SME development in BiH (Džafić, 2014, pp. 73-89). There is also a lack of specific legislation, measures, instruments, and harmonized organizations to support SME development. The lack of coordination between state and entity institutions, and centralized tax system are major obstacles to the creation of a framework policy for SMEs (Džafić & Omerbašić, 2018, pp. 2-5).

By migrating to cloud technologies, companies have the opportunity to focus on the primary business and let the platform necessary for the operation of information systems to be the responsibility of cloud providers. Cloud providers, due to economies of scale (Gorelik, 2013), can offer their services at an affordable cost while providing numerous other benefits/services. Some of the benefits of migrating to the cloud are (Microsoft Learn, Microsoft Cloud Adoption Framework for Azure, Microsoft Cloud Adoption Framework for Azure: Define strategy, Capital expenditure (CapEx) versus operational expenditure (OpEx), Govinda, Okereafor & Babu, 2012):

- The elimination of CAPEX (Capital expenditures) involves the investment in infrastructure related to: servers, network components, backup and archive costs, Data center infrastructure costs, and ultimately, these costs include the salary of technical personnel, etc.
- Most cloud providers support users with access to a platform that enables them to independently activate the services they need, thereby affecting operational expenditures (OpEx) which include: leasing software and customized features, scaling charges based on usage/demand instead of fixed hardware or capacity, billing at the user or organization level, *etc*.
- The flexibility that enables the delivery of computing resources at the time and volume required.
- Possessing your own data center requires owning/training IT staff whose day-to-day operations will relate to the administration, management and maintenance of the data center. With the application of cloud services, all hardware-related jobs and certain software are transferred to the cloud provider.
- Cloud providers constantly monitor data center operations, continually upgrade hardware and software, and have multiple data centers across different geographical locations, increasing security (in the case of service with that requirement). Due to the economy of sales, cloud providers are able to provide services at low cost, which is more favorable for companies than maintaining their own infrastructure.
- Cloud providers have adequate backup systems (often in multiple locations), as well as disaster recovery, providing high reliability and data security at extremely low cost.

In addition to these advantages, there are many other advantages including (Mohiuddin *et al*., 2012, p. 202): Reliability, Scalability, Lower initial investment, Device independent, Easier to manage, Security, Deploy faster, Location independent. It is significant to note the application of cloud technology is not solely intended for profit oriented companies, but it can also be widely used in educational institutions and universities (Rania, 2017, p. 2). Certain cloud providers provide services

for special conditions for educational institutions or students, for instance, enabling students free access to learning and testing, as well as the use of various services such as: calendars, e-mails and other services under cloud technology.

These advantages are just some of the advantages of cloud technology. The paper entitled *The benefits of using cloud technology in Bosnia and Herzegovina* (Tatić, Džafić, Haračić & Haračić, 2020) presents many other in more details, as well as Cloud Deployment Models, as: Software as a Service (SaaS), Platform as a such as: Public, Private and Hybrid cloud. Various cloud services are also presented, such Service (PaaS), and Infrastructure as a Service (IaaS).

Cloud technology can respond to challenges related to fluctuations and demands change, due to internal or external requirements in a short period of time (Lorido-Botran, Miguel-Alonso & Lozano, 2014). These challenges relate to increasing or decreasing resources and/or required services (which is also presented in Figure 1). Unfortunately, this is

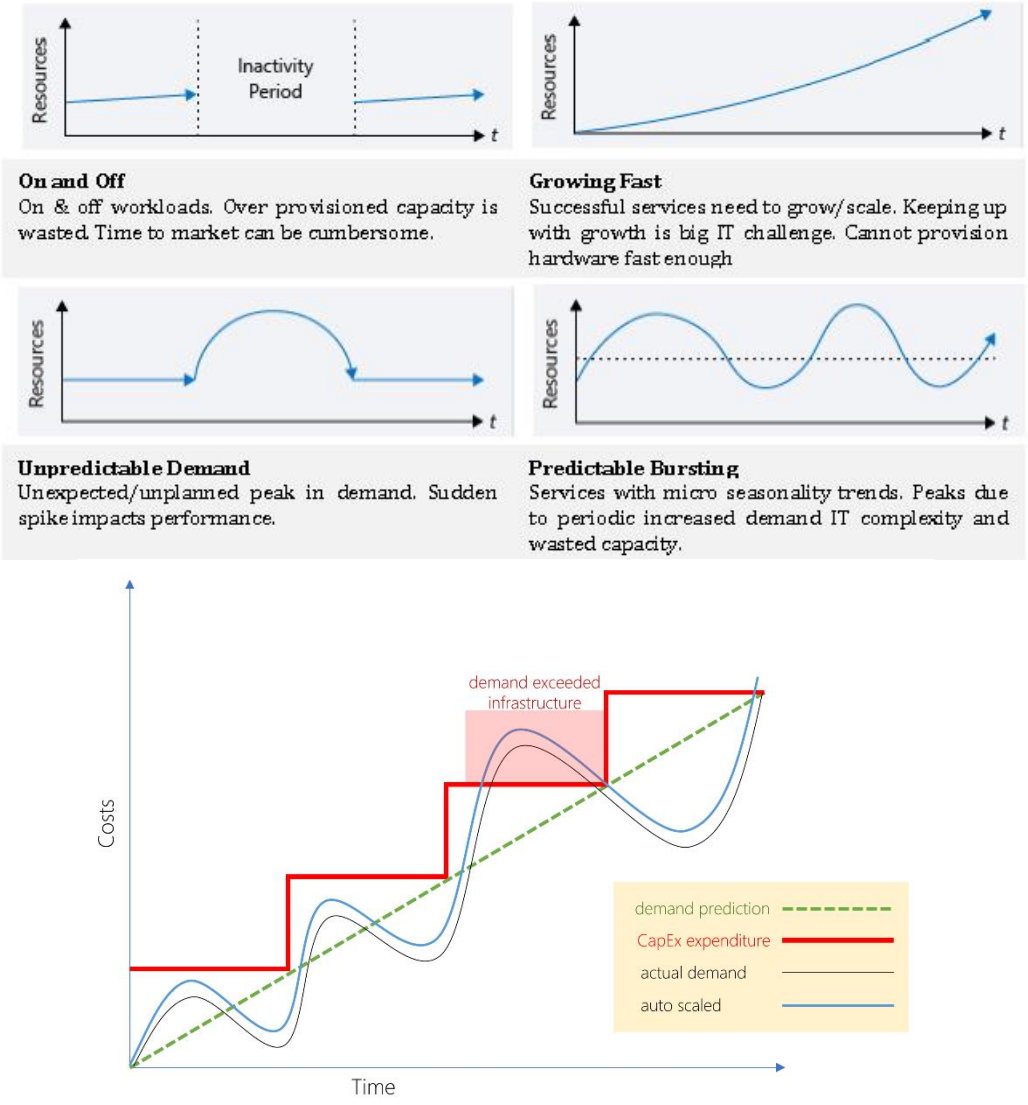


Figure 1. *On-premises & cloud infrastructure fluctuating scenarios*

Note: Demand and growth can be unpredictable and can outpace expectation, which is a challenge for the CapEx model.
Source: Microsoft Learn

not the case if the company utilizes its own infrastructure or data center.

The first figure presents various scenarios that enable the company a considerable degree of agility and flexibility. It is significant to point out that cloud technology does not merely refer to flexibility and agility of the computer resource, but also to different services and solutions (Intellipaat) which have a tendency to be used solely with the help of cloud technology. Moreover, it cannot be implemented in a company data center. This implies that the companies that embrace the cloud as a core technology and platform for IT and its business enter a digital transformation process that will enable them the following: to improve productivity, increase market share, increase profitability, and more.

The decision to move to the cloud is a strategic decision of the company, however, there are certain triggers that can influence the decision to base the company on the cloud, and they relate to (Microsoft Learn. Microsoft Cloud Adoption Framework for Azure: Define strategy, Carroll, Kotzé & Merwe, 2011):

- Requirements for new technical capabilities
- The need for flexibility to meet market needs
- Lower costs
- Reducing vendor dependency or technical complexity
- Increasing the degree of agility
- Optimization of company business processes
- Improve user experience
- Changes in the market due to the occurrence of new competitors/products

Cloud technology provides an opportunity for companies to increase capacity and foster a dynamic environment without owning their own IT experts and purchasing their own infrastructure, licenses, *etc*. (Subashini & Kavitha, 2011, p. 1). A significant number of companies believe cloud technology can drive innovation within companies by: enhancing communication within the organization, sharing knowledge and information, helping to establish business decision-making systems through the use of sophisticated reporting tools, using different services (primarily SaaS), *etc*. (Windekilde, 2015, pp. 27-28). Using cloud as the basis for business advancement and innovation is primarily dependent on the corporate culture of the company. The cloud represents an opportunity whose capacity depends on the vision of leaders within the company and the commitment to formulate strategies and goals based on unconventional and non-traditional ways of thinking, as well as to apply modern telecommunications and information technology.

It is critical to note the application of each technology and innovation of the business bring certain advantages and risks (Islam, Weippl & Krombholz, 2014, p. 1), which need to be analyzed, identified, and managed within the company. The company should keep up-to-date on the risks of cloud technology and devise adequate activities to reduce or eliminate them. It is equally critical to point out there are regulations in certain countries that can represent a barrier to the implementation of cloud technology.

In such cases, legislations do not follow current technological trends and do not recognize technological solutions and the possibilities for their application, which presents a tremendous problem for companies looking to migrate to the cloud technology (*e.g*., storing user data on the cloud, digital signature, *etc*.).

Cloud technology is an opportunity to improve the business, reduce costs, increase efficiency, and increase the level of business commitment, without the need to invest in its own infrastructure. It is significant to emphasize that modern technology should be introduced and implemented no matter of industry branch (Albini, Tokody & Rajnai, 2019).

Cloud technology will perform an increasing role in the future, because with its help the company will be able to resolve certain problems cau-sing inefficiencies that threaten its compe-titiveness and flexibility (Si Xue & Wee Xin, 2016, p. 1), and therefore the survival of the company. Cloud technology cannot overcome problems related to inefficient business pro-cesses, problems resulting from unclearly defined processes/ownership, as well as pro-blems

related to corporate culture and HR. The application of cloud technology can be a significant driver of business development and improvement, especially if the company migrating to the cloud is efficient and effective.

Cloud technology, like many other information technologies or information systems, is not a complete solution that will eliminate bottlenecks and black box syndromes (Haračić, 2012, p. 37). It is critical to note business migration to the cloud is a complex project that requires the active involvement of high-level managers and leaders who need to create an adequate migration plan and strategy that will be acce-pted by employees (Microsoft Learn. Micro-soft Cloud Adoption Framework for Azure: Summary and resources). Additionally, the management needs to define clearly the goals and strategies, as well as to ensure employees (internal or external) possess the necessary skills, knowledge and experience.

The goal of the migration to the cloud is to increase effi-ciency and effectiveness (Microsoft Learn. Cloud Concepts - What is cloud computing?), which is why it is necessary to have efficient business processes. Before migrating to the cloud (as well as implementing other major changes within companies, *e.g*. reorganization, upgrade of existing or procurement of new information systems) it is of utmost impor-tance to map business processes, to improve them by applying BPI (key performance indicator) or to redesign the same with BPR (business process reengineering) techniques (Tatić, Haračić & Haračić, 2018, p. 35).

Most companies accumulate a wealth of data that can serve as the basis for business improvement techniques (Microsoft Learn. Microsoft data estate migration and modernization: Gaining insights from your data). The information stored in one or more databases is a source that can greatly assist in developing an adequate decision-making system and in making day-to-day operational as well as strategic decisions.

Digital transformation enables the creation of synergistic effects between people, data, and processes whose end results should be creating added value for the user and increasing efficiency and competitiveness. Digital transformation should be accompanied by an improvement/change in corporate culture that will be based on customer commitment, business processes and data (Microsoft Learn. Enabling digital transformation: What is digital transformation?).

Digital transfor-mation is a trend, extremely important and significant for companies and is a way of cre-ating new value and transforming the tradi-tional way of doing business in many industries (World Economic Forum, 2016, p. 6, IDG, 2018).

Changing in the corporate culture is equally remarkable for the process of digital transformation, which also needs to be promoted or evolved. This process is complex and requires time and a clear vision, strategies and goals that must be constantly monitored to create a clear picture and per-ception of all employees (including managers and leaders) (Capgemini, 2017, pp. 8-19).

Migration to the cloud also transforms the way that companies collect, store, manage and process information, and helps them to create new value from the data they possess (Microsoft Learn. Microsoft data estate migration and modernization: Data modernization.). The results of the research (Tatić, Džafić, Haračić & Haračić, 2018, pp. 34-36) suggest the application of BI (Business Intelligence) has multiple advantages and beneficial effects on the business. Migrating to the cloud makes it easier to implement advanced analytics tools such as BI tools (Sirin & Karacan, 2017), where it is important to point out that certain cloud providers offer their own solutions that do not require specialized IT professionals to deploy, nor do they need significant customization, provided that the companies have defined KPIs. This is precisely the reason why cloud technology is extremely important for companies. Therefore, the cloud is a flexible platform that supports the present and future requirements of companies.

The previous research has also confirmed that in BiH there are numerous obstacles to the development of manufacturing companies in

particular. Of these the most significant external obstacles are: bureaucracy, corruption, lack of financial stimulation/government support for the development of manufacturing enterprises, lack of government measures to stimulate employment, quality of the workforce and quality, and costs of telecommunications (Džafić, Zahirović, Okičić & Kožarić, 2011, p. 167).

## 3. Research method

The research was conducted between February and September, 2019 in the form of online research, created through Microsoft Forms and distributed by email, Skype, Viber, and LinkedIn. The research was sent to 387 participants, but in total 84 questionnaires were filled in full. The research questions werecreated on the basis of the following research: Deloitte (2017), Sahandi, Alkhalil & Martins (2012) and Reza, Adel Justice (2013). The research results were processed in Microsoft Excel and will be presented in graphical form in the paper.

## 4. Results and discussion

The research results show a significant number of the respondents is from the telecommunications sector, then services and manufacturing.

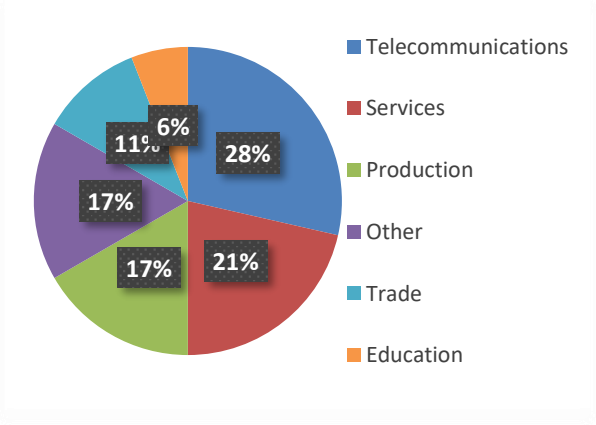


Figure 2. *Industry branch of your company*

Source: Author's analysis

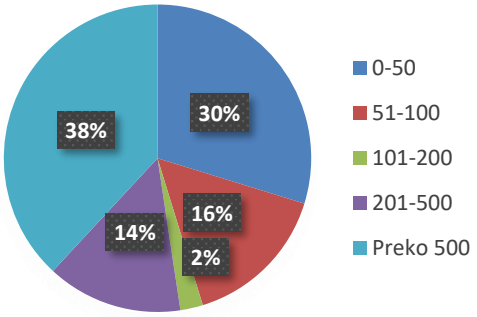


Figure 3. *Number of employees in the company*

Analyzing the number of employees within the companies, we can conclude a si-gnificant number of the respondents belong to the companies with 0-50 employees and over 500 employees. Based on the results of the research, we can conclude that the very few respondents stated their company used the cloud completely, while on the other hand, a large number of the respondents stated their company did not use the cloud in their business at all (detailed information presented in Figure 4).

A significant number of companies in BiH use certain SaaS services primarily related to e-mail services. Companies that migrate their businesses to the cloud will use a larger number of SaaS services (*e.g.* CRM 365, Dynamics 365, *etc*.) and thus the company will have less ability to change cloud providers.

Because of this, the vast majority of cloud providers will implement a large number of PaaS and SaaS services that can be exclusively used on a cloud, or with a particular cloud provider, which is one way of differentiating them from other cloud providers.

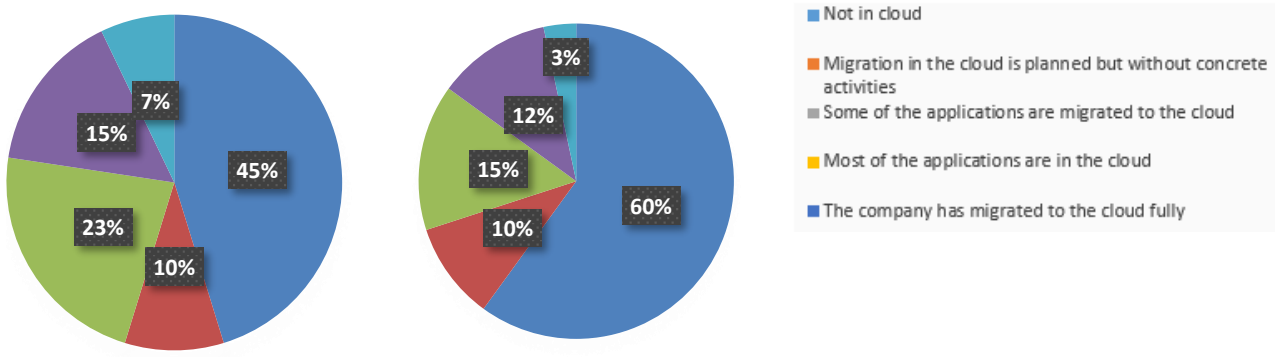


Figure 4. *How would you describe the process of migrating your business to the cloud?*

Note: The information on the right refers to the research results without including the respondents from the telecommunications sector (60 respondents included in the analysis)

Source: Author's analysis

Analyzing the research results, it is evident that a significant number of the respondents possess their own infrastructure, which they use for one or more information systems such as ERP. These research results are similar to the research results presented in another research entitled: "The use of business intelligence (BI) in small and medium-sized enterprises (SMEs) in Bosnia and Herzegovina" (Tatić, Džafić, Haračić & Haračić, 2018).

Based on global trends, market demands and needs, we can conclude an increasing number of companies in BiH will migrate a part or all of their business to the cloud in the near future. This primarily depends on the legislation, which represents one the key barriers, not a motivation for companies to partially or fully migrate their businesses to the cloud.

The data presented in Figures 5 and 6 present the data about the respondents from the telecommunications sector (24 respondents or approximately 1/3 of the total number of the respondents), as well as the respondents belonging to other branches of industry (60 respondents or approximately 2/3 of the total number of the respondents). The detailed division is presented in Figure 2.

Analyzing the results of the research presented in Figure 5, the respondents consider the following key drivers for the transition to the cloud: improving efficiency, more extensive data sharing capability, improving security, higher innovation, and reducing costs. The key motives or drivers for the companies relate to the elements that greatly influence efficiency, effectiveness and competitiveness.

If we analyze the results of Deloitte survey in 2017 (presented in Figure 5) with the results of this research, then it is possible to observe a correlation between the key drivers for the migration to the cloud.

Numerous benefits of cloud technology enable companies to increase flexibility and agility (Kofax, 2019), which are some of the key reasons why companies will increasingly migrate to the cloud in the future.

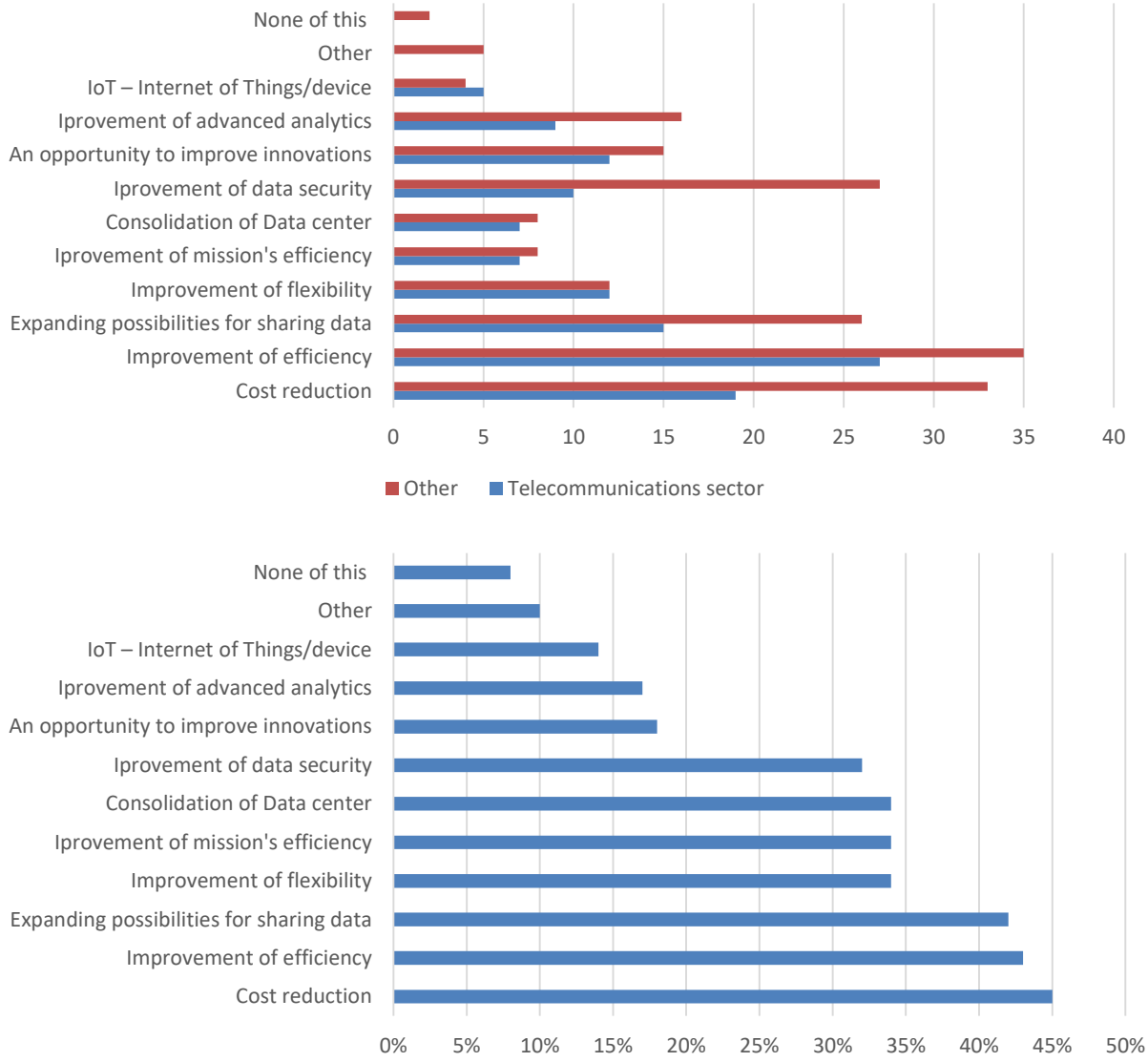


Figure 5. *In your opinion, what are the key drivers for your organization to more to the cloud technology?*

Source: Deloitte, 2017

The research results imply that domestic companies recognize the benefits of cloud technology, primarily in tangible segments that directly affect the cost. Efficiency and effectiveness of business are some of the key reasons why domestic companies would partially or fully migrate their businesses to the cloud.

However, it is extremely significant that the respondents recognized the role and importance of intangible segments that are affected by the cloud, whose impacts may not be directly measurable, but which certainly produce the effect of increasing productivity and efficiency (*e.g.* analytics and reporting).

The research conducted also covered the segment of barriers and obstacles of migration to cloud technology.

Some of the most considerable obstacles and barriers (exact data presented in Figure 6) according to the results of the research are: lack of in-house experts, privacy, confidentiality of private data, lack of providers' responsibility in case of security incident, costs and complexity of migration to the cloud.

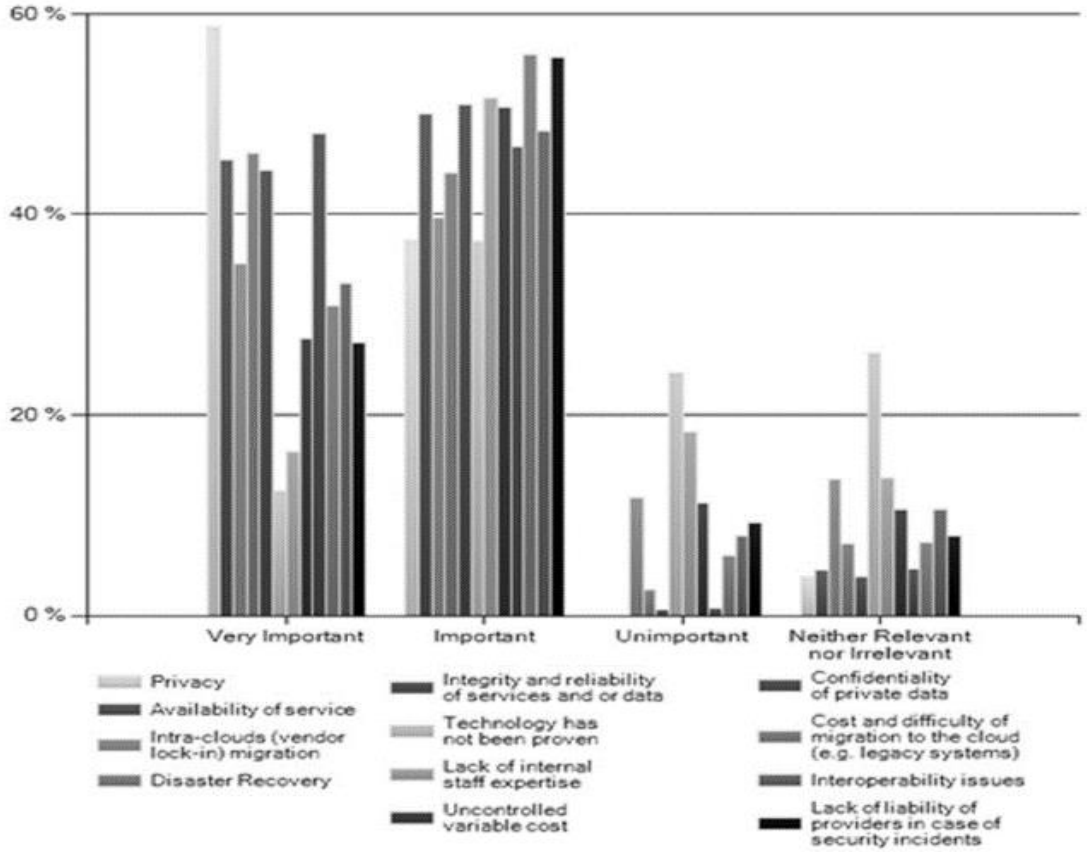


Figure 6a. *What are your biggest obstacles/barriers for migrating to the cloud?*

Source: Reza, Adel & Justice, 2013

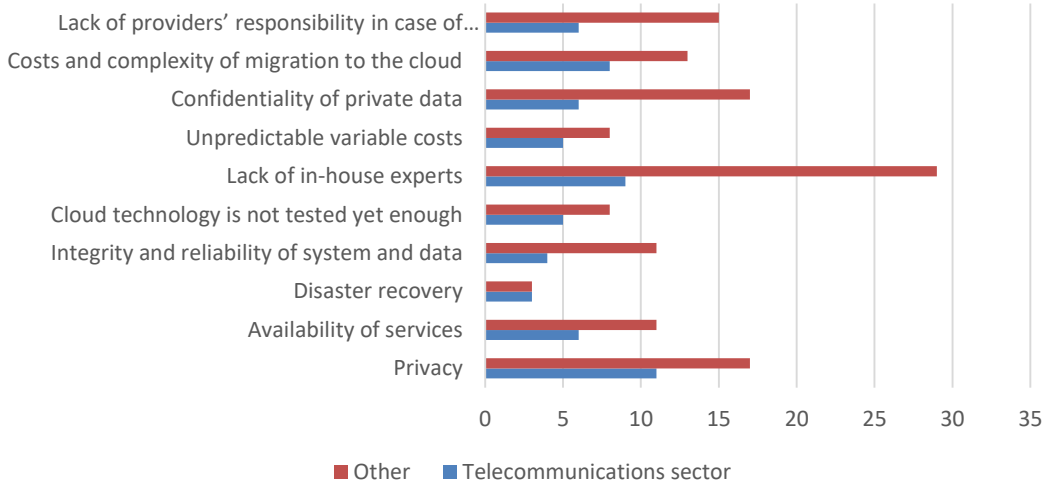


Figure 6b. *What are your biggest obstacles/barriers for migrating to the cloud?*

Source: Authors' analysis

Specific results of the research are presented in Figure 6b, together with the results of research conducted by other authors in 2013 (Figure 6a). We believe the elimination or reduction of the presented barriers represents the basis for the increase of cloud utilization in BiH. We believe some of the barriers identified in the research are the result of the respondents' lack of information, especially in the privacy and data security segment. Cloud

providers have made large-scale investments in security and data protection and we believe the mentioned risks are significantly lower. Also, no incidents related to data loss or privacy breach have been reported in the recent period. However, this does not mean the companies should not analyze the listed risks, which should also be legally defined. It is critical to emphasize the security and data protection segment is the obligation of the cloud provider, defined in the SLA (Aljoumah *et al*., 2015) or other cloud contracts or terms of use. However, the users of cloud services should take care of data protection and perform constant analysis and access control. Depending on the cloud provider, companies may have different services and products available to them that relate to enhancing security and access control/monitoring. Certain cloud providers have created various tools proposing to a cloud user specific recommendation regarding data protection and fraud prevention.

Some of the barriers presented in Figure 6a and Figure 6b are significant, implying the risks that the companies accept are enormous, due to using private data centers and servers (it is que-stionable whether companies evaluate them). Based on the research results, the most significant barrier relates to the lack of internal experts, which is, unfortunately, a serious problem if companies maintain their own data centers.

It is critical to note that disaster recovery is not presented as a barrier and obstacle in the implementation of cloud technology. On the contrary, the most of the respondents recognize backup and disaster recovery as one of the essential benefits of the cloud. We believe that by educating management within companies and presenting the benefits of using the cloud, as well as certain risks, home-based companies would be more willing to migrate to cloud technology. Considering that certain companies, typically small companies, do not invest enough (or do not possess sufficient financial resources) in their own data centers and servers, they are confronted with significant risks related to the segment of data loss, data theft, access and reliability of information systems.

An additional problem is the personnel departure from BiH, which is why the companies struggle to find qualified staff. Moreover, the companies face issues in obtaining accurate and reliable information about the conditions of their data center/server. This is the case mostly because the companies, especially the small ones, often lack adequately (detailed) documented data and information about both hardware (including network infrastructure) and software used within the companies.

## 5. Discussion

Many companies in BiH still do not recognize the cloud as an opportunity for business advancement, mainly due to the lack of information and knowledge regarding the benefits of cloud technology. Under the conditions of modern economy and rapid technology development, owning a server/data center is significantly different from using cloud technology. Companies that invest in the procurement of their own servers assume they will use these servers for a longer time period (*e.g.* 5 years), and on the basis of this prediction they make a plan for depreciation method. However, it is important to emphasize the advancement of technology and requirements for the use of information technology influence and change the required resources. Put differently, companies that invest in their own equipment may come into the situation the planned use of the purchased server (*e.g.* 5 years) can be significantly shorter, which directly affects depreciation, business efficiency, agility and flexibility. Purchasing new servers or expanding the existing capacity requires additional investment, as well as the time required to acquire, implement, configure and test. It is of utmost importance to point out certain services crucial for the company's development are exclusively available on the cloud (*e.g.* Artificial Intelligence – AI and Machine learning – ML).

It is necessary for companies to constantly improve their business processes (*e.g*. by applying BPM), and to seek innovative ways to streamline business processes or reduce costs/time required for end-to-end processes. An important segment of business process optimization is the application of modern information and telecommunication techno-

logy (Tatić, Haračić & Haračić, 2018), which can be the key driver but also the most critical barrier for the company's development (if not implemented in time, or in a proper way). Cloud technology represents an integral part of modern business, primarily because of the numerous advantages it offers, while the following are stated as the most important: flexibility, speed and efficiency of all business processes and activities (Kiryakova, Yordanova & Angelova, 2015, pp. 394-395).

The presented research results clearly indicate the respondents recognize the role and importance of cloud technology, and the benefits it offers serve as the basis for the long-term growth and development of companies, as well as for achieving the adequate level of efficiency, flexibility and competitiveness required in the modern economy.

It is significant to point out there is a significant number of studies in the world related to the same or similar topic, but there is not a sufficient number of studies on this topic relating specifically to BiH. It is important to emphasize the research results presented in the paper are correlated with other studies that have been conducted over different time periods, such as:

- "Cloud Computing From SMEs Perspective: A Survey Based Investigation" by Reza, Adel & Justice (2013) where it can be concluded that the key motives and drivers for the migration to the cloud are primarily related to reducing costs, increasing efficiency and flexibility, similar to the results of this research.
- "The Use of Cloud Computing in SMEs" from 2016 states as the most important the following benefits: cost efficiency, scalability & flexibility, sustainability maintenance by cloud provider, security, and improved service delivery.
- A 2017 survey titled "The AdvancedCloud Survey 2017" indicates that the most important drivers for adapting cloud computing are: business continuity, greater system availability, increased efficiencies, cost reductions, speed of implementation, scalability, geographic accessibility, support of business, move from CapEx to OpEx.
  Based on the survey results, we can conclude the key drivers for cloud migration are not significantly different from the survey results presented in Figure 5.
- The research results presented in the Economic and Social Impacts of Google Cloud, 2018 also present numerous benefits of cloud technology, which correlate with the research results presented in Figure 5.

The research results, as well as other research presented in the paper, imply cloud technology enables the increase of the degree of agility, flexibility, productivity and competitiveness of companies. The use of cloud technologies primarily involves understanding the advantages and disadvantages of cloud technology, knowledge and optimization of internal business processes, and adequate planning of the application of cloud technology. The planning involves internal and external analysis, followed by the analysis of business processes, existing architectures (hardware and software), availability of human resources, and ultimately defining the company's vision and goals, as well as guidelines for the future. It is critical to emphasize the cloud does not merely include hardware, but the integration of hardware and software, which implies the existence of a considerable number of services and ready-made solutions, because of which the cloud technology can be regarded as a dynamic and flexible platform.

Companies' struggles to find and hire internal IT personnel will remain a growing problem in the future, and the potential solution to this problem is indeed the migration to the cloud. This is primarily due to the fact that cloud providers assume a significant portion of responsibilities and obligations. Companies increasingly base their business on information and telecommunication technologies and thus become more dependent on these technologies. Therefore, the availability, security and reliability (Sabahi, 2011) of information systems represent a primacy for a significant number of companies.

The results of the research presented in the paper: "Migration to the cloud: top management's perception in companies in BiH" (Tatić, Džafić, Haračić & Haračić, 2020) clearly indicate that managers do not have enough information regarding the advantages and disadvantages of the cloud. However, the research results at the same moment suggest domestic companies are willing to start with migration to the cloud.

Analyzing the world trends, it is evident there is a significant increase in the number of Iaas/PaaS and SaaS users (Shallal, Bokhari & Tamandani, 2016), as well as a significant increase in the use of public cloud technology (Brinda & Heric, 2017, p. 1). Although this segment in BiH is not at the level compared to global trends, we can expect in the following years a significant increase in the number of cloud users, where domestic cloud providers can have the main market share.

Companies that become more agile in the implementation of cloud technology, have the ability to easily and quickly expand the existing and implement new information systems and tools, which, among other things, affects business efficiency. The results of the research conducted by the authors of the paper and theoretical aspects, as well as the results of the research by other authors in the world confirm the defined hypothesis.

## 6. Conclusion

Based on global trends and the benefits of cloud technology, as well as with increasing internal and external demands for increased efficiency, flexibility, agility and competitiveness, cloud technology will be increasingly deployed in large and small companies, both globally and in BiH. According to the research results, the respondents recognized the cloud as the one that enables business improvement and innovation, while reducing costs. Cloud technology represents a blend of hardware and software, where cloud providers often create services that can be used exclusively on their cloud platforms, which is one of the key comparative advantages over other cloud providers. Domestic cloud providers have the opportunity to position themselves as the main cloud providers with a significant market share, through adequate presentation of the benefits of cloud technologies, as well as providing advisory and consulting services. The logical questions arising from the presented data and results are the impact of global trends and global cloud operators on domestic cloud providers and existing and potential domestic users of cloud technoligies. An additional issue and unknown is the speed and scope of changes to existing and the adoption of new legislation, primarily thinking of digital signatures and data protection. Recommendations for further research relate to the analysis of availability and deployment of services that can be used solely on cloud platforms, as well as the use of cloud technology to create new value based on information/data available in companies' databases.

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