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## Cloud computing – a risk or an opportunity for business

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### ABSTRACT

This article raises the issue of the impact of cloud computing services on the economic efficiency of companies. The authors primarily concentrate on the benefits which companies accrue, in particular, the flexible use of resources of cloud computing without the necessity to make additional investments in their IT infrastructure. The article also raises the question of the risks associated with the use of the service in question, too. This concerns mainly the loss of data, which may result in adverse economic effects for a company. However, it is estimated that the benefits of the use of Cloud computing services outweigh the risks.

**Keywords:** computing Cloud; SaaS; PaaS, IaaS; IT infrastructure; risk

### 1. INTRODUCTION

Processing, access to data, their quick and safe transfer are the basic needs of contemporary organizations, including business organizations. Technologies offered by the IT industry, which belongs to the fastest growing areas of the modern economy, meet the needs. The cloud computing service ought to be mentioned in this context.

The use of cloud computing, however, is not risk-free. The risks are associated with the violation of personal data, copyright, unauthorized data transfer, civil rights of both providers and recipients of services. Due to the potentially global scope of cloud computing, the risks

associated with its use are global in nature and therefore data is not only protected by the national and European law but as well as the international private law. Thus this raises the question of how the benefits associated with the use of cloud computing offset the losses arising therefrom. The additional question arises how the associated risk can be eliminated by the risk management. These issues will be considered in the next sections [1].

## **2. THE ESSENCE OF CLOUD COMPUTING**

The model of cloud computing refers to the idea of distributed computing systems located in different data centers scattered around the world and available via the Internet where distributed data reside in unknown and generally irrelevant to the user locations [2]. Cloud computing is defined in this context as all kinds of services available from a wide area networking [3], or as the style of calculations, in which dynamically scalable computing resources (usually virtualized) are provided to external users as web services on demand. The user does not need to be aware of how this service is implemented, nor has to deal with the technical aspects necessary for its operation [4]. Moreover, the user does not have to be close with his or her device which makes use of the cloud computing. It is sufficient to be connected with it. Thus we ought to take into account the most frequently cited in the literature definition of cloud computing by the National Institute of Standards and Technology of the United States (NIST). In the light of this definition cloud computing is a way of the access to a shared and easily configurable computing resources via the network (networks, servers, data stores, applications, and services) which may be dynamically allocated and released on demand, while technical services are minimally involved [2]. Cloud computing consists of the following components:

- cloud management system;
- a catalog of services offered;
- the delivery system of virtual servers;
- the billing system for services;
- monitoring system;
- portal for administrators and users [5].

The access to cloud computing is characterized by the following features [6]:

- Self-service (self-selection) on demand.  
The customer uses the service when needed, without the necessity to contact the vendor/provider.
- The broad access to network.  
The user has the access to the service using a standard web browser without the need to install additional applications.
- Combining resources.  
There is the possibility of sharing resources and costs by a larger number of users and the ability to integrate resources located in various physical locations.
- Flexibility.  
Using the resources when the need arises.
- Accounting according to the use.

You just pay the cost of consumed power, the size of the actual data transfer and disk space used.

Each customer who has access to cloud computing obtains the following benefits [7]:

- the automatic access to increased computing power and necessary applications, appropriate to the growing or decreasing demand;
- the implementation of access using standard computer systems, namely the ones the user is currently in possession, without the need to make additional investments.

### **3. BUSINESS BENEFITS**

Cloud computing brings a twofold benefit:

- macroeconomic, for the whole economy;
- microeconomic for particular industries, sectors and individual companies.

Moving to cloud computing has been beneficial for American economy. At least three fundamental systemic premises of macroeconomic benefits can be indicated:

- the optimization of the resources allocation
- the significant reduction of financial barriers
- the investment growth in the economy resulted from savings in the corporate sector, due to the use of cloud computing [8].

The aforementioned premises remain valid on the microeconomic level. As noted in the literature' the increased interest and popularity of solutions based on the processing data model in the cloud computing result from the unquestionable benefits which are connected with the decision to apply this technology to the management of IT infrastructure. One of the main advantages of cloud computing is the ability to optimize costs [6].

Cloud computing is most commonly used in companies to service the following functionalities [9,10]:

- accounting and work on documents in the cloud;
- the management of own and team work;
- virtual disk;
- supporting the processes of production preparation;
- supporting diagnostic processes through cloud computing;
- the selection of optimal technological process parameters.

The crisis in the world economy encourages companies, especially medium and small ones, which are not in a position to cope with the cost of maintaining their own IT departments [7] to use the service. The service of cloud computing is perceived as a solution to meet these goals. It reduces costs of the SMEs due to:

- 1) the outsourcing of equipment;
- 2) the optimization of the time-cost;

3) the maximization of the use of equipment with flexible access to it [11].

Looking at the question of the benefits which companies obtain from the use of cloud computing services in a more insightful manner, it can be noted that it is particularly useful to companies in the SME sector in the following situations [7]:

- 1) the insufficient data processing by the existing company infrastructure;
- 2) the occasional demand for high performance of IT infrastructure;
- 3) the inability to predict the demand for calculating power;
- 4) the willingness to use existing software;
- 5) the reluctance to invest in infrastructure.

In these circumstances, the company may, without the detriment to the effectiveness, but with large savings, pursue goals and tasks in the sphere of IT. The savings are of somewhat dual nature. On the one hand, they result from not incurring costs for the expansion of IT infrastructure, on the other hand, they result from the fact that it does not freeze equity in the unit where the highest performance will be needed only occasionally. Moreover empirical data support the use of cloud computing for small and medium enterprises.

According to a study conducted in 2011 on behalf of the European Commission, 81% of companies which moved to services in the cloud computing model, reduced IT costs by 10-20%. Additionally, thanks to the model, they achieved greater telecommuting opportunities (46% of respondents), higher performance (41%), the increase in the use of standard procedures (35%), as well as new business opportunities (33%) and greater access to new markets (32%) [12]. Therefore the use of cloud computing services should be certainly recommend to small and medium-sized businesses, instead of investing in the expansion of their IT infrastructure as this may lead to a reduction in their overall effectiveness and efficiency.

#### **4. RISKS ASSOCIATED WITH CLOUD COMPUTING**

However, the use of the services of cloud computing is associated with a number of significant risks. The literature calls, inter alia, attention to the fact that the companies making the choice to move the IT systems to the cloud take the strategic and operational risk, and therefore they are interested in an analysis of the specific economic benefits to accurately assess whether the transition to a new model is profitable [6]. In other words, the risks referred to should not be a prerequisite for the resignation of such a move, but should be taken into account when assessing its profitability. The principal risks associated with the use of cloud computing services can be summarized in three risk groups [13]:

- risks associated with data security
- risks associated with legal transactions
- risks resulting from obligatory procedures resulting from the needs of national security

The above threats are significant factors which are considered against the use of cloud computing. Are essential here concerns the heads of companies on insufficient guarantees data security.63% of respondents reported such reasons for the resignation of cloud

computing services in a study conducted on behalf of the European Commission. Respondents quoted dependence on suppliers (46%) and geographic location (31%) as other crucial reasons. The interested parties indicate the lack of standardization of services on an international scale with the international nature of its provision, the diversity of legal conditions in individual countries [13] as a systemic prerequisites. In this context the objective obstacles in using the company's services should be considered, for example, the impossibility of data allocation or regulation prohibiting the transfer of data outside the country's action [7]. Yet the principal and relevant to taking the decision to resign from the services of cloud computing, is the risk of data loss or interception by unauthorized entities, which questions the soundness of cloud computing services.

## **5. FINDINGS / CONCLUSION**

Decisions about the use of cloud computing by enterprises, especially SMEs, should be excogitated and both opportunities and threats ought to be taken into account. A significant reduction in cost and maintaining the current level of effectiveness are in favor of this solution. Using the services of cloud computing companies do not incur the costs of expanding their IT infrastructure and maintaining it in periods when the demand for the highest performance does not occur.

Nevertheless there are significant disadvantages of cloud computing services associated with the risk of data loss or interception by unauthorized entities. In general, however, there are more pros of the use of cloud computing than cons. This solution allows not only to optimize the company's own costs, but it is a factor driving the development of IT solutions supporting the operation of the business, namely, concepts such as fog computing and the Internet of Things, are genetically related to cloud computing and they should be mentioned here.

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