Benefits Related to Cloud Computing in the SMEs

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Abstract: Nowadays Small Medium Enterprises have to face a wide range of challenges such as globalization, competitiveness, adaptability, speed of change, growth. Thus increasingly, there is a need of cutting-edge technology. How to tackle these challenges successfully depends largely on the implementation of cloud computing which could exploit and develop the potential in a company. Cloud computing can be an essential tool for the creation, development and growth of small and medium enterprises. The main reason for this is based on the fact that cloud computing has changed the Information Technology Service Business.

Keywords: cloud computing, small and medium enterprises SMEs, innovation, information technologies IT, benefits, flexibility

1. Introduction

This paper aims to discuss information associated with cloud computing in order to analyze the transformations in the business world because of this new technology. For this purpose, it can approach to this issue from two parts. The former, it is going to outline a definition of cloud computing based on its main aspects. Besides, it is going to indicate its main features, its levels and patterns of implementation. The latter, it is going to analyze the main aspects associated with SMEs. Cloud Computing is an information technology (IT) deployment model,

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based on virtualization, where resources, in terms of infrastructure, applications and data are deployed via the internet as a distributed service by one or several service providers. These services are scalable on demand and can be priced on a pay-per-use basis (Böhm et al. 2011). Consequently, companies only pay for the IT services they consume. For this reason among other advantages related to cloud computing, there has been a radical transformation in the business world. Overall, the importance of cloud computing with regard to companies lies in the fact that companies can grow quickly without large investments in technological equipment, software or personnel added. Moreover, this paradigm is going to contribute positively and significantly to economic growth creating one million new jobs and thousands of new SMEs in the EU, Spain is supposed to create 55,0000 new SMEs (Etro 2010).

All of these changes do not happen overnight but stem from the evolution of the environment. This is the case of Web 2.0. The Internet has evolved from a simple information repository with a search system as an entrance point to a social network that relates people and companies and offers services pursuant to those relationships and makes them possible. In general, when we mention the term Web 2.0 we are referring to a series of applications and Internet pages that use collective intelligence to provide interactive services online, giving the user control of their data. Consequently, Web 2.0 technologies can increase organizational effectiveness, efficiency and usability for company knowledge management systems (Antonova, Gourova & Roumen 2009). Web 2.0 provides us with these functions and they are supported by services offered in a ubiquitous manner (independent of the physical location), consumable from any system or person in any place, referred to as the "Cloud" or "Cloud Computing".

The introduction of cloud computing will drastically reduce fixed production costs, changing them into variables and adapted to manufacturing needs. This act shall have a positive impact in competitiveness for all sectors where expenditures in information technology are crucial (Etro 2009). However, it does not necessary mean that cloud computing is good for all businesses; this paper will analyze these benefits and its impact on small- medium sized companies.

2. Definition, Features, Levels and Implementation models

Basically, Cloud computing is the management and provision of applications, information and data as a service. These services are provided through the internet. The computing resources are provided on the network to be shared by multiple users, across different devices and enabling work on the same issue. Thus, cloud computing provides access to IT services regardless of physical systems or its location. The only prerequisite is to have an internet access. This allows companies not to store the information on their own computing devices. Moreover, this information will be found in the systems provided by the cloud. In addition,

there is no need to install application programs on the systems of organizations. So they will run in the cloud over the Internet. As a result, there are big energy savings and huge cost savings because there are no requirements associated with storage and processing capacity.

The most significant features of cloud computing can be summarized in four, scalability, virtualization, ubiquity and usage-bound payment models.

To begin with, scalability would be the greatest advantage of cloud computing. It is based on the ability to adapt easily to the deployment of resources according to the current needs and a changing demand. Scalability allows resources to adapt dynamically to business needs, so IT services can be as efficient as possible. A consequence of this efficiency is the fact that there are cost savings because the enlargement or reduction of resources in cloud computing is cheaper than in traditional systems, where large investments are needed for expansion. Furthermore, very often it is not possible to recover these investments when there is no need of many resources.

A second advantage to consider is virtualization. Virtualization is the ability to separate software such as, operating system and application programs, of physical systems or hardware. As a result, companies are not responsible for the implementation of IT services and do not have to be concerned about the hardware associated with these services. Moreover, IT services providers are who should handle these kinds of questions.

From an economic point of view, virtualization and scalability increase flexibility in companies because costs related to resource deployment can adapt properly to organization needs at any time.

Another advantage to consider is ubiquity. IT services access is performed through the network, so different devices such as mobile phones, PDAs or laptops, can access the same service on the network. This feature allows heterogeneous systems to access the same service from any physical location.

Finally, usage-bound payment models are based on the idea that companies only pay for what they consume. It is possible to find two main models. The former, subscription fees where companies pay for certain IT services within a given period of time. The latter, deployment pay where payment is based on the amount of information transmitted over communication networks, or each unit of information storage, or processing unit and so on.

In cloud computing IT service providers offer their services grouped into three categories, infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS).

Infrastructure as a service (IaaS), is a cloud computing model that lets users deploy hardware computing resources as a service. It allows customers to purchase hardware resources (servers, storage systems, switches, routers, etc.) as if they were fully outsourced services. This model manages to expand or reduce the physical resources in a very short period.

Platform as a service (PaaS), brings together a set of functionality that allows users to create new computer applications. It provides all the necessary compo-

nents for creating a new software application, offering a service that usually includes a setting of development and application programming interface, or API (Application Programming English Interface).

Software as a Service (SaaS), offers the consumer a wide variety of applications provided by service providers and running on the infrastructure of the cloud. Applications in the "cloud" are accessible by several devices customer through a simple interface, such as a web browser. The consumer Service does not manage or control the underlying infrastructure of the service, including network communications, servers, operating systems and storage.

In cloud computing there are three kinds of implementation models public cloud, private cloud and hybrid cloud. So this issue must be taken into account by companies and they should choose the model which best fits their business.

Public cloud, this refers to the standard model of Cloud Computing, where the service is available to anyone on the Internet infrastructure for free or by paying certain amount of money. Its owner is the service provider. Applications and information are stored on external servers and the service is offered via the Internet. The main advantage of this model lies in the fact that is very easy to expand IT resources. However, this benefit can offset by some major problems such as the impossibility of being located the information provided to the cloud services.

Private cloud, this refers to networks or data processing centers where the company is the owner. This model deploys characteristics of Cloud Computing technologies such as virtualization but within the structure of the company. The main advantage of this model lies in the fact that companies have physically the information. However, it is very difficult to expand IT resources

Hybrid cloud, this refers to the combination of the models described above. It takes advantage of physical location information managed by the private clouds with the ease of expanding resources of public clouds.

3. Business perspective of cloud computing

The emergence of the phenomenon commonly known as cloud computing represents a fundamental change in the manner in which IT services are generated, developed, deployed, adapted, maintained, and compensated. In this type of computing – cloud computing – everything an IT system can offer as a service, in such a way that users can access the available services "in the Internet cloud" without knowledge (or at least without being an expert) in management of resources that they used (Li et al. 2009, Luftman, Zadeh 2011).

Cloud computing is a general concept (Wang et al. 2008, Zhang, Cheng & Boutaba 2010b) that incorporates software as a service, such as Web 2.0 and other recent software, also known as technology trends, where its common point is the trust in the Internet to satisfy the needs of user computing. As examples of cloud computing Amazon EC2, Google Apps, eyeOS, and Microsoft Azure are notewor-

thy, providing common online business applications accessible from a web browser, while the software and data is stored on servers.

EU social networks, accounting for more than 200 million registered users, are able to improve competitiveness of the European web industry by collaborating with established EU ICT industry and academia (European Commission 2008).

The companies look ever more to "the cloud" to follow social developments. It will be in the interest of business enterprises to deploy some of these paradigms (social networks, blogging, open source) within their environments and with business intentions. (Grossman 2009, Li, Zhang & Yu 2011, Marston et al. 2011, Wen et al. 2010, Zhang et al. 2010a) The "cloud", "cloud computing" is an attempt to standardize an already existing situation of interoperability among applications and distributed services (Low, Chen & Wu 2011). It is currently getting a strong push and is highly supported since it provides the best services to support the business. The business can now stop trying to understand and worry about IT capabilities and concentrate on what they do best. The recognized advantages are: - Simplified IT management process- Improved end-user experience- Decreased IT performance Challenges- Reduced the cost of infrastructure- Alleviated internal resource pressures.

The primary beneficiaries of this system and innovative technologies are the small medium enterprises, the Educations Institutions (Ercan 2010, Mircea, Andreescu 2010, Rio-Belver, Berenguer & Gomez de Balugera 2009), organizations engaged in Scientific Research and of course large companies.

From a business standpoint this new cooperative, collaborative, and social work system with shared services will result in business management of the same manner, making it more shared and participatory, at the same time reducing information system costs. It will reduce the costs of resources and increase aspects of globalization (Mohammed, Altmann & Hwang 2010).

According to a survey conducted by European Network and Information Security (ENISA), a European Union agency; it found that 68% of the SME responses it received indicated that avoiding capital expenditure in hardware, software, IT support and information security is behind their possible engagement in cloud computing while almost 64% of the responses also indicated that flexibility and scalability of IT sources was the reason (ENISA 2009).

Cloud is likely to be an attractive option for many small medium enterprises, particularly in the current global economic crisis, due to its flexible cost structure and scalability (Nabil 2011).

Cloud Computing can offer several advantages to SMEs. The main advantages can be divided into three types: strategic, technical and economic advantages.

Strategic advantages such as productivity improvement. Increasingly, there is a need of teamwork. All digitized service infrastructure must be accessible anytime, at any device, at any connection and from any place at a reasonable and affordable prize. In principle, it is what we expect from the internet, but in reality it sets a number of demands. These demands relate both to the physical infrastructure and to the various aspects of the usability of the provided services. Services must be

available seamlessly at any device and anywhere (Kloch, Petersen & Madsen 2011). This increases the flexibility of the company and therefore the productivity of their employees. Another strategic benefit lies in Outsourcing IT service. The central motives for outsourcing decisions are still mainly economical benefits, in particularly flexibility of costs and cost savings, technological advantages, innovation, strategic aims, and business-oriented advantages, such as an increasing service quality or an increasing flexibility of the business (Böhm et al. 2011). One of the most obvious strategic advantages is the development of new business ideas, products and services. SMEs can carry out new business ideas that would be impossible before because the fact that time and costs associated with   software and hardware requirements were too high. However, nowadays IT service providers are who assume these kinds of costs. The barriers to entry for a particular market or market segment for a startup company have been dramatically reduced and cloud computing may have tipped the balance of strategic advantage away from the large established corporations towards much smaller or startup companies. A small, dedicated, and talented team of individuals can now pool their individual talents to address a perceived market need without an immediate need for venture capital funds to provide the necessary IT infrastructure (Talukder, Zimmerman & Prahalad 2010). Another strategic advantage lies in the fact that SMEs have other business investment opportunities. The cost savings which are generated by the adoption of cloud computing allow companies to focus on other tasks of their own business such as greater investment in innovation.

Technical advantages such as flexibility, companies only use the IT services they need at every moment. SMEs do not have to be concerned about great costs in IT infrastructures and wasting time on their implementation. IT service providers have duplicate systems that reduce the likelihood of loss of information or service in the event of a disaster. This is a large benefit for SMEs, the majority of which are poorly prepared for hardware failures and disaster recovery. It can reduce downside risks at low cost (Talukder, Zimmerman & Prahalad 2010).

Economic advantages, there is a cost reduction in purchasing new computer systems, maintenance and labour cost. While the proper design of cloud applications requires high-level software development skills, their maintenance and support is vastly simplified in the cloud environment. Cloud providers handle all maintenance and support issues for both hardware and platform software at costs that are either bundled into the usage fees or available in various configurations as premium services. This allows significant cost savings through reduced staff overheads (Talukder, Zimmerman & Prahalad 2010). One of most significant technical benefits is energy saving. SMEs can dramatically reduce or eliminate local servers, cloud computing provides direct utility cost savings as well as environmental benefits (Talukder, Zimmerman & Prahalad 2010).

On the other hand, SMEs should take into account the following issues; Firstly, security and privacy. How to ensure security, how to make access control, the data backup process, what happens when there is a data loss, it is meeting the data protection law. Secondly, availability, what happens if there is a loss of the internet

connection, and finally, standardization, it would be possible a quick and easy change to another provider.

4. Conclusions

The generalization of Internet and web 2.0 provokes changes in the structure of small medium enterprises. The possibility of simple connection from anywhere will strengthen business globalization. The company shall reduce its resources and investments in information technology by sharing resources, therefore converting a part of the fixed costs in variables. This act will increase competitiveness of sectors in which IT expenses are crucial.

To sum up, cloud computing can be considered as a key element to reduce barriers to market entry, the main reasons for this are the following: Firstly, reduction in costs which brings about the implementation of new businesses which would be impossible to manage with traditional system because investment requirements would be unreachable. Secondly, flexibility that allows SMEs to adapt quickly to a changeable environment. Nowadays, this is a fundamental aspect to the survival of SMEs, due to current financial crisis. Finally, scalability that easily and quickly enables to adapt the growth or reduction of IT resources to demand needs without losing service quality. Taking all sides that have been put forward in this paper into consideration, it would say that cloud computing generates employment, promotes economic growth and facilitates innovation and collaboration.

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