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THE VALUE OF CLOUD COMPUTING IN THE BUSINESS ENVIRONMENT

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Abstract:
Without any doubt, cloud computing has become one of the most significant trends in any enterprise, not only for IT businesses. Besides the fact that the cloud can offer access to low cost, considerably flexible computing resources, cloud computing also provides the capacity to create a new relationship between business entities and corporate IT departments. The value added to the business environment is given by the balanced use of resources, offered by cloud computing. The cloud mentality includes the possibility to have access without storing or maintaining technologies. This leads not only to changing the way business is conducted, on an individual level, but it is also widely transforming purchase decision-making.

Key words: cloud computing, business environment, issues, opportunities

JEL classification: L86, M15, M21

INTRODUCTION

The vice president and chief of cloud computing research at Gartner Group, Daryl Plummer, considers that "there is a stronger recognition today that this is more than just one shift of technology" (Plummer, 2012). If we take a look at the shift from mainframe to client/server, which was a switch from one technology architecture to another, the shift towards cloud computing passes beyond the transformation of technology architecture, into the field of behavioral relationship. This is making it more alike to the change at the end of the 20th century, developing on-premises systems, into using the web and e-business.

If we consider the concept of cloud computing, it has gone through a number of different e-business terms, business models and computing paradigms. While the concept has been intensively used and has gained a lot of interest in the field, its essence remains subjective and its definitions are still countless (Krikos, 2012).

THE IMPACT OF CLOUD COMPUTING

Governments from all around the world spend considerable amounts on IT, with the aim to improve security, efficiency, transparency, and to deliver more interactive services to citizens and businesses. Cloud Computing offers the possibility of cutting costs, while still increasing computing capacity and introducing new products and services with a rapid time-to-market cycle (Matei, 2012).

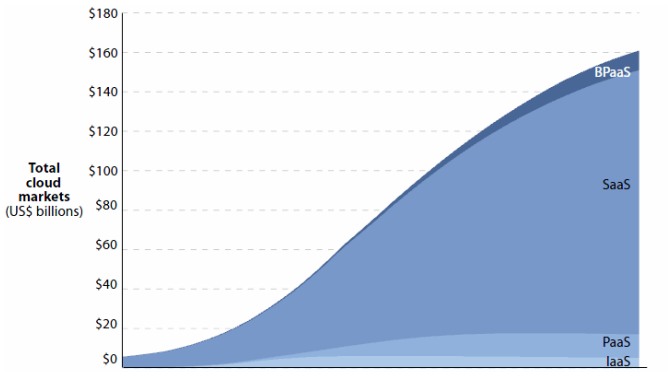
According to severe market competition and a dramatically changing business environment, firms have still prompted to adopt various state-of-the-art information technologies (IT) to improve their business operations (Pan and Jang, 2008; Sultan, 2010).

The advantages of cloud computing comprise:

- lower costs;
- faster implementation;
- reliance;
- scalability.

ECONOMIC IMPACT

Cloud computing has become a wide business, but, in the same time, it is almost unreachable to anyone without knowledge of this domain. With a market approaching $200 billion in overall size and perhaps trillions in IT-related spend in play, getting cloud computing right will be one of the most important issues for enterprises, vendors, brokers, and service providers alike (Plummer, 2012). It is expected for the global cloud computing market (figure 1) to have an ascending trend by 2020: a study released by Forrester Research predicts that cloud computing will become a $241 billion market by 2020, up from $40.7 billion in 2011.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
BPaaS ($)	0.15	0.23	0.35	0.53	0.80	1.26	1.95	2.93	4.28	6.00	7.66	9.08	10.02
SaaS ($)	5.56	8.09	13.40	21.21	33.09	47.22	63.19	78.43	92.75	105.49	116.39	125.52	132.57
PaaS ($)	0.05	0.12	0.31	0.82	2.08	4.38	7.39	9.80	11.26	11.94	12.15	12.10	11.91
IaaS ($)	0.06	0.24	1.02	2.94	4.99	5.75	5.89	5.82	5.65	5.45	5.23	5.01	4.78

Source: Forrester Research, Inc.

Figure 1. Forecast: Global Cloud Market Size from 2011 to 2020

In the "cloud", solutions are brought up like community resources, delivered "as a service" that can be used by everyone without owning them. Every client has to pay a part of the price, this way lowering the total costs for all users. This is the main idea of cloud computing. All customers use the same hardware and software, without the necessity of buying and maintaining them. This leads to cost savings. Without the necessity of owning computing equipment, the client does not have to hire the staff to maintain it. An external provider can ensure this for clients, delivering a reduced price through economies of scale.

This way, the client can be focused on the value that the company provides. The only concern of the client will be paying operating expenses instead of capital expenses. This ensures more flexibility, so that the customer can measure profit on business outcomes, not only costs. On the other hand, the client gains price transparency, only paying for what he used.

Another aspect is the fact that cloud computing allows the client to simply buy subscriptions to a billing service, or a check printing service or a programming service. The price is based on what you get out of it and what the market will bear. All these benefits are enabled by cloud computing, because end-users can consume resources without the strictures of traditional IT (Erik, 2009). Clients are paying for the services like they would pay a magazine subscription. And when the service is no longer required, they can easily cancel the subscription with no equipment bought and abandoned.

The most commonly used approach to account the outcomes of the use of a certain service is by measuring Value. Referring to the outcome achieved by the customers who use cloud services, this outcome could be the desire to save money.

Richard Hunter, Gartner VP Distinguished Analyst, has often said that the best means to measure value is by examining the price of the service versus the performance obtained. This could be summarized in a simple question: Is the client paying a reasonable price for the outcomes provided by the service? (Frampton, 2011).

Price is defined by the requirements of the business environment. Performance is determined by a certain degree of expectations for that particular service. This happens because the

main purpose of using a service is the level of outcomes. The question that arises, could be: What is the customer expecting to obtain by using this service?

Possible outcomes established by the client, could be:

- an efficient collaboration for employees and transparency in pricing and costs;
- a fast change and more agility in supplying application development platforms;
- a decrease in the energy use of the company.

Whatever the desired outcomes, once established, other factors become easier to determine. Contracts should include clauses not only regarding performance, but also for considering the continuity of the business needs.

The cloud service providers should be interested not only in subscribing the client to the service, but also in helping the client achieve his outcomes. If we refer to the value added by cloud computing, ROI – Return on Investment (a measure to evaluate/estimate the performance or the efficiency of an investment, or an instrument to compare the output of a number of different investments) is a statement of value in itself (***, 2012). But, on the other hand, ROI initiatives are mostly used to highlight the amount of money saved or generated, not to express the client's satisfaction with outcomes.

Empowering users to serve themselves with cloud-based applications and services can even lead to more efficient processes by offering users the possibility to choose. Another factor not to be ignored is the transformation of the relationship between the business users and the IT department of the client. If cloud services can bring more efficiency to the client's IT department, by helping users get what they need sooner, it might be worth making some expenses in order to accomplish it.

TECHNOLOGICAL IMPACT

One of the most important aspects regarding cloud computing is worldwide connected computing. Every day, hundreds of millions of users connect to the Internet, which has brought a relevant influence both on the existing culture and also, on the appearance of new principles of behavior. Furthermore, the fact that the Internet is always available has also created new possibilities for innovation, contributing to the continuing progress in the technology sector. Therefore, we could say that cloud computing is the basis upon which anytime-anywhere computing is built. The meaning of cloud computing involves a third party running the customer's computers and software while the clients can use what they deliver and center on producing value.

Although end-users may not understand the technology behind cloud computing, they have adopted the cloud more eagerly than many IT departments. For a great number of years clients have used a form of cloud computing for their email services and for social networking, their online figures live on a remote server. Users can now easily access a variety of services, transforming their online experience into a much more convenient form. Services like Dropbox ensure access to different documents, from all around the world, while live streaming from Spotify and Netflix improve entertainment experiences.

Considering these two elements, cloud computing and anytime-anywhere access, they can provide a useful tool for substantial and authentic experiences that a brand can increase attachment. Still, nowadays, experiences are led by separated, compartmentalized tasks. In this area, a need remains for stability between functional and emotional in order to ensure credibility and consistency throughout the portfolio and over touchpoints (Frampton, 2011).

Furthermore, referring to web applications, a solution can be always accessible. The cloud solution can increase or decrease, adjusting itself accordingly to the use of the application. Cloud computing is related to the process of storing data through the Internet. Computing and storage become a „service" rather than physical resources. Files and different sorts of data can be deposited in the cloud and can be accessed through an Internet connection. It is a form of computing where IT capabilities are offered „as a service", enabling users to access technology services from the cloud, without having expertise in the field or control over the technology infrastructure supporting them (figure 2).

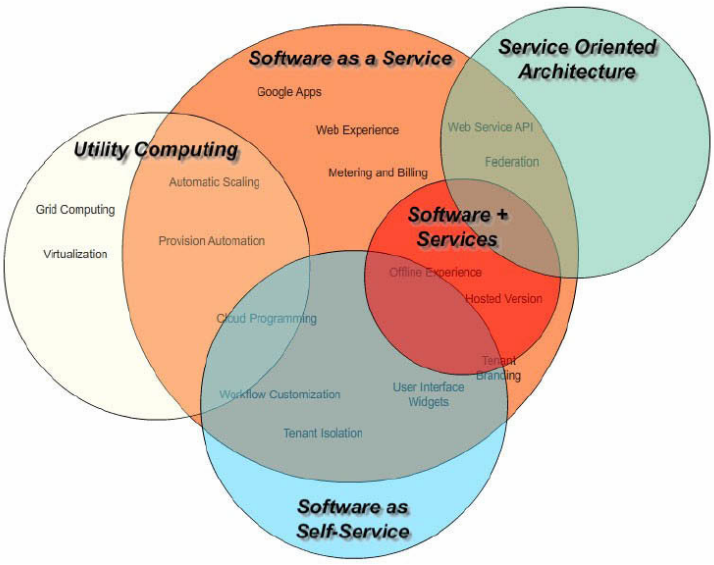


Figure 2. Five Related Forms of Cloud Computing (*, 2009)**

ENVIRONMENTAL IMPACT

By adopting cloud computing, firms benefit greatly from better understanding of market visibility, greater operation efficiency, and more accurate data collection (Misra and Mondal, 2010). Considering the current trend towards protecting the environment, cloud computing providers encourage the use of computing resources in conjunction with minimizing environmental impact and maximizing economic viability (***, 2010).

It is expected that investment in Green Computing initiatives and its effective promotion by Cloud service providers would encourage the adoption of Cloud Computing among computer users. Green computing is environment-friendly computing and one of its objectives is to make efficient use of electricity. Cloud Computing infrastructures are generally deployed in very large data centers. Using cutting-edge technology it is possible to make enormous energy saving and reduce green house emissions. For example, Google-designed data centers use about half the energy of a typical datacenter (Yogesh, 2010). People have increasingly become aware of the effects of computers on the environment, and this could be one of the key factors for driving the adoption of Cloud Computing.

POSITION OF GOVERNMENTAL INSTITUTIONS

Some public sector organizations have made early moves into cloud computing. For example, in Washington, D.C., all 38,000 city government employees have unlimited access to Google documents and services such as Gmail. The U.S. General Services Administration recently announced moving the government-wide portal usa.gov to the cloud and issued an RFI for cloud infrastructure services. In Japan, the Ministry of Internal Affairs and Communications has announced plans to shift all government agencies into a private cloud environment by 2015 (Russell, 2009).

At present, cloud computing is witnessing increasing adoption in the public sector across the world. The United States is taking the lead and moving to a “Cloud First” strategy, the country’s transition has been rapid, starting from the use of Google Mail and Google Documents to the migration of Recovery.com, making it the first Government-wide system to move into the Cloud in April 2010. Furthermore, the U.S. Federal Budget has incorporated cloud computing as a major part of its strategy to achieve efficiency and reduce costs. It states that all agencies should evaluate cloud computing alternatives as part of their budget submissions for all major IT investments, where relevant (Arun, 2011).

In September 2012, European Union regulators decided to encourage government agencies in the European Union to use cloud-computing services to reduce costs, according to a European

Commission strategy for cloud computing. Public agencies in the European Union and cloud-computing suppliers will work together on common procurement requirements to ensure that services meet governments' needs (Aoife, 2012). Among the benefits to be achieved the European Commission has mentioned that pooling public requirements could bring higher efficiency of IT equipment usage and common sectorial requirements would reduce costs, improve energy efficiency and enable interoperability.

OPPORTUNITIES VS. ISSUES

Although there are some technologists that resist this emerging trend, many are moving servers, collaboration, storage, or apps to the cloud. Even though a lot of activities can potentially be performed as a service, there are risks.

First of all, the necessity to guarantee the service delivery: a problem arises if a cloud provider managing the client's subscription fails. Another risk comes from paying for numerous subscriptions that there is nothing left to capitalize or the situation when the cloud provider became a monopoly, too big to fail.

Then, it is necessary to have a guarantee that the provider will not give away any of the client's business. Basically, cloud computing can cover a variety of options from a private model (delivering services internally to a single company) to a public model (delivering services to any entity that will pay for consuming these resources).

If we refer to the public cloud, the provider owns and runs the technologies to deliver the service, and the consumers use the service, but do not have any control over the basic operations. This leads to a risk: trusting the service provider to do things the right way. Regarding the private model, an enterprise controls the technologies and establishes which clients can use the service. This does not necessarily lead to lower costs because the system still needs to be operated and maintained or improved. Greater confidence in the storage and use of data and applications (privacy) can be obtained with trusted employees who manage, monitor and customize the technologies. The biggest benefits of the private model are performance, efficiency, quickness, a different financial plan, sustaining a more adaptable budget and the use of operating expenses instead of capital expenses.

If we refer to the credibility of the cloud computing providers, we should take a look at the need to audit the services delivered to the customers. *Quis custodiet ipsos custodes*, meaning - who watches the watchers? (Plummer, 2012). Because companies using cloud services are more aware of risks, they need independent audits of cloud services in order to be assured about how safe or risky, a cloud vendor could be. In the long term, audits will become one of the key means for cloud clients to mitigate risk and improve the level of satisfaction with the cloud.

THE CLOUD COMPUTING MENTALITY

Consumers and enterprises alike continuously increase the use of cloud services, determining a strong impact on the business life. The motto of cloud enthusiasts is "Pay as you go!". This focuses on changing the way clients pay for technology-based solutions. The main advantage of cloud computing is the fact that it allows clients to pay only for the resources they need and only when they need them.

The business value of cloud computing is a combination of benefits: operating instead of capital expenses, subscriptions to services, customers paying for outcomes not for technology and the "pay-as-you-go" (PAYG) model. Enterprises regularly spend money on vital elements for the business, some of the expenses being necessary for business operations, but not directly related to the business – electricity, for example (otherwise too expensive to own and operate). The economic model of cloud computing is opposed to the traditional economic model where customers buy technology from a vendor and do not return it when they finished using it.

From the client point of view, the resources allocated to technology are blocked in capital expenses. Reallocating money to operating expenses, by using cloud services, involves a new line of expenditure when business entities must maintain existing infrastructure.

In order to understand the purpose of cloud computing, it is important to take a closer look at the way cloud providers are exploring the possibility of changing business models through cloud services. Major vendors have shifted their point of view regarding the cloud in just one year (Plummer, 2012). Steve Ballmer, CEO of Microsoft, changed his opinion regarding the cloud: from promoting it as a secondary option to considering that everything will be in the cloud and that Microsoft is "all in on cloud computing." A year ago, Oracle CEO Larry Ellison was questioning the credibility of cloud computing, but now he promotes Oracle as the largest cloud computing vendor in the world. The changes in the judgment of giant leaders of the IT world in just a year should give us a clue, a hint about the intensity of the cloud computing phenomenon.

CONCLUSIONS

Market confusion decreases business confidence, reduces the value of financial assets, and generates uncertainty. On the other hand, history reveals that changes in the business area can create specific opportunities for those entities that look beyond the short-term issues and find solutions. Companies can either retreat, or embrace success and the increasing outcomes.

It is widely known the fact that once a new innovation starts being utilized, it will be a necessary part of people's lives, on a daily basis. Even if we talk about the using of application-driven smartphones, tablets, or the implementation of cloud computing services, the demand always surpasses the greatest expectations. The big picture of the cloud market is wide and its implications go deep. Because it is continually growing, cloud computing's impact will reach every facet of the business area.

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