

USE OF CLOUD COMPUTING BY FUTURE MANAGERS: THE CASE OF PART-TIME STUDENTS OF MANAGEMENT AT ACADEMY OF PHYSICAL EDUCATION IN KATOWICE - POLAND

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Abstract. Managing Information Communication Technology enables organizations and students to get more out of their current software solutions and hardware set-up. This paper presents a study on cloud computing used by part-time students of Management at Academy of Physical Education in Katowice for keeping e-resources for their work and research activities. Cloud computing as an emerging new computing paradigm for delivering computing services that relies on a number of existing technologies like the Internet, communication, grid computing, Web services, visualization, is been used frequently for training experiences and that is why investigate how they use the cloud, what is their experience and which one fits their expectations. The research tool used to get the primary information was an online questionnaire passed in December 2014 in a research proof of 120 part-time students with some work experience at Academy of Physical Education in Katowice.

Keywords: Cloud computing, Content Resource Management, Higher Schools, Silesia Region.

Introduction

Understanding how to Manage Information Communication Technology [ICT management] is key for Educational organizations and all its components (Deshpande 2015). Paraphrasing the words of *Lasa Information Systems Team* when speaking about small companies with one computer that will still need to manage their ICT, we would say that a student with a computer need to manage their ICT as it is likely to be used for important tasks, such as:

- writing documents more efficiently,
- managing accounting and budgeting,
- recording contact with other student, teachers, University staff,
- improving communications within the University and with others.

ICT is increasingly becoming vital in the work of students at Higher Schools so an understanding of how to manage this important and potential resource needs to be developed. It is essential for students to focus on what they want to gain using their ICT and then put in place systems to help them achieve these objectives. ICT is too important to be ignored, even by people and institutions who feel that blocking access in the classroom or University Campus will prevent the danger of using ICT during the lessons (Itagi, et al) 2015).

There are different definitions of cloud computing on Internet, but what all of them characterize is that massively scalable IT-enabled capabilities are delivered 'as a service' to external customers using Internet technologies and has different layers:

- IaaS – Infrastructure as a Service (Infrastructure is Platform independent, costs are shared by multiple clients/users, clients will pay only for the resources they have consu-

med);

- PaaS – Platform as a Service (Deployment purely based on cloud infrastructure, caters to agile project management methods);
- SaaS – Software as a Service (Reduce Capital expenses required for the development and testing resources, reduced return on investment risk and streamlines and iterative updates of the software).

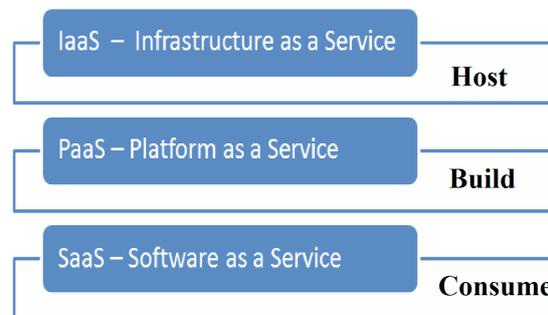


Fig.1. Layers of Cloud Computing

The cloud has important applications in Education because the Web-based application allows them to create, edit and store documents and spreadsheets online. The access to files can be reached from any computer that has a Web browser and connection to Internet. Other important task is that the cloud can improve collaboration among teachers, administrators, students and staff (WCES 2010). Higher Schools in the Silesian Region already use computers in the classroom and cloud computing platforms has increased collaboration, enhance team-building initiatives and improve group- and team-centered project success rates.

Example of this collaborative learning can be found in Pbworks platform used by Academy of Physical Education in Katowice, Poland where the subject “Information Systems in Tourism Management” has its own web page, developed and implemented by students and cover the following topics: Internet technology as a tool to reduce costs, to settle the transactions, to look for new markets, for financial services, for communication, for e-community building, for trade, for electronic circulation of documents, advertising, for entertainment and Internet technology as a tool for achieving customer satisfaction and loyalty (Ochoa 2015).

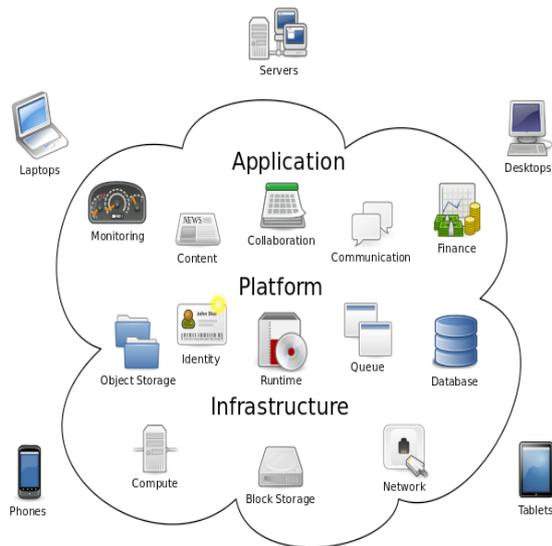


Fig.2. Cloud computing (Johnston 2015)

Cloud storage service: Advantages of using Google Drive and Dropbox in Higher Education Students

Google Drive is a multifunctional platform for storing files online and open access to them, regardless of the place and time. It is completely free up to 15GB of data and for greater data limit; student should pay a monthly subscription. The service premiere took place in April 2012. Google Docs aimed at text file sharing and simultaneous operation of several people on one document (Grabiec 2012).

The primary function of the Google Drive like other cloud storage is file store and edition on a variety of devices, creating new documents and the ability to share it to other students. So at the same time it provides a universal and permanent place of work space for valuables (creating backups). To use the service, a Google account is necessary. Initially at launch Google Drive was neither innovative nor offered far more options than the competition. The disc is available for many types devices, fixed and mobile with a web browser.

Special applications on both the computer and

the mobile devices like phones, tablets or laptops allow the user synchronize his files on the cloud and on the hard drive, so the student can work on his files or the files from colleagues without being connected to the network. Student can work on the files in both the browser and the application and all changes are quickly updated. This characteristic makes it possible to share files in real time for multiple users at once (privately to a determinate group of users or completely public).

The interface looks like a standard Windows file explorer, so it becomes really intuitive. Google is associated primarily with search engines; this fact allows availability and it is very easy to find the necessary files online. In addition, the drive has a number of features: drag & drop system automatically uploads files to the server, the ability to connect additional applications from Google. Student can see previous versions of files in Google Drive even if they weren't created in a Google format and also can delete and download previous versions, or upload a new version.

Google Drive continues the tradition of previous services and integrates with other applications derived from a common manufacturer: Google. For example, by combining with the Chrome browser, it is possible to throw simplified graphics on the site directly from the website, instead of saving the file to your hard disk, and then attaching to the files in the cloud. This integration provides sharing tools, resources and functions (even if you do not use Google drive, then this space is used for other Google services). New ways have been implemented to transfer large files by e-mail, instead of sending them in an annex, it is easier to put them on the cloud and send the link, so the recipient will be able to use them. The possibility to set permissions and determine who and what they can do with shared files (editing, read-only) is a very important aspect that students value (Tur 2015).

Dropbox is a sister product of Google Drive, with the difference that arose as one of the first on the market (2008). This fact has been important to become the cloud with a really large user base. However, the basic amount of data is much smaller than its competitor; only a maximum of 2 GB of data to start for a free account. Dropbox encourages the active use of the product, by rewarding those users who install add-ons, applications of their company, invite others to set up accounts, within other marketing actions. In this way, students can increase the limit to 20GB. The company offers two packages for sale: one plus and one for businesses (Pudale 2015).

Just like Google Drive, Dropbox can be used with both the browser window and installed application on your computer or mobile device. The installed applications allow the user to work offline and the next time the student connects to the network,

files are synchronized with the online storage site. It is extremely easy to use, with an intuitive interface. Dropbox provides full support to the three biggest computer systems: Windows, Mac, Linux.

The main difference with Google Drive is that Dropbox does not allow several people to work on the same file. Each user has his own copy and after changing and updating it, the student can synchronize it with the server. It does not define permissions and anyone who has access to the files may edit or remove, so users should be careful about what and who can have access to the files. The user has the possibility to recover any file deleted in the last 30 days from the Dropbox website and for the full year in the case of buying a paid account. It is also far more reliable in terms of safety. The creation of an account is very easy and fast. An additional option is the ability to sign a two-for safety.

Table 1. popular cloud storage options (Mitroff 2015)

	OneDrive	Dropbox	Google Drive	Box	Copy
File size restrictions?	2GB	None with Dropbox apps	5TB	250GB for free plan, 5GB for paid plan	None
Free storage?	15GB	2GB	15GB	10GB	15GB
Can I earn extra free storage?	Yes	Yes	No	No	Yes
Paid plans	\$2 month for 100GB, \$4 month for 200GB	\$10 month for 1TB	\$2 month for 100GB, \$10 month for 1TB	\$10 month for 100GB	\$10 month for 250GB
OSes supported	Windows, Mac, Android, and iOS	Windows, Mac, Linux, Android, iOS, BlackBerry, Kindle Fire	Windows, Mac, Android, and iOS	Windows, Mac, Android, BlackBerry, and iOS	Windows, Mac, Linux, Android, and iOS

Research Methodology

Our research was carried out in December 2014 to a group of 120 students of the faculty of Sport and Tourism management to investigate which of these two cloud computing better suites their necessities and expectation. To have access to the answers, an online questionnaire was used with seven closed, multiple and single choice questions. Respondents who do not benefit from the clouds, have the opportunity to select an answer. So we can have a better knowledge of the type of cloud we can use for our lectures and seminars.

The necessary number of objects to statistical analyzes was determined using the following formula:

$$n = \frac{(1 - \alpha)^2}{4d^2}$$

where:

confidence level (1 -)

d - the acceptable level of error

Relevance (validity) of the questionnaire was determined using the questionnaire on a much smaller group carried out a month earlier. This group of respondents is not involved in the later study group.

For data analysis, descriptive statistics methods

and quantitative techniques were used (Little 2013). All statistical procedures were performed with Statistica ver. 10.0.

The aim of our research was to find out which cloud students of management, future managers in tourism and sport, use to keep their files; whether their choice is the result of a deep analysis. In the questionnaire we intended to find out which cloud they prefer and if this tool is valuable for them in their study and how long they use it. These questions are designed to help us, the teachers, to determine whether the service is important to them. We cleared out the impact of the cloud computing on our students and specified the purposes for the use of such tools. In this study, we focus on the use of clouds as an educational tool.

Use of Cloud computing by students

Having analyzed the answers to the first question we found out that there are two clouds that they use: Google Drive and OneDrive. Only 6% of the respondents use Dropbox. 12% of the respondents do not use cloud computing at all. This fact makes us, teachers, aware which cloud should be used when sharing study files with students. There is no choice between Dropbox and Google drive as we thought, but within Google Drive and OneDrive. Percentage is calculated in relation to all the answers.

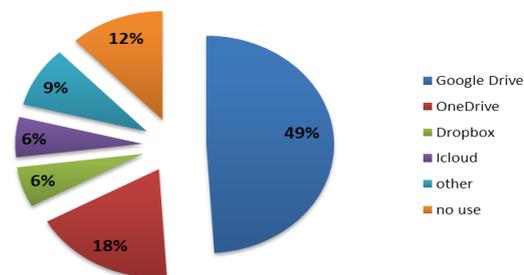


Fig. 3. Cloud computing choice

According to our research results, only 18% of respondents use more than one cloud. Nobody chose the answer "either Dropbox or iCloud". Among those users who use only one cloud (after deducting all the answers) definitely support Google Drive (74%), OneDrive (16%), other (10%). However, when summing up the results of multiple answers, the advantage of Google Drive has significantly decreased. It is worth mentioning that relatively small percentage of respondents said they use another cloud. So the vast majority of respondents use the services listed in the survey.

The respondents were asked what made them choose this particular application. The answers were different: only 7% of respondents did that because someone has recommended it. Most of them choose it by accident, they found that cloud while

using the search engines. As it was mentioned before, these answers explain the motivation of the respondents when choosing the cloud to work in collaborative research projects or keeping important files. The reason why they choose this application and not any other is to facilitate collaboration with other students that use the same application. That is why one type of cloud is spreading rapidly among students from the same study year or faculty.

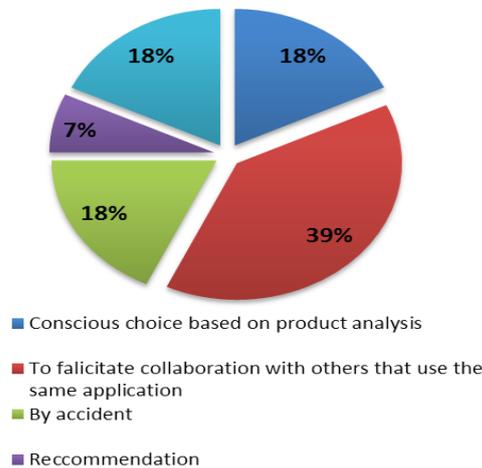


Fig. 4. Motivation for choice of cloud

There is one more interesting fact to be analyzed. 18% of the respondents affirm that they do not use any cloud, and a similar number has chosen the “conscious choice based on product analysis”.

Next question was given to find out why they use this application. There are three special reasons: sharing files, work and study and finally synchronize the files to have all of them in the same place.

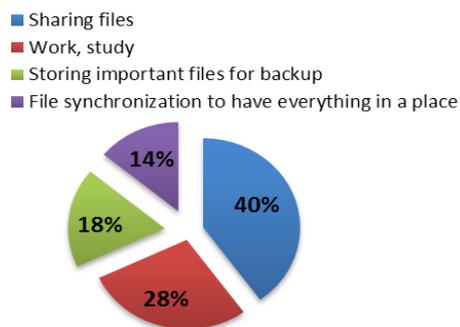


Fig. 4. Different use of the cloud

Most of the students said they use the cloud to share files (40%), as an aid in the work and learning (28%) and file storage for security reason (18%) and a small part - for synchronization of files (14%). 39% of the respondents indicated only one destination, the rest - more than one. Concerning satisfaction of the possibilities the cloud offers, the vast majority of users (75%) gave positive answers,

and only 11% were not satisfied.



Fig. 5. Satisfaction level of the cloud use

Most of the students use free of charge clouds, only 11% of them declare that they have paid for it. Now we can have a clear idea on how much the students rely on this type of platforms, and what the requirements are. Free accounts offer a decent space for storing files, and only the most demanding users need more of it. A question was given about the experience in using this type of services. 25% of the students have more than 3 years' experience. 1-3 years was the most popular answer - 36%.

The last question was about the frequency of use of the cloud. Most of the students use it several times per week (54%) and several times per month (18%). Only 7% of the respondents state that they use of these tools every day when they do not do homework daily but during week-ends, when they are not at University and need Internet for communication purposes. The vast majority use them regularly. Those who have accounts, use them frequently.

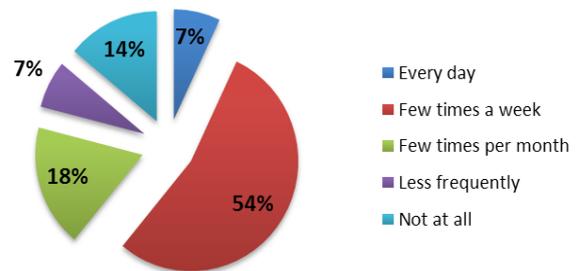


Fig. 6. Frequency of using cloud computing

Conclusion

1. Cloud computing is widely used by students at Academy of Physical Education in Katowice – Poland. 86% of students use the cloud: they find it very useful and it meets the requirements of users. Google Drive, and Dropbox are often used for important tasks. These Internet applications have played an important role in the stu-

dents' life. In a way they are able to instantly transfer files in some other way, they can work on collaborative research work. This is partly thanks to the popularization of high-speed Internet connections.

2. Students of Academy of Physical Education mainly use the service to share files, which should not be a surprise. Due to the nature of the programme, these students do not work so much on joint projects like those attending Humanities. Therefore, they use different types of application related to study or work. Most of the students (39% of the respondents) claimed that the use of the same cloud by all students in the same class makes it easier for them to cooperate. This fact is the most important feature of the clouds for them. Conscious choice based on the analysis of competing products was marked only by 18% of the respondents. I suppose that most users could also say that the cloud between them does not differ at all, or in a very small extent, so that the choice may seem quite simple.
3. Google Drive has a better future among students because the integration of large popular services, which are owned by Google: YouTube, Picasa, Gmail and finally the Internet search engine Google. Getting an account in any of the above, at the same time give access to the disk, which enables a person to instantly switch between these applications without having to repeatedly log in is another reason. In addition, the Google brand is very famous and certainly this fact attracts some users who are less oriented.
4. Great surprise is the low popularity of Dropbox, which is strongly connected to the phone system, Android, and this was one of the first products of this type. Certainly Dropbox has interesting functions but has relatively low space for storing files, and, unfortunately, does not offer easy work for several people at the same time on the same file. This seems to be one of the reasons why Google Drive has better popularity among our students and is the best option for those who are collectively working on joint projects.
5. Google Drive is more popular when it is used in the office. It has a huge advantage thanks to possibility to edit the files without necessity to download any software. Students can work on their files directly in the application or web page with the possibility to share their work with other people at the same time. Dropbox does not offer such possibilities: student must download the file first in order to change something. Then he can edit it in external programmes and take the file back to the cloud. The same thing is about collaboration tools with extended options. Dropbox does not support it.
6. In the case of both products, the paid version only changes the data limit and the number of

days, after which you can recover deleted files. Therefore, if the service is to be used at work; group work, sharing text files, spreadsheets, there is no doubt that Google product is the most popular among the students in the Academy of Physical Education.

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Santrauka

Informacinės komunikacijų technologijos valdymas leidžia organizacijoms ir studentams daugiau gauti iš turimos programinės ir techninės įrangos. Straipsnyje pateiktas tyrimas apie iššestinių studijų, Fizinio lavinimo akademijos Katowicuose, vadybą studijuojančių studentų naudojamą debesų kompiuteriją. Debesų kompiuterija, kaip naujai atsiradusi kompiuterijos paradigma teikianti kompiuterijos paslaugas, kurios priklauso nuo egzistuojančių technologijų skaičiaus, tokių kaip, internetas, komunikacija, grido kompiuterija, tinklo paslaugos, ir vizualizacija, dažnai naudojama skleisti mokymo patirčiai. Todėl tiriamo, kaip galėtų būti naudojamas debesis, kokia studentų patirtis ir kuris labiausiai atitinka jų lūkesčius. Tyrimui atlikti buvo naudojama anketa internete, apklausta vykdyta 2014 m. gruodžio mėn. Apklausti 120 iššestinių studijų studentų.

Keywords: Cloud computing, Content Resource Management, Higher Schools, Silesia Region.

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