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The Cloud Computing Preferences of University Students

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Abstract: *With the rapid development of technology, mobile technologies have become widely used. Beside of the smartphone and tabletpc that are taking the firts place among today's communication tools, also various application softwares are started to be developed. Cloud computing system is one of those applications and its popularity is increasing day by day. The research was conducted within the frame of general survey model. This study was applied to selected sample of 113 fourth class undergraduate students at the ending of the 2nd term of 2011-2012 academic year, department of Computer Education and Instructional Technology (CEIT) at Near East University. This research was carried out with 97 students because of 16 students do not use cloud computing services. As total, students of this research are 68% male and 32% female. The average age of the students also participated in the study was determined as 21. In this research, authors developed a data collection form for determine preferences of students towards cloud computing services. The data obtained by the survey was commented upon using the SPSS program with the percentage and frequency. Survey was applied online in laboratory courses. Data were collected using this form. Frequency and percentage methods were used during the analysis process. Besides, the literature review shows that there is not any study that determine the student preferences towards cloud computing services. As mentioned above, there are many cloud systems. So the aim of this study was to determine the university students' most preferred cloud computing services. Most of the students use Dropbox, Open Drive and Evernote cloud computing services. Docs, images, presentation, video and audio are the most commonly shared items on Cloud computing services. We believe that in future days more research will be prepared on the usage of cloud computing services in education due to its increasing importance and students' increasing interest in mobile technology. In addition, it is believed that, this study will guide the following studies to be prepared related to this subject.*

Keywords: cloud computing, university students, m-learning, mobile devices, cloud systems

Introduction

Hwang et al., (2009) indicated that traditional class-learning is a method of authentic learning however; it is difficult for those instructors to support personalized learning. Educational institutions have undergone rapid changes especially for the last decade years (Wurst et al. 2008; Boukas et al. 2009; Uzunboylu & Ozdamli, 2011; Aboderin et al., 2012). Liu (2007) thanks to advances in wireless and mobile technologies in his research paper because due to those technological advances, now there exist new learning environments especially out of school.

Uzunboylu & Ozdamli (2011)'s study results demonstrated that, teachers want to use mobile learning applications to support traditional education. Accordingly, it could be said that teachers should use blended learning approach, which combines classroom instruction with m-learning. Blended learning approach combines different advantages of classroom education and m-learning. Therefore m-learning is becoming more popular, however not all students have mobile devices to support it (Ozdamli, 2011). Nevertheless Schepman et al. (2012) argued that cross-platform software that has the potential to allow instructors to provide mobile support to students' learning, offering the same function to users which use traditional computing platforms. The cloud computing services enables the learners to achieve information from their mobile devices or desktop computers. The National Institute of Standards and Technology described cloud computing services as a model that enables a convenient and on demand network access to a shared pool of configurable computing resources that could be rapidly provisioned and released with minimal management effort or service provider interaction. Sultan (2010) explained cloud computing as clusters of distributed computers (largely vast data centers and server farms) which provides on-demand resources and services.

Cloud computing is a new emerging computing paradigm that delivers computing services. Powell (2009) described cloud as an on-demand computing, for anyone that has a network connection. It is possible to access applications and data anywhere and anytime, from any device. Aziz et al. (2012) indicated that cloud system is future of the internet. Cloud system users are able to access documents, photos or other data and use applications through their terminal devices such as PDAs, smartphones, tablets, PCs etc. that are connected to the network. According to Cruz (2011), cloud computing provides an innovative alternative to traditional education, that creates individual learning environments and interactive learning for learners. Also, it allows learners to collaborate with their peers, regardless of geographical location.

Katz, Goldstein & Yanosky (2009) suggested in their study that cloud computing is a natural technical progression to a standards- and Internet-based IT architecture that more fully exploits economies of scale. Main characteristics of a cloud computing services as follows:

- Independence from any device and platforms,
- It should be used without internet connection,
- Limitless number of users and authority,
- The possibility to synchronize with local data (Bal, 2010).

There are many types of cloud system in the literature. When we searched we found a lot of cloud system. Some of them free some of them commercial. The most popular cloud systems in the literature are Dropbox, Evernote, Google Drive, SkyDrive.

Dropbox application is available for Windows desktop, Mac and all mobile platforms. Users need only a single account and achieve account from all devices. If user back up a file on a pc, it will automatically sync in Dropbox account when connect to internet. It accounts for mobile and desktop are free with up to 18 GB of free space. If users want more space then they will pay $9.99 monthly for 100 GB. And also students use Dropbox as a team and share workspace.

SkyDirve is Micorsoft's homebrewed cloud service which is not limited to Windows users. Users should create account and access from any device. It provides 7GB free spaces. But users can add up to 100GB by paying a price. Files and photos store in system are protected. It includes secure sockets layer to encrypt files when upload or download.

GoogleDrive is Google's cloud. It is offering while using any Google products such as Gmail. Moreover, users should create and edit new documents, spreadsheets and presentations instantly and also share. Google drive lets learners to study together at the same time on the same doc. Users should use system on any mobile platform along with PC and Mac. It offers 5GB free space for data.

Evernote system is available for Windows Desktop, Mac and all mobile platforms. It has a lot of features. It has some tools such as Skitch, Voice2Note, CallNote, MindJet and EyeFi. It provides 5GB free spaces to users. Also Users can share Evernote notes on Facebook or Twitter.

- In parallel with these developments, the need for qualified students in this particular field also increases. Successful integration of these technologies in education primarily requires students' preferences in order to determine such technologies. Therefore, the preferences of learners are playing a key role. When both the national and international literature was reviewed, it was found that there is not

any study related to this topic which aims to determine the student preferences towards cloud computing services. As mentioned above, there are many cloud systems. So the aim of this study was to determine the university students' most preferred cloud computing services. The study attempted to find answers to the following questions:

- Did students use cloud computing applications previously?
- Which cloud computing services are the most preferred by university students?
- Which cloud computing features are used by students?
- Which mobile devices are preferred by students while connecting to cloud computing systems?
- Do students want to use Cloud Computing Services in education?

Method

The research was conducted within the frame of general survey model. This study was applied to selected sample of 113 fourth class undergraduate students at the end of 2nd term of 2011-2012 academic years in department of Computer Education and Instructional Technology (CEIT) at Near East University. This research was carried out with 97 students because of the reason that 16 students do not use cloud computing services. As total, 68% of the students were male and 32% were female in the research. The average age of the students participated in the study was determined as 21. In this research, authors developed a data collection form to determine preferences of students towards cloud computing services. The comments on the data obtained from the survey were made according to the SPSS program with the percentage and frequency. Survey was applied online in laboratory courses. Data were collected by using this particular form. Frequency and percentage methods were used during the analysis process.

Results

The results and the comments obtained through the aims of the research have been explained.

Cloud Computing Services

CEIT students on their using these applications are given in table 1.

	F	%
Used	97	85.4
Not Used	16	14.6
Total	113	100.0

Table 1: Cloud computing services

As shown in the table above 85.4% of the students used cloud computing applications and 14.6% never used. According to the findings large majority of students took place in the research were familiar with cloud computing applications.

Preferred cloud computing services

Frequency (f) and percentage (%) distribution of the cloud computing prefences of students who form the sample of the study.

Cloud computing services	TOTAL	
	F	%
Dropbox	58	22.2
Open Drive	47	18.0
Evernote	44	16.9
iCloud	38	14.6
Google drive	34	13.0
Sky drive	25	9.6
Cloudon	12	4.6
Diigo	1	0.4
Zotero	1	0.4

Table 2: Preferred cloud computing services

According to the Table 2, most of the students use the Dropbox, Open Drive and Evernote which is a cloud computing services. The only %0.4 use of them Diigo and Zotero.

The students' reasons of using Cloud Computing Services

Frequency (f) and percentage (%) distribution of the main reasons for using the cloud computing services of students who form the sample of the study.

The most preferred usage habits	TOTAL	
	F	%
Docs	66	26.1
Images	62	24.5
Presentation	55	21.7
Video	32	12.6
Audio	21	8.3
Sticky Notes	12	4.7
Bookmarks	5	2.0

Table 3: The most preferred usage habits of students on Cloud Computing services

As it can be seen from Table 3, docs (F=66, 26.1%), images (F=62, 24.5%), presentation (F=55, 21.7%), video (F=32, 12.6%), audio (F=21, 8.3%), sticky notes (F=12, 4.7%) and bookmarks (f=5, 2.0%) are the most commonly shared items on Cloud computing services. Therefore, Table 3 suggests that students use Cloud computing services for store the documents and images.

Devices used by students for using cloud computing services

Table below shows us most commonly used devices by students for using cloud computing services.

Devices which Cloud computing services is used	TOTAL	
	F	%
Smartphone	72	51.8
TabletPC	35	25.2
Laptop	22	15.8
PC	10	7.2

Table 4: Devices which Cloud computing services is used

According to the Table 4, 51.8% of students use the cloud computing services on their smart phone, 25.2% on their TabletPC, 15.8% on their Laptop and 7.2% on their PC. When the results were examined, it was observed that majority of the participants use the Cloud computing services via their smart phones. And only %7.2 of them using Personal Computers for using Cloud Computing services.

Do students want to use cloud computing services for educational purposes ?

CEIT students to use cloud computing applications to determine whether they are in the analysis results in Table 5.

	N	Percent
Want	102	90.2
Don't Want	11	9.8
Total	113	100.0

Table 5: Cloud computing services

As shown in the table above, 90.2% of the students want to use cloud computing services for educational purposes.

Conclusion and Recommendations

With the rapid development and technology, the communication tools and methods are also changing. Considering the fact that mobile internet technology is being used very effectively, it could be said that Smart Phones and Tablet PCs have an important place. The users are getting chance to reach more substantial content with the developing communication applications each passing day. For example, through varios applications, photos, videos or audios recorded with mobile equipments could be shared with people from all over the world immediately. The results of this study is proving that cloud computing services are being used very effectively with mobile equipments by most of the students. The students were using these services mostly with smartphones, tabletpcs and laptops. Beside of this result, it was found that students are mainly using documents, images, presentation, video and audio amongst other cloud computing tools. The most used four cloud computing services according to the results are; Dropbox, Open Drive, Evernote and iCloud. Students' use of Cloud Computing Services is spreading day by day and students are thinking that those services should be used for educational purposes. Thus, experimental studies are suggested to be done beside of in-service trainings in order to persuade teachers to use cloud computing services for educational purposes.

References

Aboderin, O., Fadare, O., & Kumuyi, G. (2012). A pedagogical appraisal of internet and computer usage among secondary school teachers and students in the Southwest Nigeria. *World Journal on Educational Technology, 4*(1), 56-65.

Bal, S. (2010). Cloud Computing. http://www.salihbal.net/paylasimlar/bulut-teknolojisi-cloud-computing-nedir-ve-ne-degildir/

Boukas L., Kambourakis G.& Gritzalis S. (2009). Pandora: an SMS-oriented m-informational system for educational realms. *Journal of Network and Computer Applications* 32, 684–702.

Cruz, L. (2011). How Cloud Computing is Revolutionizing Education. Cisco, The Network. Available at http://newsroom.cisco.com/feature-content?articleId=460910 on 15 September 2012.

Hwang, G.J., Yang, T.C., Tsai, C.C., & Yang, S.J.H., (2009). A context-aware ubiquitous learning environment for conducting complex experimental procedures. *Computers & Education, 53* (2), 402-413.

Katz,R., Goldstein, P., & Yanosky, R. (2009). Cloud Computing in Higher Education. Available at http://net.educause.edu/section_params/conf/ccw10/highered.pdf on 17 September 2012.

Ozdamli, F. (2011). Mobile learning perception and competence of teachers and learners according to the geographical areas in North Cyprus. *International Journal of Learning and Teaching, 3* (2) 35-46.

Ozdamli, F. (2012). Pedagogical framework of m-learning. *Procedia - Social and Behavioral Sciences,* 31 927 – 931.

Powell, J. (2009). Cloud computing – what is it and what does it mean for education? Available at http://erevolution.jiscinvolve.org/wp/files/2009/07/clouds-johnpowell.pdf on 17 September 2012.

Schepman, A., Rodway, P., Beattie, C., & Lambert, J. (2012). An observational study of undergraduate students' adoption of (mobile) note-taking software. *Computers in Human Behavior 28,* 308-317.
Sultan, N. (2010). Cloud computing for education: A new dawn? *International Journal of Information Management, 30*, 109-116.

Wurst C., Smarkola C. & Gaffney A.M. (2008). Ubiquitous laptop usage in higher education: effects on student achievement, student satisfaction, and constructivist measures in honors and traditional classrooms. *Computers & Education* 51, 1776– 783.

Uzunboylu, H. & Ozdamli, F. (2011). Teacher perception for m-learning: scale development and teachers' perceptions. Computer Assisted Learning 27, 544-556.