THE LEVEL ASSESSMENT OF HEALTH ACADEMY OF UNIVERSITY OF KIRKLARELI STUDENTS' ABILITY OF USING CLOUD COMPUTING IN BASIC INFORMATION TECHNOLOGY COURSES

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Abstract

Cloud computing or by its functional meaning on-line information distribution is a name which is given to the services which provide common sharing of information among IT devices. With this purpose, in order to reduce the hardware costs, many institutions and organizations have started to use Cloud technology. At the computer laboratory at Health Academy of University of Kırklareli, it has been provided that in the Basic Information Technology course, Cloud computing practice is used by total 512 students who receive day time and evening education on Tocology, Nursing, Nutrition and Dietetics, Health Management and Pediatric Development. With this questionnaire conducted on students, the benefits and outcomes of the Cloud computing system has been attempted to be determined.

Keywords: Cloud, vocational training in educational technology, unique training methods and techniques.

1. INTRODUCTION

Cloud Computing is one of the highlights of the first three information technologies in recent years. The other two are virtualization and web 2.0 technologies. In the following years; Cloud and virtualization grew more quickly; it will be seen to be favored by public institutions and private businesses.

Cloud Computing is a technology that uses the internet and central remote servers to maintain data and applications. Cloud computing allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access. This technology allows for much more efficient computing by centralizing data storage, processing and bandwidth (Bora et al. 2013)

1.1   Cloud Computing Service Models

Cloud computing; through covering the service and flexible adjustability, the user is a network access model that offers these services. This model serves three main services. These services are:

- **Software as a Service (Saas),** users without any installation is the advantage of accessing services to applications across any platform connected to the Internet.

- **Platform as a Service (Paas),** the user on-line; their software and applications development, testing and deployment services along with control over only the necessary peripherals for hosting this software provides management with the opportunity.

- **Infrastructure as a Service (IaaS),** users, processors who need storage space, accessing network resources, and other major computer components; Set up the operating system on which they want to develop and offer the possibility to run applications (Zaharescu and Georgeta 2012).

As the growth of cloud computing is very fast, users can obtain the essential software and computing capability at a faster rate, which leads to tremendous improvements in the IT infrastructure and industries, and has become the recent movement in computing environment. There is no hesitation that the future goes to the cloud computing. This new environment supports the creation of new generation of web applications that can run on an extensive range of hardware devices, while data is stored inside the cloud. Today, we can see that Cloud computing has been applied in many domains for many organizations such as E-commerce, health care and education especially in the ELearning environments (Zaharescu and Georgeta 2012).

1.2   Usage Cloud Computing In Universities

There are application laboratories to support the implementation of IT courses at universities. There is a sufficient number of computer hardware in the lab by the number of students required. As technology progresses, which will be shown to the student software programs it is also changing. The hardware to run the software is outdated after a while. This situation obliges making software and hardware changes as during certain periods in the laboratory environment. So, use of Cloud Computing at universities has many benefits such as accessing the file storages, databases, educational resources, research applications and tools anywhere, anytime on demand. Furthermore, cloud computing reduces universities' information technology (IT) complexity and cost. The main goal of an academic cloud is to manage effectively the technological needs of universities such as delivery of software, providing of development platform, storage of data, and computing. The implementation of cloud services at universities provides various opportunities and benefits for the users of the university (Oladimeji and Ismaila 2016).

Use of Cloud Computing; the biggest advantage is related to the low cost and use learning content anytime and anywhere. Learning material is easily maintained and updated; it may include multimedia content to facilitate understanding of concepts (Jolliffe et al. 2001).

Since cloud computing is so loosely defined, many studies have been done to explain conceptually what it is, but few have looked at how it is being used. None to date have looked at its usage and acceptance in university settings. Cloud and virtualization technology has been examined; Web-based virtual laboratory has been developed by Taher and Omer. Developed this virtual lab at Gazi University will provide effective solutions to users and other people (Taher and Bay 2013).

Anadolu University (AU), with three remote education system implements including 12 faculties, 6 colleges, 1 state conservatory, 2 vocational schools, 9 institutes, with 27 research and application centers and 15 research-development-implementation units is one of Turkey's most important universities. There are a total of 5 thousand units of computer data and 1 million students at the university. For this purpose; in 2007, the decision has been made for desktop virtualization in VM ware applications. Initially, 48 server machines number was reduced to eight. 120 virtual machines with VM ware application have now become manageable with the 8 server machines. As a result of the transition made this desktop virtualization

- Energy costs were reduced by 40%.
- Engine efficiency has been increased by 80%.
- Make a backup against power outages were provided for your convenience.
- Server installation time was reduced from 2 days to 15 minutes. (Virtualization 2014)

One of the oldest and largest universities of the country was experiencing difficulties in education for failing to provide enough computers against the increasing number of students. University had to provide computer labs for three thousand students and 144 people had to see the course at the same time. Treo Company agreed with the university management, as a result of preparatory work necessary infrastructure, necessary costs were calculated. After creating a system room and fiber infrastructure data backup, security issues were resolved. Students and instructors, the authority to distribute virtual machines created to use, automatic and professional backup system was established to ensure continuity. Treo firm, as a result of infrastructure services that solve all the problems until the system's installation, the university was founded by virtualization; it has three new computer lab. (Süer 2013)

Desktop transformation projects in Turkey, one of the most important examples Citrix XenApp project in January 2013 in Istanbul Aydin University. Citrix Virtualization technology has been implemented in Aydin University in the year 2013; there were 26,000 students. Applications and system requirements that vary, to provide hardware independent platform and to manage; began work at the over 1,000 personal computers and. 2500 lab Computer. The second phase of our applications without having to re-develop for mobile platforms IPAD, aiming to have over XenApp used in Android tablets. Citrix partners with ASSISTA the work they implement projects in a short period like two months. Currently, especially in the laboratory, it has been virtualized with Citrix technology about more than 50 different applications (Assista 2013).

The needed labor force in Turkey training, Piri Reis University in the maritime sector in the world's first virtualized simulator project VMware® Horizon to students in maritime education by choosing Enterprise has provided an ideal simulation environment in every aspects. Network advantage given VMware, said the network speed when the status of virtual machines to physical machines, the installation can make even the most complex scenarios under 1 minute. Annual energy savings of about $ 280.000 was achieved, as well as world-class the students were presented with a simulation experience. (Simulation 2016)

2.   RESEARCH

In this study, the Health Academy of the University of Kırklareli at the computer laboratory, if it has been provided that in the Basic Information Technology course, have received the application and desktop virtualization in cloud computing.

According to need on desktop virtualization one or more server machines were located in the center. With the software and devices that are connected to the machine running virtualization transaction terminals that are the backbones of the system. These terminals are connected to the network and make requests from the server over the network. Servers provide the system by opening the terminal in response to this demand.

Virtualization technology, which has brought benefits, can be listed as follows: (Harmon and Auseklis, 2009; Faucheuxve Nicolai, 2011; Kiruthigave Vinoth K. 2014):

- Provides the fall of the cost of licensing process.
- General technology allows the reduction of costs.
- It eliminates the constant renewal of computer problems.
- Ensures prolonged use of existing computer.
- Reduce the dealing with the operating system and disk failure.
- Ensures easier to deal with viruses and security threats.
- Prevents the separately programs loaded.
- Reduce the high maintenance costs.
- Increase the efficiency of the business.
- Greater consolidation through "green" data center and server environment offers (Çetin and Akgün 2015).

Computers in the computer lab, with a special interface is opened with student numbers and entering the password. As a result of any of the information entered is incorrect user session cannot be opened? Entering the correct user information and control of the IP number is logged as a result. This process is called desktop virtualization to cloud technology. Thus, in the laboratory, when students turn any machine they can access their desktop view and use it. Each student in the user log on to Windows 8.1 operating system and Office 2010 software are available. Applications they have done during the course will be able to find again the next time they sign when they register on the computer. Case of computers in the computer lab is not available, there are Wmware the client that connects to the cloud.

3.   METHODS

Health Academy of University of Kırklareli at the computer laboratory, it has been provided that in the Basic Information Technology course, Cloud computing practice is used by total 512 students who receive day time and evening education on Tocology, Nursing, Nutrition and Dietetics, Health Management and Pediatric Development.

This study, in June 2016, was made at the end of the period. Although the number of students to reach the targeted 512; 77% of students had been performed since the implementation of this survey. The survey consists of 18 questions with demographic components. The data obtained from the survey were analyzed with SPSS 21 program. The resulting data; frequency analysis, Mann Whitney U and Kruscal Wallis-H tests were analyzed. The literature prepared by survey questions compiled by researchers work has been established. Conducted survey to students in socio-demographic characteristics and virtual courses directed questions concerning the use of multiple-choice questions are used style.

Table 1. Frequency and percentage of demographic variables

		Frequency	*%*
Gender	Female	300	76,3
	Male	93	23,7
Count of the lesson taken	1	330	85,7
	2	46	11,9
	3	7	1,8
	4	2	,5

Table 2. According to the argument of the sample in frequencies and percentages

		Frequency	*%*
Know what the meaning of the Cloud	Yes	157	40,2
	No	234	59,8
Used Cloud Computer before	Yes	93	23,8
	No	297	76,2
Used Cloud Storage Service before	Yes	77	20,1
	No	306	79,7
Popular Cloud Storage Service	Windows Azure	22	6
	Google Drive	205	55.7
	Dropbox	40	10.9
	Skydrive	19	5.2
	Icloud	23	6.3
	Open Drive	2	0.5
	Yandex.Disk	56	15.2
Any difficulty in a cloud computer while user login	Yes	87	22,4
	No	302	77,6
Know why cloud computers haven't got	Yes	188	48,8

case

	No	197	51,2
Know where cloud computers' case	Yes	171	44,1
	No	217	55,9
Know that administrator manage and control information about entered site and opened program via cloud log files	Yes	211	54,5
	No	176	45,5
Any difficulty to remembering student password while user login	Yes	156	40,3
	No	231	59,7
Useful to cloud computing system	Yes	252	66,0
	No	130	34,0
Know of cloud computing systems that reduce hardware costs	Yes	124	32,2
	No	261	67,8
Know that can access files and data with Internet access from anywhere via the IP address of cloud computing system	Yes	190	49,5
	No	194	50,5
Know why preferred cloud computing system on the campus	Yes	135	35,2
	No	249	64,8
Know of cloud computing systems are being implemented in another campus	Yes	83	21,4
	No	305	78,6
Think cloud computing system should be implemented in another campus	Yes	252	65,8
	No	131	34,2

Table3. According to the argument of the sample in frequencies and percentages

Difficulty about encounter when using the cloud computing system	*Forget Student Password*	*Yes*	*162*	*4 1,4*
		No	229	5 8,6
	Server Error	Yes	98	2 5,0
		No	294	7 5,0
	The lack of Internet connection	Yes	101	2 5,8
		No	291	7 4,2
	Forget Student Mail password	Yes	73	1 8,6

| | | No | 319 | 8 |
| | | | | 1,4 |

The students who participated in the study, frequency analysis of the survey results are presented in the table above.

- **Are there any effects of gender?**

Gender; cloud computing in the use of storage services, cloud thinking is useful in information systems, in knowing that where the computer case, hardware costs in the know in reducing, in knowing that you can access their files from anywhere with Internet access via IP address or data entry system in the experienced the server error has been found to be effective ($p< 0.05$).

- **Are there any effects of Understanding the Impact of Cloud Technology?**

In cloud computing applications; computing, cloud computing using the storage service, where you know that the computer case, of the sites entered from the computer or the open the program know that realize that controlled by the administrator, to think that it is beneficial to the system, know of cloud computing systems that reduce hardware costs, the IP address via the internet with this system be aware that the data could be accessed from anywhere and files, and why on this campus has been found to be effective in the sense that you know that the preferred cloud technology ($p< 0.05$).

- **Are there any effects of the Users?**

Open the computer as the user; they use to log in to the computer cloud computing, Student password remembering the difficulty to, server failure encounter with clouds and it had an impact on the use of the computer information systems, it has been identified ($p< 0.05$).

- **Is there the effect of the computer case of Knowing Where?**

The students in the cloud computing system, that you know where the computer case; where you want to connect to the computer with the IP access, to know why it was preferred on this campus, clouds that have an effect on my knowledge of informatics applications have been identified ($p< 0.05$).

- **Is there any benefit Impact of Cloud Computing?**

Cloud computing system is beneficial, access from anywhere on the computer with the IP number and why it was chosen as the impact on this campus has been identified ($p< 0.05$).

- **Is there any effect to reducing of cost?**

Cloud computing system cost in gender, the IP number of the computer with access from anywhere, why is selected on this campus, clouds that influence the use of information systems has been identified ($p< 0.05$).

- **Is there any effect to IP access from anywhere with a computer?**

IP number in the cloud computing system access from anywhere with a computer; gender, why he selected this campus, the use of cloud computing systems and cloud computing implementation that effect have been identified ($p< 0.05$).

4.   CONCLUSION

Many private companies and government agencies are looking now for ways to reduce hardware costs. It's a way of cloud technology is a desktop virtualization. If desired, they can be rented for cloud storage server. Another method is its cloud server storage system can be created with the purchase. Kırklareli University has purchased its own server carries out the storage process in this way.

Kırklareli University of Health Sciences students; "Basic Information Technology Use" lesson is provided to take desktop virtualization using computers in Computer lab. To see advantages and disadvantages of the desktop virtualization; at the end of the 14-week course is a survey conducted for students and achieve the results were analyzed with SPSS 21 statistical program.

Our data set cannot provide normal distribution requirement; significant differences between demographic variables and questions to test whether non-parametric tests of Mann Whitney U and Kruskall Wallis-H tests was used. The results of this test:

Gender with

- cloud computing in the use of storage services,
- cloud thinking is useful in information systems,
- in knowing that where the computer case,
- hardware costs in the know in reducing,
- in knowing that you can access their files from anywhere with Internet access via IP address or data entry,
- System in the experienced the server error, have been found to be effective.

In cloud computing applications with,

- computing, cloud computing using the storage service,
- where you know that the computer case,
- of the sites entered from the computer or the open the program know that realize that controlled by the administrator,
- to think that it is beneficial to the system,
- knowing of cloud computing systems that reduce hardware costs,
- the IP address via the internet with this system be aware that the data could be accessed from anywhere and files,
- and why on this campus has been found to be effective in the sense that you know that the preferred cloud technology, have been found to be effective.

Open the computer as the user they use to log in to the computer cloud computing with

Student password remembering the difficulty to,

- server failure encounter with clouds and
- It had an impact on the use of the computer information systems, it has been identified.

The students in the cloud computing system that you know where the computer case with

- where you want to connect to the computer with the IP access,
- to know why it was preferred on this campus,
- Clouds that have an effect on my knowledge of informatics applications have been identified.

Cloud computing system is beneficial,

- access from anywhere on the computer with the IP number and
- Why it was chosen as the impact on this campus has been identified.

It turned into a form of substance we have tried to make them easier to understand.

5. RESULTS

The fact that students are not well also about cloud technology, a large portion of that not use previously Cloud storage programs, why it is required of virtualization in the laboratory, had no idea about computer cases where it is, at another campus, this application is unaware that done, whether aware that reduce hardware costs reveals the fact that they encounter some problems when logging into the system. In this case; students can be informed more about cloud technology, encouraging the use of storage devices, as it reduces the hardware cost is favored on this campus and in later times, in all university laboratory and in units of desktop virtualization process should be will the information is performed. In the future; perhaps they will use desktop virtualization to be more active in later career. But, now to be delivered as a virtual lesson of this course, the result of the reduction to a single term in the curriculum; Students will leave the cloud system deprived the desktop virtualization.

Desktop virtualization applications made in the literature about the role of education has not revealed any application. Students with the continuation of work in this field, providing to follow closely the developing technology, improving technology awareness, the success of the course can be improved.

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