



# To evaluate the effectiveness of cloud computing in hospital

Rezvan sali<sup>1\*</sup>, Shahnaz Sali<sup>2</sup>, Fatemeh Pourrezagholi<sup>3</sup>

<sup>1</sup>Departman of management , Electronic branch, Islamic Azad University,Tehran,iran

<sup>2</sup>Assistant professor, infectious Diseases and Tropical Medicine Research center,Shahid Beheshti University of Medical Science, Tehran,Iran

<sup>3</sup>Associate Professor,Nephrology,Shahid Beheshti University of Medical Scienses,Tehran, Iran

## ARTICLE INFO

### Article history:

Received 10 May 2019

Received in revised form 11 Aug 2019

Accepted 22 Sept 2019

### Keywords:

Efficiency,

Cloud computing,

Emergency,

Technology,

Health,

## ABSTRACT

**Objective:** Today, Growth, expansion, increased network speed and large-scale epidemic during recent years has been a shift in various aspects of human life, and the impact of advances in technology on the sciences, arts and business leads to emergence of new areas such as e-Government, e-Learning and e-Health. **Methodology:** The importance of knowledge and information in one hand and very high volume growth and the need to constantly update on the other hand leads to create new tools and solutions for processing and access to information. Networks development and their functionality enhancement has a significant role in advance of this field. One of the new emerging ways is cloud computing system. Cloud computing as a new IT infrastructure and new web solutions could have significant benefits in providing electronic medical services. The use of this technology in e-health needs to consider several factors. The main objective of this study is to identify and rank the effective factors on the adoption of cloud computing in e-health. In this thesis, a model based on cloud computing is designed to integrate patient's information and makes them available for patients and doctors. **Results:** This comprehensive system significantly reduces processing time and service to the patient and also the display of patient records, including all the problems and diseases such as cardiovascular problems, allergies, lack of vitamins, etc., quality of care and also reduces the risk of diagnostic errors. **Conclusion:** In This system by using an intelligent module which protects evaluation and selection of proper emergency helps to patients and store patient's information record by contacting cloud in common storage space. Using this model, we can divide the space between the patient and doctor, and doctor become responsible from the beginning up to end of complete recovery.

## 1. Introduction

Today, in the era of globalization and knowledge-based economy, organizations should be survived in the socio- ICT in all sectors of economic, political, cultural and security of the country has created enormous changes. One of these changes in the field of health care that store patient information systems, medical information systems, tracking systems management, remote management systems, systems and services to patients in the emergency department admission examples of the applications. Cloud computing is a new IT infrastructure solutions, Internet and new can be significant benefits in providing medical services to bring in electronic form. The use of this technology in e-health need to consider several factors (Assad et al., 2015).

Nowadays, information and communication technology to overcome many of the limitations of health and many ways to improve communications, information and the ability to better patient care, has been created. IT integration, intelligent systems and electronic health systems and creating new methods of treatment and reducing costs, saving time and increasing the accuracy. Evaluation of services in the field of health, with the help of the Internet and create new concepts such as the medical Dora. The service is based on broadband, various tools involved in the transfer and exchange of data. Patients and physicians are using your mobile phone connected to a wide range of information and exchange information with each other to pay. Smart card electronic patient file to your doctor gives the doctor and the doctor through a special machine, called the card information (Buzhabad, 2012).

\* Corresponding author: Rezvansalinomail@gmail.com

DOI: <https://doi.org/10.24200/jmas.vol7iss04pp29-33>

Another important point is that health care is increasingly information-based services and knowledge-based services will come perhaps. Therefore, it is essential that e-health systems, telemedicine and hospital information system should be seriously considered.

### **1.1 Problem Statement**

growth, expansion and increased network speed and large-scale epidemic in recent years has been a shift in the different aspects of human life and the impact of technology on science, technology, and business rise to new fields such as government, education and eHealth is. EHealth to create electronic health records, health information and seamlessly integrate that aggregate this information to various stakeholders is very effective. An emerging phenomenon in recent decades has made it possible, cloud computing. Cloud computing technology that is meant to provide computing services (storage, software development, application software, etc.) via the Internet or cloud. This technology sharing patient information stored can be significant advantages in providing emergency services to have electronically. Lower costs and ease of access for physicians to patient information, the most important factor in the health of addressing the cloud computing electronics. However, IT infrastructure solutions, Internet and new users to provide any medical information at any time and place and that it has become a necessity in the country (Ghaffari, 2010). The electronic health record, accounting and electronic medical billing accounts, examples of application of ICT in health is by means of computer networks. E-health systems, particularly electronic health records in addition to better management of personal health, reduce health care costs, in addition to avoiding multiple diagnoses or repeated administration (Earth, 1999).

### **1.2 The need for research**

Emergency hospital is a complex sector in which the struggle between life and death is only the size of a breath. It has problems, such as overcrowding, long waiting time and costs too much. On this basis, reduce waiting times, lowering costs and shortening delays in patient care, research is one of the most important issues. One of today's IT infrastructures emerging in emergency departments around the world are looking to set up and use cloud computing. Cloud computing is a model where each computer through the network, to connect data centers and instead of raw data, processed data is received. In the current situation, the production of data within computers and used. But there is no need for software in cloud computing because processing is done through computers in the network environment. On the other hand, there is no need for powerful hardware and computers can easily output their main computers. In other circumstances it does not matter who you're working with a powerful computer or a mobile phone you intend to use this information. The only essential issue, or through software interface through which it can be connected to the main computer and network hardware can also run the same software as the intermediary (Eman et al., 2012).

Research into the use of cloud computing in most of the security and privacy of patients studied. The main objective of this study was to evaluate the efficiency and effectiveness of emergency service systems, cloud computing in the system in terms of health and medical science is assessed in the emergency department. The main objectives of this research are:

- evaluate the effectiveness and efficiency of cloud computing using wireless networks for emergency services .
- assessing the quality of services offered in the emergency department.

### **1.3 Hypotheses**

- Use of cloud computing time in case of emergency to deal with the disease.
- The results obtained with the use of cloud computing has been in hospital due to cost-effective to implement cloud computing systems.
- set up cloud computing systems in the quality of medical treatment will be effective.
- 1-5 Methodology

The design and requirements for data collection, including the time needed to provide emergency services, physician visit time and IT structure needed to implement this system by distributing questionnaires to doctors, nurses and hospital IT managers martyr Labbafinejad and then use statistical tests to validate their data (jurist and Memarzade Tehran, 2010).

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## **2. Materials and methods**

### **2.1 Research Methodology**

Firstly, using the library and internet research and structures is based on the cloud computing model for the implementation of the regional hospital provides emergency. The design and requirements for data collection, including the time needed to provide emergency services, physician visit time and IT structure needed to implement this system by distributing questionnaires to doctors, nurses and hospital IT managers martyr Labbafinejad and then use statistical tests to validate their data (Mathew, 2013).

### **2.2 Data**

In this research using descriptive studies and survey and review recent research and production and distribution of questionnaires and interviews by experts martyr Labbafinejad hospital emergency department provided a model for the use of cloud computing. Topics of the questionnaire include electronic health records, emergency treatment centers in the state of IT infrastructure, data security and patient privacy. Collected data analyzed by SPSS 19 software experts collected and validated, and finally presented the final results with regard to limitations (Nabil, 2014).

### **2.3 The research community**

The statistical population included 30 doctors and 10 tons of hospital information technology experts martyr Labbafinejad form.

#### 2.4 data analysis method

- The responses and comments of some software SPSS 19, after ensuring normal data, different statistical tests such as T-test and correlation analysis on the data for the effect of each factor on each other and the relationship between them examine. The indigenous model based on input from experts and reviews of the status quo martyr Labbafinejad hospital for emergency care will be provided.
- To calculate the reliability of this study, Cronbach's alpha was used. The most important and most widely used Cronbach's alpha reliability testing (reliability) of the measuring tool (questionnaire here) is SPSS software. If you factor in the human sciences is more than 7/0, it can be said that there are in tool reliability features (Soleimani et al., 2014).
- To verify the reliability of the questionnaire usually used Cronbach's alpha coefficient. The computational aspects of alpha Inventory questionnaire and evaluate the effectiveness of cloud computing in various aspects of emergency was in the reliability of the data collected shows.

**Table 4-2. Cronbach's alpha to evaluate the effectiveness of cloud computing in emergency**

alpha	The number of questions
0.757	40

Since Cronbach's alpha coefficient of 7.0 is obtained, the reliability is approved.

#### 2.4 Demographic characteristics of the sample

The first step to evaluate the effectiveness of cloud computing in emergency questionnaire among 52 physicians, nurses, emergency department and IT department staff and the information distributed 45 questionnaires were analyzed. Demographic information sample seen in the following tables. (In any table in addition to the number of people who have chosen to question credible options, the number of people who have left unanswered the question as unclear shown) (Hatami and Taheri, 2012).

**Table 4-3. Sex**

Percent	number	sex
55.6	25	Female
44.4	20	Man
100	45	Total

**Table 4-4. Resume**

Percent	number	History
13.3	6	Less than 1 year
28.7	13	Between 1 and 5
13.3	6	Between 6 and 10
22.2	10	Between 11 and 15
20	9	More than 15
2.2	1	Unknown
100	45	Total

**Table 4-5. Education**

Percent	number	Education
0	0	Diploma
0	0	Associate Degree
24.4	11	BS
20	9	MSc
55.5	25	PhD
0	0	Unknown
100	45	Total

**Table 4-6. income**

Percent	number	Education
4.4	2	Less than one million
35.5	16	The one to two million
28.8	13	The two to three million
24.4	11	More than three million
6.6	3	Unknown
100	45	Total

Statistical analysis of indicators and statements questionnaire:

Inventory analysis of the strengths and improve knowledge management organization except the primary questions that enable participants to gather

demographic information, the main question is 40 (buoy-R). In this section, using chi-square statistical analysis of univariate and correlation analysis to examine the replies to the questionnaire (Yqvy Noor and Jafari, 2014).

### 3. Discussion and results

#### 3.1 Correlation Analysis

Using Pearson correlation, the correlation between indices of the questionnaire were evaluated according to the views of respondents. Given the importance of the correlation between the effectiveness of cloud computing and other factors in the effective implementation of cloud computing in an emergency, in the matrix below summarizes the results of the correlation coefficient is inserted. To facilitate and increase the accuracy of inference from the table, the correlation coefficients were significant at the one percent level error content and they have a distinctive color. Pale housing association homes in the middle level and high level of correlation between two variables highlight the show (Yunesian, 2012).

**Table 4-10. correlation test**

Save images and pathology in order to expedite the detection, treatment	Unique documentation of patients' medical records	Reduce the time searching for the data treatment process	Improving coordination between the various sectors of emergency	Can be used in any place and time	
0.252	0.369	0.41	0.212	0.223	Ease
0.154	0.105	0.163	0.173	0.259	Risk
-0.019	0.125	0.072	0.162	0.036	Compatibility
0.117	0.158	-0.01	0.19	0.122	The impact on costs
0.403	0.136	-0.021	-0.005	0.217	Support
0.288	0.299	0.139	0.168	0.429	The decision to use
-0.048	0.054	0.233	0.124	0.005	Factors affecting IT

As can be seen in the matrix above a large number of indicators are correlated with each other as a pair. particularly in the use of cloud computing services are next in order.

### 4. Conclusion

results show that the use of cloud computing in emergency situations when dealing with the disease. The deployment of Cloud Computing taken to hospital due to the cost-effective implementation of cloud computing and cloud computing systems in the quality of the treatment process of the medical view is not effective. In this way, all the research questions answered and research hypotheses have been examined.

According to the analysis carried out and experts in the field of medicine and in the field of information technology in the institutionalization of cloud computing in emergency measures must be taken that these measures are:

- Training for emergency personnel to be aware of the benefits resulting from the deployment of cloud computing in an emergency;
- Justification of the decision-making in the area of IT infrastructure, including pricing models, different types of cloud computing and eyebrows ...;
- Development of information technology solutions and cloud services integration capabilities with other IT equipment.

#### 4.1 Recommendations for future research

In this study, using the questionnaire examined the effectiveness of the deployment of cloud computing in the emergency department. Because of the work done and the results can be developed and new variables added to it. the type of emergency patients in critical condition and is not taken into account.

The recommendations for future research include cloud-based smart devices to collect biometric data of patients, emergency co-ordination between various departments such as laboratory, radiology, ultrasound, etc. can be used. Also in the statistical analysis of the use of fuzzy methods to be qualitative as well as quantitative variables transformed.

#### REFERENCES

- Assad, A., Kashif, B., Zhang, L. & U.Khan, S. 2015. A cloud based health insurance plan recommendation system: A user centered approach Future Generation Computer Systems 43–44, 99–109.
- Buzhabad, A. 2012. cloud, PNU Sabzevar, Faculty of Engineering, Department of Information Technology, Dey.
- Earth, 1999. inspired by the approach to the dissertation research, publications Daryt Cultural Center, Tehran, Second Edition.
- Eman, A., Mohamed, N. & Al-Jaroodi, J. 2012. e-Health Cloud: Opportunities and Challenges, Future Internet, 4, 621-645;

- Ghaffari, A. 2010. cloud computing systems: examples, applications, challenges, master's thesis martyr Beheshti University.
- Hatami, SH. & Taheri, A. 2012. providing a new model based on cloud computing to improve health care Emergency first telemedicine conference - Amirkabir University of Technology.
- jurist, M. & Memarzade Tehran, G. 2010. darnning threshold, the privacy of patients, a prerequisite for the development of e-health, medical ethics journal, Issue XII, the summer.
- Mathew, S. 2013. Cloud computing: A new foundation towards healthcare, International Journal of Innovative Technology and Exploring Engineering (IJITEE) Volume-3, Issue-2, July.
- Nabil, S. 2014. Making use of cloud computing for healthcare provision: opportunities and challenges, International Journal of Information Managemen 34 ,177–184.
- Soleimani, A., Hamidzada, J. & Mahmoudi, S. 2014. cloud security by encrypting the group Shamir health, science and technology progress ninth Symposium, December.
- Yqvy Noor, M. & Jafari, H. 2014. identification and ranking of key factors influencing the adoption of cloud Rabansh eHealth, Quarterly Journal of Science and Technology Information Research Institute, October.
- Yunesian, Y. 2012. hospital design and implement a new model of agile and portable tablet-based architecture and cloud computing as infrastructure systems, telemedicine, first telemedicine conference - Amirkabir University of Technology.

#### How to Cite this Article:

Sali R., Sali SH., Pourrezagholi F., To evaluate the effectiveness of cloud computing in hospital, Uct Journal of Management and Accounting Studies 7(4) (2019) 29–33.