RESEARCH ARTICLE

INVESTIGATING THE OBSTACLES OF IMPLEMENTING HEALTH INFORMATION SYSTEMS FROM VIEWPOINT OF PERSONNEL OF MEHRIZ HEALTHCARE SYSTEM IN 2017

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Abstract

Objectives: Health centers have a special significance as one of main organizations of providing services and first line of access to services for people. These centers severely require using various means of information systems due to existence of high volume and variety of information in various fields and the best tool for managing this collection of wide and different information is Sib health information systems. The present study was conducted with the aim of investigating obstacles of implementing Sib health information system from viewpoint of personnel of Mehriz healthcare network in 2017.

Methods: This study investigated the obstacles of health information system qualitatively and with content analysis method. The research environment includes Mehriz city healthcare network and the study sample was 12 managers and authorities of Mehriz health center as key authorities who entered interview with purposeful sampling method with personal consent. Data collecting tool in this study was open questions. After performing interviews and implementing them, the data obtained from interview was analyzed based on topics and subtopics.

Results: The results obtained from interviews analysis showed that totally there are 5 main topics from view of Mehriz health network personnel for implementing Sib system. These topics include obstacles relating to human forces about commissioning and implementing health information system, financial obstacles before Sib health information system, legal obstacles before Sib health information system, organizational and structural obstacles of health information system, and technical obstacles (software and hardware) obstacles for health information system.

Conclusion: Regarding the identified obstacles, informing about application and development of information system in health domain, holding conferences with the objective of providing the latest achievements and using people with competence in training affair and providing applied training in this field and also increasing of commitment between user and support is a suitable way of obviating obstacles

Keywords: Health information system, Mehriz health network, obstacles, Sib.

INTRODUCTION

Today, technologic progresses, growth of customers' expectations, demand increase, shortage of resources and concern about errors of healthcare system have increased more complexity of healthcare systems that has emphasized on the issue of performance of health care organizations[1]. Performance is an important tool for every organization that its measurement is possible through collecting information and whether the performed works are related to objectives and hypotheses or not. Statistics and indicators are criteria able to measure success of an organization performance and determining the rate of achieving the considered objective of that organization[2]. Therefore, we require preparing and applying suitable indicators for effective supervision. Having information about requiring healthcare may be the criterion in planning in this field and helps determining objectives and providing services. What was mentioned indicates that in the health domain rate and accuracy of indicators measurement is inevitably significant for assessing performance. Growth, development and increasing of the environment increasing complexities has caused managers of healthcare organizations to seek more and more accurate information for reaching effectiveness

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and efficiency of their organizations performance and revival in the market[3]. For improving functional indicators, managers require a system like health information system, which provides the actual rate of available indicators accurately, and in the shortest possible time for them. World Health Organization considers the aim of creating health information system as developing mechanized service of patients' information, which will lead to effective promotion of information for caring patients, statistics, training and research. Health information system through providing accurate information for policy makers causes improvement of decision making in healthcare systems and many managers believe that they have to use them in health section for creating evolution[4]. Regarding that health section severely depends on information, so managers of these organizations should understand that it is only through powerful domains of information management that they could enter capabilities of health information system and information management in their business approaches, since systematic evaluation of health information system supports clinical, financial and managerial measurements of treatment cares and leads to modifying and developing health software proportionate to users' needs[5]. One of information systems which have been implemented at present is health information system or Sib. According to circular No. 298/100 dated 25.06.2016 of Minister of health, Treatment and Medical Training, Sib system was set in Universities of Medical Sciences and from beginning of October 2016 any type of registration, collecting and reporting information in paper is forbidden in the country level and will merely performed through Sib system. It should be mentioned that now some of universities of medical sciences have completed the operation of omitting paper and making the whole processes electronic[6]. This system follows objectives like creating health electronic files for all people, creating national base of health domain information, providing health services for all Iranians all over the country especially less developed regions and cities margins for increasing social justice level and securing public health, promoting qualitative level of health services through standardization of services according to the latest national health plans and providing health services based on private needs of age groups especially in risk groups (mothers, children and elderlies)[7]. Yet, the present study has been newly triggered and has some obstacles, which require studies in this field. So the present study was conducted with the aim of investigating obstacles of implementing Sib health information system from view of Mehriz healthcare network personnel[8].

METHODS

This study was performed qualitatively and with content analysis method for investigating health information system. The study setting included Mehriz City health network. In this study, the considered population for investigating obstacles and performing interviews was managers and skilled experts in the field of health information system[9]. Also, some skilled people from the Vice-Chancellor for health of Yazd Shahid Sadoughi University of Medical Sciences entered the study. The study sample was purposefully selected from heterogonous groups of managers and authorities of Mehriz healthcare network. Total 12 managers and directors entered the interview as key informants through purposeful sampling method with personal consent. The history of service higher than 5 years old, the key role of person in the considered unit, interest and high motivation for participating in the interview were considered as primary criteria of participating in the interview[10].

Data collecting tool in this study was open questions. This form besides the interviewee primary specifications included the place of performing the study, date and hour of interview, non-verbal reactions and emotional states relating to interview and other necessary information[11]. For validity of the study, some principles such as validity or credibility, transferability or transmissibility and conformability were considered. For investigating reliability in the study, the principle of dependability was also considered which is referred to data retrieval and repeatability of data by other researchers[12]. After completion of interviews, their text was written and typed word by word. In the process of analysis which started at the time of interviews, at first the pre-existing theories were put aside and then the text was read several times so that a complete understanding of it is obtained and in the next stage, the semantic units were specified and primary codes were extracted. Primary codes were placed in one class based on similarities and differences existing between them and then subcategories were created. For extracting codes, no special software was used[13].

RESULTS

The results obtained from interviews analysis showed that from view of Mehriz healthcare network; totally, there are five main topics or five general obstacles for implementing Sib system[14]. These topics include obstacles relating to human resources for triggering or implementing health information system, financial obstacles for Sib health information system, legal and ethical obstacles for Sib health information system, technical obstacles (software and hardware) for Sib health information system (Table 1 to Table 4).

Topic 1: Obstacles relating to human force:
In the topic 1, 5 subtopics of insufficient experience of human force and weakness of knowledge transfer in health domain, lack of specified rules and regulations for attraction, training or retraining of personnel, insufficient knowledge, expertise and skill of personnel, low commitment and understanding of personnel and lack of support and attention to creative ideas which have a limiting role on Sib system implementing.

Topic 1-1: insufficient experience of human force and weakness of knowledge in health domain. Personnel don't have enough experience about health information systems and among governmental and private organs.

Table 1: Four topics and subtopics obtained from interviews analysis.

Main categories	Main components	Item
Insufficient experience of human resources and weakness of transferring knowledge in the health domain		
Lack rules and regulation specified for attracting, training or retraining of personnel	Obstacles relating to human resources	1
Insufficient knowledge, expertise and skill of personnel		
Low understanding and commitment of personnel		
Lack of support and attention to creative ideas		
Shortage of validity for employment and training of personnel		
Insufficient validity for repair and maintenance		
	Financial obstacles	2
Insufficient validity for equipping and updating		
Lack of rules for confidentially of information		
Lack of responding	Legal obstacles	3
Spiritual ownership		
Planning and organization		
Commitment		
Culture	Organizational obstacles	4
Coordination		
Equipment non-updating		
Support	Technical obstacles	5
Access		

The trend of transfer of experiences is not performed between governmental and private organizations with optimal order and principles[15].

Topic 1-2: lack of specified rules and regulations for attracting, training or retraining of personnel:

Rules and regulations of training and updating human resources information have not been codified and about attracting of specialized forces of medical information technology of medical information no special rule has been codified.

Topic 1-3: insufficient knowledge, expertise and skill of personnel

There are not human resources with sufficient skill and expertise in the field of working with information technology and personnel has no skill in the field of working with equipment, software and hardware[16].

Topic 4-1; low commitment and understanding of personnel regarding cares and activities becoming electronic, there is no suitable understanding of health technology, especially in veteran personnel and apprentices

Topic 5-1: lack of support and attention to creative ideas

In respect to supporting posed ideas and views, which are presented by users, sufficient support is not performed[17].

Topic 2- Financial obstacles

Topic 2-1: credit shortage for employment and training of personnel

Regarding to non-payment of corporative personnel salary in due date and delay in paying their salary, the 3-month monitoring for 6 months reduced the personnel motivation and causes their occupational dissatisfaction

Topic 2-2: insufficient credit for repair and maintenance

For repair and maintenance of computer and network systems moderate but not high rates have been considered.

Topic 2-3: insufficient credit for equipping and updating

Designating budget for establishing and updating programs has not been well performed so that system is not updated in suitable time[18].

Topic 3: legal obstacles

Topic 3-1: lack of rules for information confidentiality

Lack of supplying private environment especially about caregivers of women health and also in many medical centers, the nutrition and mental expert has no special room or working table and rooms are in common

Rules codified for preserving confidentiality are little, for example, the entering code to system is accessible by everybody.

Topic 3-2: lack of responding.

In many cases, the system faces problem that it is required that the origin company of the system provide information for the user that the information does not show the identity of people but there is no specific respond in this regard.

Topic 3-3: spiritual ownership

Companies providing software merely see themselves as owner of the system and though the system purchased by the university, but they oppress the system spiritual ownership right that belongs to health network.

Topic 4: organizational obstacles

There is no positive attitude on behalf of personnel in using information technology for facilitating and accelerating tasks.

There is no planning and organizing by high rank authorities that this causes disorder in providing services and using system.

Topic 4-2: commitment

It is required that users of the system to have organizational and working liability that in such cases there is no commitment.

Topic 4-3: culture

Still there is no suitable culture about using and maintaining information system in optimal level.

Topic 4-4: coordination

No suitable coordination between sectors is performed for facilitating the affairs and registering the information system and applying discord between various sections[19].

Topic 5: technical obstacles

Topic 5-1: non-up-to-date equipment

The available software is an incomplete copy of west specimen that this same incomplete translation is contradictory and imagery.

Topic 5-2: support

Supporting companies in technical respect either in the province health network or the plan main support don't support the plan problems

Topic 5-3: access

There is only access to internet or internal network that sometimes due to non-payment of dues by the supporter; we face disconnection of network and lack of access to the system[18].

DISCUSSION

In the present study, we investigated the effective obstacles in better implementing of health information system in the form of 5 groups of human, financial, legal, organizational and technical obstacles. In human obstacles, topics such as personnel experience and supplying personnel training needs were identified. The results of studies performed by Yuen and Ma indicate that personnel experience and attitude towards implementing information technology is among obstacles of this system. Many studies have been performed about human and individual resources effective on accepting information systems and individual obstacles have been investigated from various dimensions. In the study performed by Robertson, one of individual dimensions of utilizing information systems is related to individuals' general knowledge. If the general literacy level and the ability of using day technology in a country is suitable, it will be an effective factor in mobility of the whole society towards using technology progresses. General knowledge in third world countries is in a low level due to low level of society culture, rural life, low level of literacy, failures and economic, political and social poverty, so it is considered as a very great obstacle for developing modern communicational networks in that society. Generally, it could be said that the human force factor is considered as the most important factor in the field of acquiring modern technologies and its development. Countries who want to progress in this field, should invest for increasing of general knowledge, training efficient and specialized forces, increasing of professional knowledge of agents of information systems activities and also increasing of general and professional knowledge of respective organizations personnel in the trend of modern communicational and informational technologies and providers of new services[8]. In technical obstacles, topics such as inefficacy of available equipment, lack of software and hardware support and inappropriate

access to internet and intranet are considered among important obstacles. Access to internet and intranet requires formation of internet service providers. Providers of internet services should connect to mother big stations and by having phone lines with sufficient number, provide this possibility for those who want to use internet. It is suggested that for modifying and improving infrastructures of information systems, some measurements are performed for increasing the internet speed, preparing and producing more up to date software and hardware and preparing support systems. Health centers could use potency and experience of private and international companies in preparing and supplying required in creating smart information network by attracting their support[11].

Among organizational obstacles, topics such as managers' support from information technology unit and personnel commitment were identified. The obtained results are consistent with the results obtained from studies of Toprakci *et al.*,[11] Drent *et al.*[12] and Melsen *et al.*, who considered managerial factors effective in utilizing technology. These scholars found out that non-cooperation of management personnel and lack of support and commitment of managers and change of rules prevents from utilizing technology. Lack of continuous support of senior manager is one of cases, which has commonly been emphasized by Kwok *et al.*,[13] Langli *et al.* and Bellone *et al.*,[14] In addition, in Siponen and Willison *et al.*, view, if there is not sufficient knowledge and awareness about information system, the organization will face some problems at the time of implementing this standard, so it is proposed that specialized and experienced managers who have sufficient specialty in the field of managing resources and using equipment are used[9]. In legal resources, topics such as non-observance of information confidentiality and lack of administrative policies were considered. Gupta *et al.*, in their study considered security and preserving privacy effective in utilizing information technology by small and medium companies[16]. Regarding that today, the subject of management of information security faces many controversial problems due to high complexity, these debates are in the line of providing framework, method and technologies for improving information security implementation in the organization. Effective implementation of information security requires an integrated approach. In the present status, information security has found a managerial nature and has required training and attention of organizations managers. This has caused codification of one of the most comprehensive standards of information security management in 2005 called ISO 200:20071. The aim of codifying this national standard is to specify a requirement for creation, implementation, exploitation, monitoring, revising, maintaining, improving and promoting a documented security management system. Therefore, it is proposed that health information systems model these standards for preserving information confidentiality and extend warranty of implementing health information system in all organizations. In financial obstacles, the most important topics from view of studied samples was

supplying credit for repairing and maintaining computer and network systems and supplying credit for software and hardware. In the study of Smith *et al.*, the financial subject was considered among main obstacles in implementing hospital information system[17]. In their comprehensive evaluation model have pointed to economic concepts as one of main dimensions and introduced criteria of measurement, cost analysis, effectiveness and opportunity analysis. In another study has investigated investment status in information systems in one of treatment service centers[16].

CONCLUSIONS

Regarding the identified obstacles, appropriate ways of obviating obstacles include giving information about application and development of information system in health domain, holding conferences with the aim of providing the latest achievements and using competent people in training and providing applied educations in this field, providing high capacity of internet band for health offices and organizations, updating transmission equipment and also increasing commitment between user and supporter.

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AUTHOR'S CONTRIBUTION

Abbas Y: writing original draft, methodology, investigation, formal analysis, conceptualization. **Hamid E:** writing, review and editing, methodology, formal analysis, conceptualization. **Somayeh H:** writing, review, and editing, methodology. All authors read and approved the final manuscript for publication.

DATA AVAILABILITY

The datasets generated during this study are available from the corresponding author upon reasonable request.

CONFLICT OF INTEREST

No conflict of interest associated with this work.

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