

## Agility obstacles in Medical centers with a hospital information system (HIS)

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**Abstract:** Considering the states about the importance of organizational agility, as a means to overcome the challenges of the third millennium, surveying the agility obstacles in the hospitals can be a big jump in agility development and their high performance. Survey-analytic method is used in this study in which Urmia University Medical Centers that established Hospital Information Systems (HIS) have been analyzed in terms of agility obstacles. In the study, information related to the human agility factors and system-related agility factors were gathered using the comments list designed by academics and experts of HIS in two ways of hospitals visiting and using the information contained in the database of hospitals. Analysis of the collected data is done by SPSS-17 software using descriptive (frequency and percentage) and inferential tests (chi-square). Alpha level of 0.05 was considered as significant. Results: Of the 198 samples collected, 129 (65.2%) were human factors, and 69 (34.8%) were systematic. The maximum agility were occurred in laboratory sections 37 (18.7%) and clinical 31 (15.7%), respectively. Also there was no significant difference between human and systemic barriers for agility and studied hospitals ( $P > 0.05$ ). The most human obstacles on the agility were reported for inobservance and speed of data entry, no complete awareness of users about system and no training for new users to be attracted to the University. The most important obstacles of the system agility were: lack of proper reporting of system, no statistical separation for different working shifts, low-resolution radiology images in the system, multiple file numbers for one patient in the system and the problem of data about patients' bed to bed transfer.

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### 1. Introduction

In present competitive world, the organizations do much to be developed and well organized and use the suitable strategies for development and to be alive(1). Organizations' ability to react the environmental fast changes and their responses to the client desires in present competitive situation are the most important points. However, many factors limited the possibility of organizations adapting to environments' changing and also changes the chances to threats for organizations and make the competition hard and expensive. Suitability of the organization's structure and technical factors and adaptation to internal and external changes are the basic and inter-related points. In addition to technical factors, an agility organization uses the new organizing forms, human resources and technologies that are used the maximum advantages of skills and knowledge of human resources and also set the integration between human factors, technology and organization and provides an integrated and coordinated system (2). Along with what have been explained about the importance of the organizational agility as a tool to overcome the Third century challenges(3), analyses in this topic in hospital agility obstacles can be a significant jump in agile development and their high

performance. The findings of the present study show that cultural resistance and sedentary of clinical staff in using information technologies, increases especially when their use become time consuming or the basic changes in treatment emerges or the use of the technology needs more training programs(4). The results of Synder et al (2006) showed that the use of some technologies such as CPOE increases the workload of physicians, and as a result, using this technology is not welcomed (5). Grol et al said that different factors which mix the activities should be used in order to increase the agility of a hospital(6).

Tsinopoulos and McCarthy argued that the agility relates to the ability of the organization to attend activities in critical way and as a result, it is a direct factor to be competitive based on the organization's era (7). In a study held by Fathian et al about Mega Motor, mean score for organizational agility was 5.8 which is medium to low levels and according to the researches the organization needs mean level for agility (8). This research was conducted by giving the importance of agility in hospitals and its impact on the competitive situation and providing better and faster service and to determine the agility obstacles of hospitals with information systems.

## 2. Material and Methods

Survey-analytic method is used in this study in which Urmia University Medical Centers that established Hospital Information Systems (HIS) have been analyzed in terms of agility obstacles. In the research two factors that were agility obstacles in using HIS were analyzed. These factors are human related factors and system related factors. Human related factors conclude: unawareness of users in using the system, failing to enter the correct, accurate and fast information in the system, lack of confidence to the system, etc. System related factors are: Lack of proper reporting, tracking of electronic patient records in system, the lack of accurate statistics in some sectors, lack of breakdown in different working shifts, low-resolution of radiology images in the system, creating several numbers for a patient records in the system, the data problem about patients' bed transfer and etc. these factors were gathered using the comments list designed by academics and experts of HIS in two ways, first by hospitals sectional visiting and the second by using the information contained in the database of hospitals. Analysis of the collected data is done by SPSS-17 software using descriptive (frequency and percentage) and inferential tests (chi-square). Alpha level of 0.05 was considered as significant.

## 3. Results

Of the 198 samples collected, 129 (65.2%) were human factors, and 69 (34.8%) were systematic. The maximum agility were occurred in laboratory sections 37 (18.7%) and clinical 31 (15.7%), respectively. Also there was no significant difference between human and systemic barriers for agility and studied hospitals ( $P < 0.05$ ).

Table1: human and systemic factors frequency of agility obstacle different hospital wards

Hospital departments	frequency	Percent
Radiology	28	14.1
Pharmacy	14	7.1
Labratories	37	18.7
Operating Room	10	5.1
Hospital Ward	31	15.7
Medical Document	24	12.1
Addmission	18	9.1
Discharg	20	10.1
OutPatient	16	8.1
Total	198	100

Table2: Human frequency agility obstacles based on hospital

Hospital	frequency	Percent
Emam Khomeini	81	40.9
Motahhari	73	36.9
Syed-alshohad	44	22.2
Total	198	100

Table3: System frequency agility obstacles based on hospital

Hospital	frequency	Percent
Emam Khomeini	27	39.1
Motahhari	32	46.4
Syed-alshohad	10	14.5
Total	69	100

As Table 4 shows, there is no significant relationship between systematic and human agility obstacles and hospitals ( $P > 0.05$ ).

Table4: human and systemic factors frequency for decreasing agility among different studied hospitals (n=198)

	Hospital			P-value
	Emam Khomeini frequency (%)	Motahhari frequency (%)	Syed-alshohad frequency (%)	
systemic	27(31.9)	32(46/4)	10(14.5)	0.063=P
Human	54(41.9)	41(31.8)	34(26.4)	

## 4. Discussions

Over the past decades, the world witnessed a revolution in the realm of science and technology under the name of Information Technology and many documents have been presented in this subject. Although the start of this movement is to use the information technology in services and economics, in most areas of human life, including health care and treatment, using the outcomes of the technology department related to authorities and managers. In developed countries and also in countries leading the use of IT, establishment and development of information technology in health care organizations are faced with obstacles. Present study unlike other studies analyzed the agility in terms of human and systematic dimensions. Goldman summarized the agility in three words: strategic reaction, prominent changes and pervasive systems (9). Sharifi and Gang determined a three-section sample that the first section are the agility stimulators in workplace, second section is for agility abilities and third goes to the agility empowerment (10). Lin et al determined a conceptual sample for agility that recognizes the changes as an important element for agility. According to this sample, organization agility needs a

set of abilities such as flexibility, competence, responsiveness and speed to face the changes(11). In our study, the most human obstacles on the agility were reported for inobservance and speed of data entry, no complete awareness of users about system and no training for new users to be attracted to the University. In Patterson's research, cultural resistance and sedentary of clinical staff in using information technologies, increases especially when their use become time consuming or the basic changes in treatment emerges or the use of the technology needs more training programs are mentioned as human related obstacles. In another study increscent of the work time of physicians in the use of some technologies such as CPOE do not be welcomed (5). In addition, another human related obstacle in using IT such as electronic records in hospitals is the disagreements of the patient in use of computer systems. The results of the study in USA show that according to many patients, electronic data transmission and storage can endanger the integrity and confidentiality of them. So there should be legal process to prevent unwanted deletion, change , decrement or distribution of this information to reduce the concerns of patient about the access of other persons other than clinical members who are required to be are responsible for medical records (12) . In present study, some of most important system agility obstacles mentioned as follow: lack of proper reporting, no statistical separation for different working shifts, low-resolution radiology images in the system, multiple file numbers for one patient in the system and the problem of data about patients' bed to bed transfer. But in another study technological obstacles mentioned as: unsuccessful information transfer, lack of current software in market and systems backup firms, Infrastructure problems and needed terminology for network interconnection and service providers. In this paper, there is no significant relationship between agility obstacles and hospitals ( $P>0.05$ ). In the paper by Yarmohammadi et al, there is no significant relationship between agility in public and private hospitals of Isfahan. In order for hospitals to be able to change such as technology and equipment and develop procedures and to keep up-to-date treatments, it is necessary to design and demonstrate their management and management political. Also the hospitals, for success (not survival) need to be learners to be able to response the requests faster, cheaper and more effective(13).

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#### **References**

1. Karbasian M, Javanmardi M, Khabushani A, Zanjirchi Seyed M. Designing An Integrative Approach Of Interpretive Structural Modeling (Ism) And Fuzzy Topsis- Ahp For election And Ranking Of Agile Suppliers. *Prod. Oper. Manag.* 2011;2(12):107–34. (Persian)
2. Jafar-Nejad A, Zarei AA. Evaluating the role of Intra-Organizational Factors in explaining a model for changing the current organizations to the agile ones in the electronics and telecommunications industries of Iran. *Cult. Manag. J.* 2005;3(10):67–86. (Persian)
3. Sharifi H, Ismail H, Reid I. Achieving agility in supply chain through simultaneous “design of” and “design for” supply chain. *J. Manuf. Technol. Manag.* 2006;17(8):1078–98.
4. Patterson E. Human factor barriers to the effective use of clinical reminders. *J. Am. Med. Inform. Assoc.* 2004;11(1).
5. Snyder R, Weston MJ, Fields W, Rizos A, Tedeschi C. Computerized provider order entry system field research: the impact of contextual factors on study implementation. *Int. J. Med. Inf.* 2006 Nov;75(10-11):730–40.
6. Grol R, Baker R, Moss F. Quality improvement research: understanding the science of change in health care. *Qual Saf Heal. Care.* 2002;11(2):110–1.
7. McCarthy I, Tsinopoulos C. Strategies for agility: an evolutionary and configurational approach. *Integr. Manuf. Syst.* 2003;14(2):103–13.
8. Fathian M, Golchin Pour M, Khosroshahi S. Organizational agility: case study on MegaMotors. *Tadbir.* 2006;17(175):37–43.
9. Goldman SL, Graham CB, editors. *Agility in Health Care: Strategies for Mastering Turbulent Markets.* 1st ed. Jossey-Bass; 1999.
10. Sharifi, Zhang Z. Agile manufacturing in practice - Application of a methodology. *Int. J. Oper. Prod. Manag.* 2001;21(5/6):772–94.
11. Lin C-T, Chiu H, Chu P-Y. Agility index in the supply chain. *Int J Prod. Econ.* 2006;100:229–85.
12. Getting to E- Health: the opportunities for using IT in healthcare industry [Internet]. [cited 2013 May 18]. Available from: <http://www.itaa.org/>
13. Yaghobi M, Karimi S, Raeisi A, Javadi M, Sharbafchi N. A study of relationship between the learning organization and rganizational commitment among manager in educational hospitals of Isfahan University of Medical Science. *Health Inf. Manag.* 2010;7(2):225–34