Agile design of public hospitals in Iran

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Abstract: Purpose: Hospitals that are part of the organization because of the sensitivity and importance of the treatment must have in today's dynamic agile structure to be able to adapt to environmental changes. The aim of this study was to provide a structural model of agility in hospitals. **Methods:** This descriptive study was conducted in the year 2014-2015. A total of 260 people were selected as sample from mentioned the statistical population. Validity of the questionnaire through examination exploratory and confirmatory factor analysis and reliability tests with Cronbach's alpha was approved 0.97. Data software 18 SPSS and 8.5 Lisrel a factor analysis using mathematical models the final model was developed based on confirmatory factor analysis confirmed the pattern was evaluated. **Results:** Question related to four agility (responsiveness, competence, flexibility, speed) are measured at the agility hospital And supply chain (independent variables) to correctly cover the variable and valid. Agile supply chain variable between maximum sensitivity and responsiveness(0.66±1.98) To develop the skills of employees received the lowest average (0.46±1.34) As well as structural equation modeling and all relationships were verified (P-value = 0.00) (t-value ≥ 1.96). **Conclusion:** Therefore, it is suggested to apply that to be successful and better adapted to the environment and achieve enhanced service quality, employee satisfaction and patients, competitiveness, reduce costs, reduce time to service delivery and organizational agility.

Keywords: agile manufacturing, general hospital, responsiveness, competence, speed, flexibility.

1. Introduction

Organizations today operate in an environment that changes rapidly, it is required to have adaptive strategies. In fact, the problem of how organizations can succeed in a dynamic environment and unpredictable, a subject that is the most important challenge today is known (Ravichandran & Troy, 2007). The business environment is unpredictable and variable current era, excellence in competition, the main goal of any organization (Zeng, Jumbo, et al.). In that the largely unpredictable and cannot be pre-determined response, Have the flexibility to be embedded in organizational processes and IT systems. In fact, a new level of flexibility and agility they need it (Highsmith, 2009). Agility pattern, to innovative products, in low volumes, supply chain highly volatile, in which customer needs are often unpredictable and source control functionality and innovation is difficult to see such good health services (Lin, Chiu, et al., 2006). But most organizations are agile way to fail not because they did not respect the principles of agility, but just because there have not linkages between sectors (Geraldi, Lee-Kelley, et al., 2010). In today's environment, every organization must be simultaneously producing different products and

short lifespan, redesign of products, changes in production methods and called "agile organization," read the response can be effective to change (Pan and Nagi, 2010). Organizational agility is a significant business capability (Lee, Sambamurthy, et al., 2015). Health System hospitals and non-profit organizations that can be managed with economic and administrative mechanisms should be considered on the grounds that: If you look at the hospital with the attitude of an organization, it will change the patient to stare at us. Then to obtain consent will be considered further (Raschke, 2010).That Organization of care covers access, waiting times, reliability and efficiency (Benson & Potts, 2014) due to the competitive environment, patients can choose different services and understand that the organization needs to change and adapt to its survival and perpetuation of the status quo, to take advantage of the competitive environment and economic mechanisms. The hospitals that are part of the organization because of the sensitivity and importance of the treatment must be agile to survive in today's dynamic and responsive to the needs and demands of their patients (Yusuf, Gunasekaran, et al., 2014). For diagnosis and treatment of patients (Raghupathi &

Raghupathi, 2014) and improve their service quality (Popowich, 2005). Agility in the supply chain can be defined as "the ability of a supply chain to react quickly to market changes and customer needs" (Christopher, Lowson, et al., 2004). Supply chain agility is a key determinant of competitiveness in today's dynamic and turbulent business environment (Sangari, Razmi, et al., 2015) and able to respond worthy to the way the changes that happen in work environment (Agarwal, Shankar, et al., 2007). With respect to work and achieve success factors in the supply chain of eleven components (development of staff skills, use of information technology, integration processes, sensitivity and responsiveness to market, appropriate planning, flexibility, new product introduction, speed of delivery, reduce costs, customer satisfaction, product quality) were identified that were more common (Doz & Kosonen, 2010). Sherehiy et al., study of the properties of the flexible global business agility, responsiveness, speed, culture change, integration and low complexity, good quality products and services and mobility introduce basic competencies (Sherehiy, Karwowski, et al., 2007). Yang et al., announced that due to the numerous obstacles that environmental factors into their organizations. How organizations respond to this uncertainty is the standard for measuring performance (Yang & Liu, 2012). Qumer and Henderson-Sellers in their study stated that agile methods is the way in which the focus is on employees, relationship-oriented, flexible, fast, responsive and creative learning that managers rely on them to staff deal with the instability (Qumer & Henderson-Sellers, 2008). Therefore, organizations need to survive and thrive in an environment of change and uncertainty, so organized with a flexible and innovative organizational structure in order to make quick decisions to promote. Agile organizations need to retain the human resources that can transform the growth of uncertainty and change in order to move an entrepreneur organization (Lin, Chiu and Chu, 2006). Agile organizations to understand and predict changes in the business environment. And in this context, to re-structure their own. Three basic elements of survival and improve the agility of organizations will be created: the knowledge, flexibility and efficiency (Qumer & Henderson-Sellers, 2008). In today's competitive world that subject to rapidly change; Health care organizations are with regard to the responsibility and mission for important in the keeping health and care of society life Like other organizations must be agile to respond to these changes This means that you should analyze the situation and the position of have their own present and future To timely and correct decisions for the future are vague and unknown (Sullivan & Wyatt, 2009). In most developing countries 5-10 per cent of government expenditure allocated to the health sector (Sinimole, 2012). Some authors like Cox & Chicksand

and Herer et al., showed model of agility, for innovative products, in low volumes, supply chain highly volatile, in which customer needs are often unpredictable and control capabilities source of innovation is difficult to see such good health services (Lin, Chiu and Chu, 2006). This study is to investigate the factors influencing hospital agility provide a model for agility.

2. Material and Methods

Current research of studies Applied and case studies in 2014-2015, which was developed using structural equation modeling. The study population consisted of the directors, managers and experts, including doctors, hospitals, university faculty members, senior experts and experts in the field have been hospital. The Kysr- Myr- Okin (K. M. O) in structural equation modeling If you P-value < 0.05 is of sufficient sample size in the method for determining the sample size ranged from 10 - 20 times the number of samples will act (Mahmodi & Khademlo, 2013). In the present study to determine the sample size based on the number of variables, multiplying 13*10-20 A total of 260 people were selected from the population (Hooman, 2006). Cluster sampling is that the whole country into five regions (North, South, Central, East and West) and each region is divided into four selected hospitals and 52 quotas were allocated to each region. Using the study of books and articles in Persian and English and with the help of scientific information, Internet, agile organizations that theoretical models have been examined. The health care system, including hospitals, schools and health organizations agile application patterns have been studied. Apply the recommendations of the experts, the final questionnaire design and the statistical sample was placed. To determine the reliability of the distribution of the full study, 30 questionnaires were distributed among the members of the sample in this study; Cronbach's alpha coefficient was calculated questionnaire 0.97. Two-part questionnaire that included demographic data is the first part. The second part of the survey included questions on the agility of public hospitals is designed to question the questionnaire contained 53 closed questions. The Scale used a Likert scale of 5 options. 280 questionnaires have been scholars and experts finally collected and analyzed 260 questionnaires were based on test hypotheses. Exploratory factor analysis was performed on data from the questionnaires and the final model was developed using mathematical models based on confirmatory factor analysis confirmed the pattern was evaluated. In combination with the use of SPSS version 18 and version 8 with LISREL using Kolmogorov-Smirnov test, regression test and Friedman to analyze the data in a meaningful level of P- value ≤ 0.05 was used.

3. Results

According to the findings of the study population was 52.7% male, 39.6% of respondents in the age group 25 - 35 years and 3.1% of the respondents in the age group 55 - 65 years and the age distribution curve extreme skewness respondents younger age groups there, 15% of respondents had a bachelor's degree and doctor were 11.9%, 36.9% and 7.3% of respondents have experienced 2 - 9 years' experience of respondents 23 to 30 years (Table 1).

Table 1. The distribution, frequency and cumulative percentage of respondents' demographic characteristics of supply chain agility hospital.

Variables		The observed	frequency	Percent Views	The cumulative percentage
Sex	Male	137		52.7	52.7
	Female	123		47.3	100
Total		260		100	
Age	35-25	103		39.6	39.6
	45-35	100		38.5	78.1
	55-45	49		18.8	96.9
	65-55	8		3.1	100
Total		260		100	
Education	BA	39		15	15
	MA	131		50.4	65.4
	PhD	26		10	75.4
	GP	33		12.7	88.1
	Doctor	31		11.9	100
Total		260		100	
Major	General medicine	34		13.1	13.1
	Doctor	30		11.5	24.6
	General Surgery	2		0.8	25.4
	Management of Health Services	45		17.3	42.7
	Medical Records	23		8.8	51.5
	Other areas of Medical Sciences	126		48.5	100
Total		260		100	

The factors affecting the agility of the most scores in the hospitals of varying flexibility (2.23) and the Least average of the variable competence (1.36), respectively. Minimum 1 and maximum agility 3 and the mean score of respondents in this variable is 1.51. In Table 2, a description of the respondents based on agile supply chain variables presented the highest scores on the variable responsive to the market (1.98±0.66) and the lowest average in the range of staff skills (1.34±0.46) were paid.

Table 2. Descriptive statistics for the variables of supply chain agility public hospitals and Kolmogorov-Smirnov test results.

Statistics Variable	Number	At least	Up to	Average	Variance	P-value
Responses	260	1	3	0.48 ±1.61	0.23	0.000
Competency	260	1	3	0.38± 1.36	0.14	0.000
Flexibility	260	1	3	0.84±2.23	0.70	0.000
Delivery speed	260	1	4	0.78± 1.49	0.71	0.000
Agility (in general)	260	1	3	0.37±1.51	0.14	0.000
Employees develop skills	260	1	5	0.46±1.34	0.21	0.000
Application of Information Technology	260	1	3	0.50± 1.51	0.25	0.000
Integration processes	260	1	4	0.53±1.58	0.28	0.000
Responsive to market	260	1	5	0.66± 1.98	0.43	0.008
Planned accordingly	260	1	3	0.47±1.45	0.22	0.000
New product introductions	260	1	2	0.54±1.56	0.29	0.000
Lower costs	260	1	4	0.67±1.74	0.45	0.000
Customer satisfaction	260	1	3	0.47±1.46	0.22	0.000
Quality	260	1	4	0.60±1.53	0.36	0.012

With respect to the adequacy of the sample size appropriate Myr- Kysr- Olkin (K.M.O) a view examples Bartlett meaningful test data suitable for factor analysis. Based on the test data when analyzing what are the indicators (K.M.O) than (0.7) and close to a level significantly lower than the Bartlett test (0.05) is. If the value of this parameter is greater than 0.7 are available on the factor analysis is very good. If it is between 0.5 and 0.69 must be considered, and if less than 0.5 is not suitable for factor analysis (Table 3).

Table 3. Sizes (K.M.O) solved Bartlett Sphericity test for the variable agility and agility of public hospitals in Iran.

Index	Good value	Earned Value	
		Agility	Supply chain
K.M.O	≥ 0.7	0.851	0.813
Bartlett significant level	≤ 0.05	0.000	0.000
Test results		Suitable	Suitable

K.M.O=Kaiser-Meyer-Olkin

According to the output lisrel software, fitness index values obtained are appropriate and all the numbers and load factor greater than (0.5) is acceptable and desirable (Figure 1).

Fig 1. Times the standard functional structural model for the study of supply chain agility and public hospitals in Iran.

Structural equation modeling in the research, all the numbers and load factor greater than 0.3 is acceptable and desirable (Figure 2).

Table 4. Indicators for the fitness and agility of the supply chain research model for public hospitals in Iran.

Fitness index	χ²/df	SRMR	RMSEA	GFI	AGFI	NFI	CFI	IFI
Fitness research models	3.12	0.03	0.090	0.93	0.91	0.93	0.92	0.74

SRMR=Root Mean Square Residual
RMSEA=Root mean Square Error of Approximation
GFI=Goodness of fit index
AGFI=Adjusted Goodness of Fit Index
NFI=Normal Fix Index
CFI=Comparative Fit Index
IFI=Incremental Fit Index

The table above shows the results of the research model fit indices are in good condition. Goodness of fit index, which ranges between 0-1 with a value of 0.74 is very good reception Thus according to all indicators and according to fitness index can be calculated Fitness indicators for research model is fitted enjoyed good (Table 4). Due to all of the t-statistic t-test, the significant correlations observed in this model is more than 1.96 accepted (Figure 2).

Fig 2. Again statistic t-value structural model for the   study of supply chain agility and public hospitals in Iran.
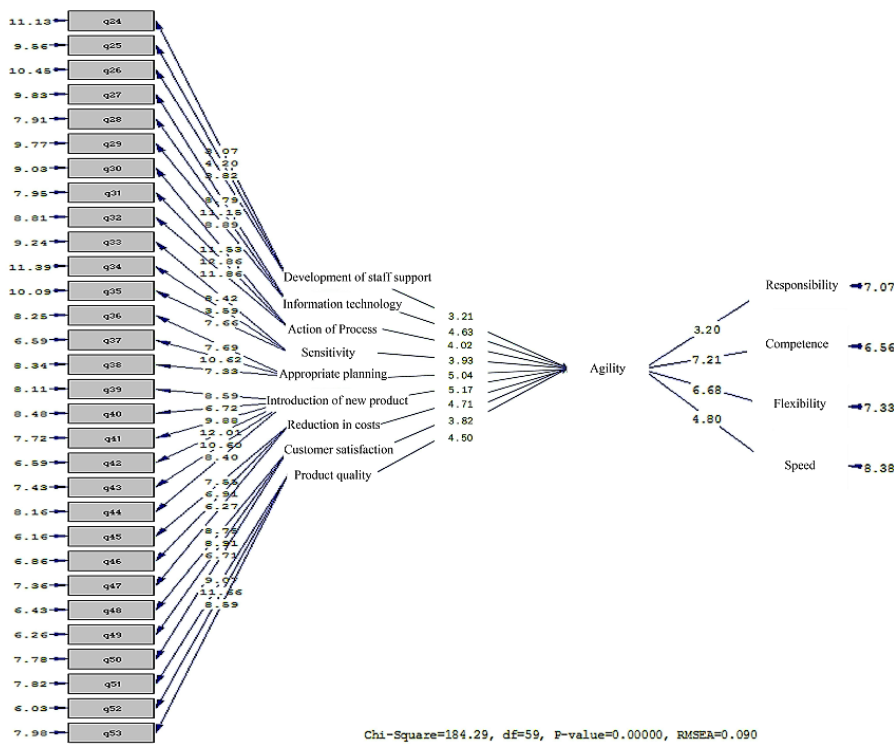

Fig. 1. Times the standard functional structural model for the study of supply chain agility and public hospitals in Iran
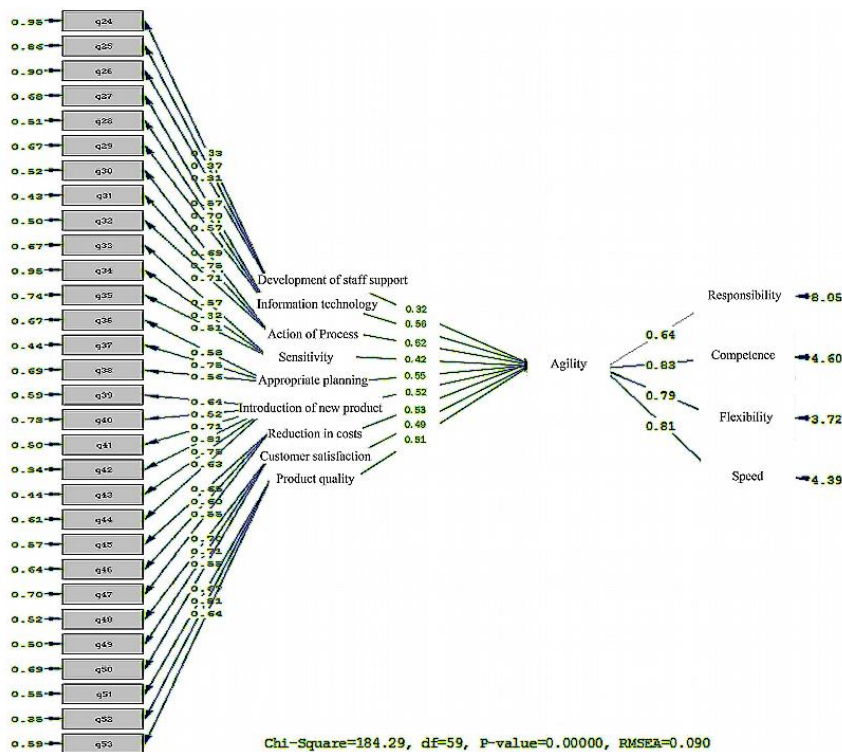

Fig. 2 Again statistic t-value structural model for the study of supply chain agility and public hospitals in Iran

4. Discussion

According to the findings of inferential statistics KMO index sample size (number of respondents) is adequate for factor analysis. Bartlett test as well as the level of significance, is smaller than 0.05, which shows exploratory factor analysis to identify the appropriate operating model. Confirmatory factor analysis showed diagrams and then the question of the four potential agility (responsiveness, competence, flexibility, speed) in total hospital assessment and supply chain agility (independent variables) to properly cover the variable they are valid. Costs, customer satisfaction and product quality, agility public hospitals in Iran, like similar studies were confirmed, so that the supply chain agility factors affect hospitals. Seyedhosseini et al., at the design agility in the process of new product development models using path analysis in Tehran the conclusion that new product development agility and conquer the market is effectively competitive (Seyedhosseini, Ahmadi, et al., 2010). Hesami et al., the research the design of agile supply chain management in the industry did Ghazvin Stated that the new product development and supplier management and development directly and indirectly and delivery management only indirectly affected the agility of the supply chain (Hesami, Rajabzadeh, et al., 2010). Alzoubi et al., in their research stated that the new product development process is significantly associated with agility (Alzoubi, Al-otoum, et al., 2011). Shahin & Lellahgany Isfahan University the research in the service stated that the application of the principles of agility significant impact on the variety of services offered by the university (Shahin and Lellahgany, 2011). Lin, Chiu and Chu the research of organizational agility indices agile organizational management, product design and manufacturing of a new product or service as their agile (Lin, Chiu and Chu, 2006). Salimi et al., the research in the IRIB industry stated that information technology and supply chain are the most ranking and human resources is the least ranking (Salimi, Matin, et al., 2013). Molavi et al., the research in the Isfahan industry stated that information technology and technology management strategies compared to other industry has a positive effect on agility (Molavi, Ismailian, et al., 2012). Yoonesian the research agile making of the hospital states as the only factor agility in information technology infrastructure, telemedicine (telemedicine) (Yoonesian, 2012). Tizro et al., Hormozgan Iron Melting Company Joint Stock did research, introduced the role of staff skills and the ability to use information technology as a cornerstone of Agility (Tizro, Azar, et al., 2011). Ghorbanizadeh et al., was done research on automotive Bahman Group companies stated that a learning culture and a significant positive impact on organizational agility and of knowledge management (Ghorbanizadeh, Hourmanesh, et al., 2011). Lahafi the research of private and public banks in Sanandaj city had the greatest impact on enterprise agility and teamwork least two components to responsiveness customer impact and value to the skills and organizational knowledge (Lahafi, 2011). Znjyrchy et al., the research did in Yazd the textile industry when the organization agility that knowledge management is the sense of balance and as a result extreme weakness in the infrastructure of knowledge management in Yazd the textile industry companies reduced agility (Znjyrchy, Hatami, et al., 2011). Fathian the research customer orientation organization said the main factor in the Agility Model of agility (Fathian & Providing, 2010). Bagherzadeh et al., a research was done at the post office in Mazandaran Ghayemshar concluded that the office of Yousef and Zhang study of four potential agility (responsiveness, competence, flexibility and speed) does not have a gap there in terms of agility (Bagherzadeh, Jamkhanh Baluey, et al., 2010). Zanjirchi and Olfat The research showed that the needs of the new business environment creates always new ways to compete Depending on the strong support of the theoretical and the need for organizations to be comprehensive And effective structures on the agility of Total Quality Management, information technology management and Lean Manufacturing (Zanjirchi & Olfat, 2010). Shahabi & Rajabzadeh their study have done on government organizations, increased efficiency, staff and customers' satisfaction as well as high quality products and Services Organization as the major advantages mentioned organizational agility (Shahabi and Rajabzadeh, 2005). Ribeiro and Colombo in their study concluded that the operational agility of the intelligent and multi-skilled staff have a significant effect (Ribeiro, Barata, et al., 2009). Zain M, Rose the real use of information technology in research and considerable direct effect on organizational agility (Zain, Rose, et al., 2005). Hospitals also considered including organizations that are dependent desperately information technology (Jahani, Naghshine, et al., 2014). At the beginning of the twenty-first century service organizations intense changes on their observed. The intensity these changes so that service organizations have faced modern challenges And inattention to the challenges of existence and success of any organization is as extremely affected .Some of these changes are: 1- The globalization of markets and market position of organizations 2- is very Customers need different service 3- Customers want to satisfy their request individual 4- The emphasis on the introduction of new services and focus on their marketing organizations. These and other factors led to the organizations of the

service which now function in an environment where change is the most important feature. The paradigm agility to adapt ability to a changing environment as well empower staff to response rapid to market needs and customer Empowering staff were presented (Ghodosi Rad, 2014). For many reasons stated in relation to the problems in the health system, Such as getting into the competitive environment and the use of market mechanisms for the continued existence of the need for change is greater than ever. The program should be modified to achieve the objective of health system and respond to the needs and expectations of the society to be developed. The success and better adaptation to the environment and achieving increase service quality, satisfaction staff and customers, competitive advantage, reducing costs, reducing service time and organizational agility is recommended.

Studies have shown that agile organizations to gain increased success rate (about 20%) than their counterparts in the implementation of development measures (Shahabi & Jafarnejad, 2007). As well as 2007 report by the Institute Astndysh group showed that only 16 % of the time agile software projects were successful, but after the agile Gartner report showed that 77% of projects were successful (Rubinstein, 2007). Forrester research in 2004 showed but after the agile 93% increase in efficiency, 88% quality and 83% increase beneficiary's satisfaction, 49% cost reduction, 66% risk reduction in the return on investment (Lin, Chiu and Chu, 2006). Factory Lrdstun General Motors in 1993 began to change in agile production and reduce the waiting time 38 %, 48 % inventory, 27 % of production workshop space (Lin, Chiu and Chu, 2006). As well as a case study as presentation supply chain agility factors and evaluation indicators National Iranian Oil Company, represents the direct connection agile supply chain with agility organization. Investment in such companies with high volume and having common resources and the importance of commitment against customers, not agile supply chain and the lack of timely supply of pieces cause damage and opportunity costs and discontent is irreparable (July & Hezarkhani, 2006, Sohrabi & Kazazi, 2009).

5. Conclusions

Nowadays, environment organizations expecting changes, opportunities and many challenges that face their ability can be expected from the organization. From one side, having a strategic view of the changes and opportunities resulting from the changes, and on the other hand, improving the infrastructure organization can be successful long-term and stable mechanism for the organization. Introducing agile organizations move along the development chain variants that organizations are equipped to survive in the conditions of world trade

is today. To this end, organizations are required to pave the way for the realization of their agility.

Conflict of Interest
The authors declare no competing of interest.

References
[1]. Agarwal, A., Shankar R. & Tiwari M.(2007) Modeling agility of supply chain. *Industrial Marketing Management* 36: 443-457.
[2]. Alzoubi, A.E.H., Al-otoum F.J. & Albatainh A.K.F.(2011) Factors associated affecting organization agility on product development. *International Journal of Research and Reviews in Applied Sciences* 9: 503-516.
[3]. Bagherzadeh, M., Jamkhanh Baluey A. & Moafi Madani S.(2010) Check the status of agility in government agencies: Case study: Mazandaran Post Office. *Management researcher* 7: 1-47.
[4]. Benson, T. & Potts H.W.(2014) A short generic patient experience questionnaire: howRwe development and validation. *BMC health services research* 14: 499.
[5]. Christopher, M., Lowson R. & Peck H.(2004) Creating agile supply chains in the fashion industry. *International Journal of Retail & Distribution Management* 32: 367-376.
[6]. Doz, Y.L. & Kosonen M.(2010) Embedding strategic agility: A leadership agenda for accelerating business model renewal. *Long range planning* 43: 370-382.
[7]. Fathian, M. & Providing A.(2010) A model for the development of agility in the organization. *Journal of Industrial Engineering and Management of Sharif* 1 127-138.
[8]. Geraldi, J.G., Lee-Kelley L. & Kutsch E.(2010) The Titanic sunk, so what? Project manager response to unexpected events. *International Journal of Project Management* 28: 547-558.
[9]. Ghodosi Rad, A.(2014) Explaining the organizational agility indicators studied and validation of Babol university of medical sciences and health services.
[10]. Ghorbanizadeh, V., Hourmanesh F. & Gholamhosseini H.(2011) The role of learning culture and knowledge management in organizational agility. *Journal of Management*

Studies in development and Evaluation 21 47-72.

[11]. Hesami, h.Z., Rajabzadeh A. & Tolouee A .(2010) Study of factors affecting supply chain agility and agile supply chain management concept model. *Quarterly Journal of Commerce* 4: 15-22.

[12]. Highsmith, J.(2009) *Agile project management: creating innovative products*. Pearson Education.

[13]. Hooman, H.A.(2006) *Multivariate analysis of behavioral science research*. Tehran.

[14]. Jahani, M.A., Naghshine A., Naghavian M., Bijani A., Hadad G. & Abdi M.(2014) Effect of hospital information system on processes and personnel function from users' viewpoint in the hospital affiliated to Babol university of medical sciences, Iran; 2013. *Journal Babol University of Medical Sciences* 16: 63-70.

[15]. July, F. & Hezarkhani B.(2006) Diagnosis of NIOC material supply chain bottlenecks, NIOC Company .

[16]. Lahafi, B. The relationship between teamwork and organizational agility (Thesis For A Master's Degree). Sanandaj, Sanandaj Islamic Azad University, 2011.

[17]. Lee, O.-K., Sambamurthy V., Lim K.H. & Wei K.K.(2015) How Does IT Ambidexterity Impact Organizational Agility ?*Information Systems Research* 26: 398-417.

[18]. Lin, C.-T., Chiu H. and Chu P.-Y.(2006) Agility index in the supply chain. *International Journal of Production Economics* 100: 285-299.

[19]. Mahmodi, G. & Khademlo M.(2013) *Medical and health research for use by medical students*. computer science, medicine Artin in, Tehran.

[20]. Molavi, B., & Ismailian M. (2012) Identify and rank the drivers of agility and planning techniques using ftopsis deficit. *Vision Industrial Management* 5: 91-114.

[21]. Pan, F. & Nagi R.(2010) Robust supply chain design under uncertain demand in agile manufacturing. *Computers & Operations Research* 37: 668-683.

[22]. Popowich, F.(2005) Using text mining and natural language processing for health care claims processing. *ACM SIGKDD Explorations Newsletter* 7: 59-66.

[23]. Qumer, A. & Henderson-Sellers B.(2008) An evaluation of the degree of agility in six agile methods and its applicability for method engineering. *Information and software technology* 50: 280-295.

[24]. Qumer, A. & Henderson-Sellers B.(2008) A framework to support the evaluation, adoption and improvement of agile methods in practice. *Journal of Systems and Software* 81: 1899-1919.

[25]. Raghupathi, W. & Raghupathi V.(2014) Big data analytics in healthcare: promise and potential. *Health Information Science and Systems* 2: 3.

[26]. Raschke, R.L.(2010) Process-based view of agility: The value contribution of IT and the effects on process outcomes. *International Journal of Accounting Information Systems* 11: 297-313.

[27]. Ravichandran, T. & Troy N.(2007) IT competencies, innovation capacity and organizational agility: Performance impacts and the moderating effects of environmental characteristics. *Conf Inform Systems Tech, INFORMS, Baltimore*.

[28]. Ribeiro, L., Barata J. & Colombo A.(2009) Supporting agile supply chains using a service-oriented shop floor. *Engineering Applications of Artificial Intelligence* 22: 950-960.

[29]. Rubinstein, D.(2007) Standish group report: There's less development chaos today. *Software Development Times* :1

[30]. Salimi, M., Matin H., Vazin M. & Jandaghi G.(2013) Check the status of the factors affecting the agility of the irib. *Quarterly journal of Islamic culture management* 11: 115-132.

[31]. Sangari, M.S., Razmi J. & Zolfaghari S.(2015) Developing a practical evaluation framework for identifying critical factors to achieve supply chain agility. *Measurement* 62: 205-214.

[32]. Seyedhosseini, S., Ahmadi A.A., Fekri R. & Fathian M.(2010) Agile New product Dvevlopment Model Using path Analysis Method for Iranian Auto Industries. *Industrial Engineering and production management* 4: 77-89.

[33]. Shahabi, B. & Jafarnejad A. *Introduction To Organizational Agility And Agile Manufacturing*. Institute Good Book Publisher, Tehran, 2007.

[34]. Shahabi, B. & Rajabzadeh A.(2005) Assessment dimensions of organizational agility governmental organizations approach it., *The second international conference on information and communications technology management*. Call The Morning Of The Economy (Pure), Tehran, Iran.

[35]. Shahin, A. & Lellahgany Z.(2011) Studying the concept and agility application in services. *International Conference on Industrial Engineering, Amirkabir University, Tehran*

[36]. Sherehiy, B., Karwowski W. & Layer J.K.(2007) A review of enterprise agility : Concepts, frameworks, and attributes. *International Journal of industrial ergonomics* 37: 445-460.

[37]. Sinimole, K.(2012) Evaluation of the efficiency of national health systems of the members of World Health Organization. *Leadership in Health Services* 25: 139-150.

[38]. Sohrabi, R. & Kazazi A.(2009) Designing the operational attributes and criteria for supply chain agility evaluation in national Iranian oil company. *Change management Bulletin* 2: 142-165.

[39]. Sullivan, F. & Wyatt J. *ABC of health informatics*. John Wiley & Sons2009.

[40]. Tizro, A., Azar A. and Rafiee R.(2011) Agility Model Supply Chain Case Study: Iron Melting Company Joint Stock. *Industrial Management* 3: 17-36.

[41]. Yang, C. & Liu H. M.(2012) Boosting firm performance via enterprise agility and network structure. *Management Decision* 50: 1022-1044.

[42]. Yoonesian, Y.(2012) Design & deployment of tablet oriented portable organization with cloud computing support as mobile business management infrastructure. *The first telemedicine conference*. Tehran's Amirkabir University of Technology, Tehran, Iran, 2012.

[43]. Yusuf, Y.Y., Gunasekaran A., Musa A., Dauda M., El-Berishy N.M. & Cang S.(2014) A relational study of supply chain agility, competitiveness and business performance in the oil and gas industry. *International Journal of Production Economics* 147: 531-543.

[44]. Zain, M., Rose R.C., Abdullah I. & Masrom M.(2005) The relationship between information technology acceptance and organizational agility in Malaysia. *Information & Management* 42: 829-839.

[45]. Zanjirchi, S. & Olfat L.(2010) The role of technology in achieving agility in Iran's electronic companies. *Journal of science and technology policy* 3: 29-44.

[46]. Zeng, J., Jumbo A. & Zhang J.(Embracing Agile Health Analytics: A Use Case for Stroke Registry .

[47]. Znjyrchy, M., Hatami S. & Nejatian H.(2011) Explanation of the requirements of agility libraries based on Total Quality Management approach in public libraries in Yazd city. *Scientific Research Public libraries in the Quarterly Journal* 17 71-97.

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