

*Full Length Research Paper*

# Factors affecting process orientation in Iranian Social security organization's hospitals

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Process orientation was one of the new approaches in managerial topics, which were recently considered by the Iranian healthcare centers. The study's aim is to identify the main factors of process orientation in health care management arena in Iranian hospitals. To achieve this objective, the main variables were recognized and the questionnaire was determined. Iranian Social security organization's hospitals were chosen as a sample among all Iranian healthcare centers (n=48). The validity of questionnaire were assured with expert judgment and the reliability was determined using Cronbach's alpha and Pearson correlation (1<sup>st</sup> and 2<sup>nd</sup> times). Cronbach's alpha coefficient and Pearson correlation was respectively as 0.819 and ( $p < 0.001$ ) 0.951. The questionnaire was filled out by the research community. After the sample size was proved to be sufficient, the exploratory and confirmatory factors were analyzed. The findings of the present research showed that, after conducting the factor analysis of "process orientation" in health care management, 2 factors were extracted. The factors were "design and implementation of processes" and "control and improvement of processes". The calculated fitness indexes proved the desirability and appropriateness of structural relations. It may be concluded that these factors have substantial roles in the performance of process orientation and are considered to be the main factors while performing process orientation approach in these organizations.

**Key words:** Process orientation, Iranian healthcare, social security organization, health care management.

## INTRODUCTION

For 40 years the issue of fit between an organization and its strategy, structure, processes, technology and environment has been a basis for theory construction and research (Hashim et al., 2010). The changing economic environment has led to an increasing interest in improving organizational business processes to enhance

performance (Ranganathan and Dhaliwal, 2001). Several new approaches to organisational development were introduced, ranging from re-engineering and quality systems to organisational learning, along with new ways of measuring organisational activities (Anderson et al., 2003).

Neubauer (2009) stated that business process management (BPM) is among the most important managerial topics because it provides companies agile adaptation to changing business requirements. Consultants and researchers are regularly proposing new methods and concepts based on BPM (ISO 9001, EFQM, BSC) for further increasing the efficiency of corporate processes.

Verigidis et al. (2008) study showed that there has been a surge of papers and practitioners interest in this area for more than a decade. Benner and Tushman

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**Abbreviations:** **BPM**, business process management; **BPI**, business process improvement; **BP**, business processes; **GFI**, goodness of fit index; **CFI**, comparative fit index; **NFI**, normed fit index; **NNFI**, non-normed fit index; **IFI**, incremental fit index; **RFI**, related fit index; **AGFI**, adjusted goodness of fit index; **RMSEA**, root mean square error of approximation; **RMR**, root mean square residual; **KPs**, key processes.

(2002) further argue that, process management and its associated set of managerial practices and programs (for example, total quality management, Six Sigma, ISO 9000) is perhaps the most important managerial innovation of the last 20 years.

A business process is a complete, dynamically coordinated set of activities or logically related tasks that must be performed to deliver value to customers or to fulfill other strategic goals (Strnadl, 2006). Various empirical researches indicate that there is a positive correlation between process management and business success (Skerlavaj et al., 2007; Trkman, 2010).

Customer satisfaction, quality issues and managing change are crucial factors in the current ever-expanding competitive business environment. For many organizations, implementation of a process approach represents a fundamental step in their management systems, which means a fundamental change from a functionally oriented organization to a process oriented system (Balzarova et al., 2004).

Processes associated with twenty-first century products and services are far more complicated than pins (Pin factory of Smith), and require many more tasks. Managing and coordinating these tasks are very difficult (Kim and Ramkaran, 2004).

An effective and integrated management is even more important in those fields where business justifications are coupled with compulsory safety constraints, in order to care for the end-users (Carmignani, 2008).

All activities within an organization can be described in terms of processes. They have some stimulus, they bring about some change, and they use some resources. The inputs and outputs of the process can be described and, to varying degrees, measured. The origins of the process-based view of the organization (business process management) are predominantly operational and predominantly concerned with managing flows of material people or information. Improvement of the processes has focused on attempts to change practices to be more responsive to customers and to improve performance in quality, time, speed and reliability, while reducing production costs (Armistead, 1999). Basically, this can be seen as an industrial view on business processes, where input (raw material) is transformed into output (finished products) (Goldkuhl and Lind, 2008).

Business process is a field of knowledge at the intersection of management and information technology, encompassing methods, techniques and tools to design, enact, control and analyze operational business processes involving humans, organizations, applications, documents and other sources of information. Business process management follows a life cycle consisting of four phases, namely: design (modeling), implementation, enactment and analysis (Filipowska et al., 2009).

Improving organizational efficiency and effectiveness inevitably involves process improvement. Over the last 25 years, a variety of business process improvement (BPI)

methodologies and frameworks has been proposed and sometimes applied (Dalmaris et al., 2007).

Biazzo and Bernardi (2003) argued that, today managers are enthusiastic and indeed impassioned about processes because of the possibilities for change that they offer in terms of both reducing the fragmentation and compartmentalisation of work and improving the capacity for lateral coordination and communication.

The competitiveness of a company is mostly dependent on its ability to perform well in dimensions such as cost, quality, delivery dependability and speed, innovation and flexibility to adapt itself to variations in demand. While alignment of operations with strategic priorities is core to competitiveness, the continuous improvement of operation processes plays a very important complementary role in quest of competitiveness in the long run (Alam et al., 2010). Continuous improvement has been defined as a company-wide process of focused and continuous incremental innovation (Carpinetti et al., 2003).

The ability of organizations to successfully deploy appropriate business processes relies heavily upon 1- the effectiveness of systems that support the management of constantly evolving business processes that support the current set of business needs, and 2- the ability of process participants to understand and reason about the constantly evolving business processes. This requires that the fit between business processes (BP) and systems that support the management of business processes be continuously maintained and evolved (Ramesh et al., 2005).

Over the years, process management has become more important for manufacturing. Today and in the future, the service sector (like healthcare centers) will also increasingly use process management techniques and technologies for health care, banking, government and retail. The trend in coming years will be, for example, lean and six sigma, process statistics, control principles, and business process management underpinning process management tasks (Reijers, 2006; Paim et al., 2008).

Hamidi (2001) mentioned that, although numerous hospitals have developed ongoing programs for the implementing process orientation approaches, and many process orientation surveys have been published in the arena of health care management, few researches has been devoted to factors that may affect process orientation. Also, Nikniaz (2002) said that, peer-reviewed health-related journals publish numerous articles in terms of process orientation studies each year, but few of them were attended to main factors of this approach in health care management arena. Even though some of healthcare centers are applying process orientation, but it can be said that even though some of Iranian healthcare centers are applying process orientation approach, the factors of process orientation have not yet been studied in these organizations and factors associated with the process orientation in Iranian hospitals are not recognized

**Table 1.** Frequency distribution of research community in accordance with demographic characteristics.

Demographic factors		Abundance (%)
Sex	Female	44
	Male	56
Age groups	Less than 30 years old	6
	30-39	54
	40-49	37
	50 years and older	3
Educational degree	Associates degree	10
	Bachelor degree	59
	Higher	31
Acquaintance with process orientation topics	Very high	14
	High	47
	Medium	33
	Low	3
	Very low	3
Participation in training courses in the field of process management	Less than 10 h	7
	From 10 to 20 h	17
	From 20 to 30 h	14
	More than 30 h	62

now. Therefore, the present research was performed in health care management arena with objective such as the identification of factors having effects on process orientation in the Iranian Social security organization's hospitals and the research question was "what were the main factors that affect process orientation in the Iranian Social security organization's hospitals?"

## MATERIALS AND METHODS

First, in order to collect data, the researchers developed a questionnaire based on variables impacting process orientation in health management arena in hospitals. To assess the validity of the questionnaire, expert judgment and interview with expert method was applied. So the designed questionnaire, along with explanations regarding terms and concepts were presented to five university professors, three managers in the ministry of health, and two persons in charge of quality improvement in hospitals, and they were asked to express their views about its construct, content, formal appearance, and writing mode. The necessary amendments were then made and it was finally confirmed by other experts, its content validity and construct validity were assured. Iranian Social security organization's hospitals (as the greatest public non-governmental health institution in Iran) which had applied at least one of the process orientated models, were chosen as a sample among all Iranian healthcare centers (n=48).

To determine the reliability of the questionnaire, it was sent to all the mentioned hospitals. The questionnaire was filled out by the research community two times with an interval of 14 days. The members of research community were in charge of quality improvement of the social security organization's hospitals. After the

mentioned questionnaires had been filled out, the reliability of the questionnaire was determined using Cronbach's alpha and Pearson correlation (1<sup>st</sup> and 2<sup>nd</sup> times). Cronbach's alpha coefficient of the component "process orientation", was 0.819 and Pearson correlation was ( $p < 0.001$ ) 0.951 respectively. It showed that the questionnaire was reliable.

Next, Kaiser-Meyer-Olkin was used to determine the sufficiency of sample size, and Bartlett test of sphericity was applied to calculate the meaningfulness of correlation matrix. Then the exploratory factor analysis (as one of the statistical and managerial methods for analyzing factors) was performed with maximum probability approach to identify the rate of loading of variables identified in the component, and Varimax orthogonal approach was used to interpret the variables of process orientation in health management arena. Then the confirmatory factor analysis was used, with application of Lisrel 8.7, to verify the fitness of factors achieved during the explanatory factor analysis. The fitness indexes were as follows: Chi square index, goodness of fit index (GFI), comparative fit index (CFI), normed fit index (NFI), non-normed fit index (NNFI), incremental fit index (IFI), related fit index (RFI), adjusted goodness of fit index (AGFI), root mean square error of approximation (RMSEA), and root mean square residual (RMR).

If CFI, GFI, NFI, NNFI, IFI, RFI, AGFI are higher than 0.90, and RMSEA and RMR are less than 0.050, this proves a desirable and appropriate fitness (Alexopoulos and Kalaitzidis, 2004).

## RESULTS

Table 1 shows some of demographic characteristics of the research community. As it is indicated in the table, a major part of the members of research community are very familiar with process orientation topics and more

**Table 2.** Recycled matrix of factors.

Code	Variable	Process orientation			t-value	R <sup>2</sup>
		1 <sup>st</sup> factor	2 <sup>nd</sup> factor	3 <sup>rd</sup> factor		
F1	Identification of processes		0.640		4.70*	0.29
F2	Design processes			0.581	3.87*	0.31
F3	Identification of sequence and interaction of processes		0.692		4.17*	0.52
F4	Determination of indexes and their standards for control of processes	0.438	0.545		3.51*	0.68
F5	Provision of resources to support the implementation of processes		0.559		3.99*	0.58
F6	Availability of information for the implementation of processes		0.439		4.59*	0.39
F7	Control, measurement and analysis of processes		0.668		4.01*	0.57
F8	Revision and improvement of processes	0.774			4.70*	0.87
F9	Identification of people in charge of improvement of processes	0.554			4.46*	0.41
F10	Flexibility of processes for consistency with the requirements and requests of customers	0.999			3.16*	0.69
F12	Observance of standard service for designing of processes			0.972	-0.41	1.17

\* t&gt;1.96

than half of them have participated in training course of process management for more than 30 hours (Table 1).

In the first step, the correlation of each identified variables, and internal consistency of all variables were calculated in the component 'process orientation'. The correlation of variable "objective copying the processes of similar hospitals" was negative and the correlation of variable "comparison of processes with those of other similar hospitals" with all variables was small. Therefore, these two variables were omitted.

In the next step and before explanatory factor analysis, the Kaiser-Meyer-Olkin approach was used to determine the sufficiency of sample size for the component and Bartlett test of sphericity was used to establish whether the correlation matrix has meaningful difference with zero or not. The sufficiency of sampling and meaningfulness of the correlation matrix for the component "process orientation" were respectively: 0.741 and  $p < 0.001$ , 258.733. It shows that the exploratory factor analysis was permissible.

Then, the explanatory factor analysis was performed with maximum probability approach and the variables were interpreted with Varimax rotation approach. The results showed that, three factors came out from the process orientation component with special values bigger than 1. The first, second and third factors explained respectively 44.404, 13.509 and 9.910% of total variances of variables. Therefore, these three factors explained 67.823% of the total variances of variables of the component "process orientation" in health care management arena. The following variables formed the 1<sup>st</sup> factor:

- i. Revision and improvement of processes
- ii. Identification of major people in charge of process

improvement

iii. Flexibility of processes for consistency with the customers' requirements and requests.

The following variables formed the 2<sup>nd</sup> factor:

iv. Identification of processes

v. Identification of the sequence and interactions of processes

vi. Determination of indexes and their standards to control processes

vii. Provision of resources to support the implementation of processes

viii. Availability of information for the implementation of processes

ix. Control, measurement and analysis of processes.

The following variables formed the 3<sup>rd</sup> factor:

i. Design processes

ii. Observance of standard service for designing processes (Table 2).

Then, the confirmatory factor analysis was made with the use of the software "lisrel 8.7". The path diagram of process orientation was designed (Figure 1) and then the fitness of the factors achieved was determined.

After conducting the confirmatory factor analysis in the component "process orientation", the variance of error of the variable "observance of standard service for the designing processes" was negative. Therefore, the variable was excluded from the analysis. Furthermore, the variable "design processes", which was forming a single factor along with the variable "observance of standard service for designing processes", was put in the

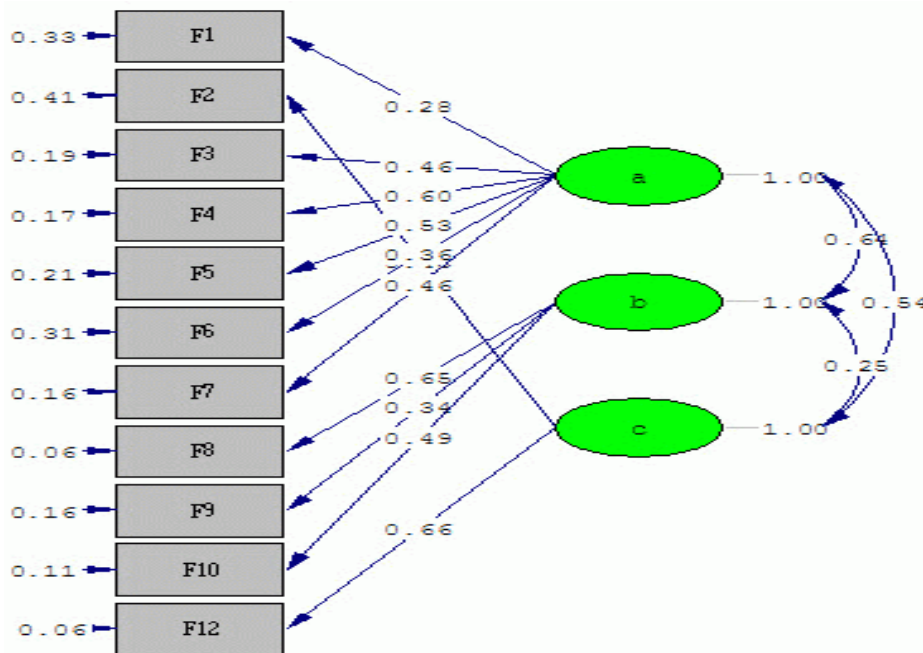


Figure 1. Path diagram of process orientation component.

Table 3. Fitness indexes calculated for the component.

Component/index	RMSEA	GF	CFI	NFI	NNFI	IFI	RFI	AGFI	RMR	X <sup>2</sup>	P-value
process orientation	0.050	0.92	0.94	0.90	0.92	0.94	0.87	0.88	0.034	44.18	p>0.05

same category as that of the variables of the 2<sup>nd</sup> factor, all forming a single factor and finally 2 factors were extracted from the process orientation component.

The fitness indexes of GFI, CFI, NFI, NNFI, IFI and RMR were respectively 0.92, 0.94, 0.90, 0.92, 0.94, and 0.034 for the component “process orientation” and P-value was more than 0.05. The findings achieved from the confirmatory factor analysis showed that these fitness indexes calculated for the component “process orientation” of health management were desirable. The indexes RMSEA, AGFI and RFI were respectively 0.050, 0.88 and 0.87. Nevertheless, other fitness indexes are evidences of desirable and appropriate fitness (Table 3).

After the above stage, the approved factors were named: The first and second factors of the component “process orientation” were named respectively “control and improvement of processes” and “design and implementation of processes”.

## DISCUSSION

Findings of this research showed that, two factors have been identified regarding process orientation in health care management arena in Iranian hospitals. First factor

has been called “control and improvement of processes” and the second one was “design and implementation of processes”. The confirmatory factor analysis too, indicates that the structural model of these factors was a proper one.

Dalmaris et al. (2007) have tried to identify the framework of the factors influencing process improvement. In this framework, processes are identified and then some instructions are developed for process improvement and finally processes improve based on developed tools. So it may be mentioned that in respect to the result of this research, the findings of the mentioned research corresponded with the present research.

Balzarova et al. (2004) said that, in doing process orientation, the organization must able to manage its operations and tasks based on the monitoring and analysis of its key processes (KPs). In their research, Balzarova et al. (2004) stated that, for performing process orientation, organizations should first try to identify processes and activities related to them, and then take measures to monitor and analyze main processes. In fact it can be said that, the findings of this research corresponded with the present one.

Harmon (2003) states that, ISO 9000 family of standards and 6 Sigma methodologies emphasize first

identification of processes and their operation, and then their improvement. In fact the result of Harmon's research corresponded with the research.

The results achieved from Dalmaris et al. (2007), Balzarova et al. (2004) and Harmon (2003) research is consistent with the results of the present research.

Paim et al. (2008) in their research said that, the bibliographic review yielded a set of tasks that were grouped conceptually into "designing processes", "managing processes from day to day" and "fostering process-related learning". In Paim et al. (2008) research, managing process factor is in fact that process control factor in this research and fostering process factor seems to be similar to the first factor "process improvement", with the difference that are in Paim et al. (2008) research, managing process factor and fostering process factor have been identified separately, but in this research these two factors have been recognized as one factor titled as "control and improvement process".

According to a research by Sanders (2008), the main factors of process orientation are as follows: "process design", "process control", and "process improvement". In this research, "process orientation" was divided into three main factors of "process design", "process control" and "process improvement". It could be said that the researches of Sanders (2008) and Paim et al. (2008) corresponded somehow with the present research.

Ko et al. (2009) and Sandhu and Gunasekaran (2004) said that, the cycle of process management began with "process orientation" and "identification of processes". Effective performance of process management is ensured with the performance of continual improvement. In this research, present research identification of process is one of the main variables, and process improvement is one of the main factors of process orientation in the arena of health care management.

On the basis of the results achieved from the present research, and taking into account that the factors "design and implementation of process" and "control and improvement of process" have been given high points by the people in charge of quality improvement in the social security organization's hospitals, It may be concluded that, these factors have substantial roles in the performance of process orientation in health care management arena and are considered to be main factors for the performance of process orientation in these organizations.

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## REFERENCES

Alam GM, Hoque KE, Ismail L, Mishra PK (2010). Do developing

- countries need education law to manage its system are ethics and a market-driven approach sufficient? *Afr. J. Bus. Manage.*, 4(15): 3406-3416.
- Alexopoulos DS, Kalaitzidis I (2004). Psychometric properties of Eysenck Personality Questionnaire- Revised (EPQ-R) short scale in Greece. *Personal. Individ. Differenc.*, 3(7): 1205-1220.
- Anderson A, Hallberg N, Timpka T (2003). A model for interpreting work and information management in process-oriented healthcare organisations. *Int. J. Med. Inform.*, 7(2): 47-56.
- Armistead C (1999). Knowledge management and process performance. *J. Knowl. Manage.* 3(2):143-154.
- Alzarova MA, Bamber CJ, McCambridge S, Sharp JM (2004). Key success factors in implementation of process-based management: A UK housing association experience. *Bus. Proc. Manage. J.*, 10(4): 387-399.
- [Benner MJ, Tushman M \(2002\). Process Management and Technological Innovation: A Longitudinal Study of the Photography and Paint Industries. \*Adm. Sci. Q.\*, 4\(7\): 676-706.](#)
- Biazzo S, Bernardi G (2003). Process management practice and quality management standard. *Bus. Proc. Manage. J.*, 9(2): 149-169.
- [Carmignani G \(2008\). Process-based management: a structured approach to provide the best answers to the ISO 9001 requirement. \*Bus. Proc. Manage. J.\*, 14\(6\): 803-812.](#)
- Carpinetti LCR, Buosi T, Gero'lamo MC (2003). Quality management and Improvement: A framework and a business-process reference model. *Bus. Proc. Manage. J.*, 9(4): 543-554.
- Dalmaris P, Tsui E, Hall B, Smith B (2007). A framework for the improvement of knowledge-intensive business processes. *Bus. Proc. Manage. J.*, 13(2): 279-305.
- [Filipowska A, Kaczmarek M, Kowalkiewicz M, Zhou X, Born M \(2009\). Procedure and guidelines for evaluation of BPM methodologies. \*Bus. Proc. Manage. J.\*, 15\(3\): 336-357.](#)
- [Goldkuhl G, Lind M \(2008\). Coordination and transformation in business processes: towards an integrated view. \*Bus. Proc. Manage. J.\*, 14\(6\): 761-777.](#)
- Hamidi Y (2001). The evaluation of total quality management in health system and optimized model for Iran. PhD dissertation, Islamic Azad University Science and Research Branch, Tehran, Iran.
- Harmon P (2003). Editor, *Business Process Change: A Manager's Guide to Improving, Redesigning, and Automating Processes*. Morgan Kaufmann: Amsterdam.
- Hashim F, Alam GM, Siraj S (2010). Information and communication technology for participatory based decision-making-E-management for administrative efficiency in Higher Education. *Int. J. Physic. Sci.*, 5(4): 383-392.
- Kim HM, Ramkaran R (2004). Best practices in e-business process management extending a re-engineering framework. *Bus. Proc. Manage. J.*, 10(1): 27-43.
- [Ko R, Lee S, Lee E \(2009\). Business process management \(BPM\) standards: a survey. \*Bus. Proc. Manage. J.\*, 15\(5\): 744-791.](#)
- [Neubauer T \(2009\). An empirical study about the status of business process management. \*Bus. Proc. Manage. J.\*, 15\(2\): 166-183.](#)
- Nikniaz A (2002). The Evaluation of Improved Processes in Department Azerbayejen Province Health Center. PhD dissertation, Islamic Azad University Science and Research Branch, Tehran, Iran.
- [Paim R, Caulliraux HM, Cardoso R \(2008\). Process management tasks: a conceptual and practical view. \*Bus. Proc. Manage. J.\*, 14\(5\): 694-723.](#)
- [Ramesh B, Jain R, Nissen M, Xu P \(2005\). Managing context in business process management systems. \*Require. Eng.\*, 10: 223-237.](#)
- [Ranganathan C, Dhaliwal JS \(2001\). A survey of business process reengineering practices in Singapore. \*Inform. Manage.\*, 39\(2\): 125-134.](#)
- Reijers Hajo A (2006). Implementing BPM systems: the role of process orientation. *Bus. Proc. Manage. J.*, 12(4): 389-409.
- Sanders J (2008). *Discovering process management: One of the least understood concepts in Operations Management*. PhD dissertation, Faculty of the graduate school of the University of

- Minnesota, Minnesota, USA.
- Sandhu M, Gunasekaran A (2004). Business process development in project-based industry: A case study. *Bus. Proc. Manage. J.*, 10(6): 673-90.
- Skerlavaj M, Indihar Stemberger M, Skrinjar R, Dimovski V (2007). Organizational learning culture—the missing link between business process change and organizational performance. *Int. J. Prod. Econ.*, 106(2): 346-367.
- [Strnadl CF \(2006\). \*Aligning business and it: The process-driven architecture model. Inform. Syst. Manage.\*, 23\(4\): 67-77.](#)
- [Trkman P \(2010\). \*The critical success factors of business process management. Int. J. Inform. Manage.\*, 30:125–134.](#)
- Verigidis K, Tiwari A, Majeed B (2008). Business process analysis and optimization: Beyond reengineering. *IEEE. Trans Syst. Man. Cybern. Part C*, 38(1): 69–82.