

Improvement of hospital processes through business process management in Qaem Teaching Hospital: A work in progress

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ABSTRACT

In a world of continuously changing business environments, organizations have no option; however, to deal with such a big level of transformation in order to adjust the consequential demands. Therefore, many companies need to continually improve and review their processes to maintain their competitive advantages in an uncertain environment. Meeting these challenges requires implementing the most efficient possible business processes, geared to the needs of the industry and market segments that the organization serves globally. In the last 10 years, total quality management, business process reengineering, and business process management (BPM) have been some of the management tools applied by organizations to increase business competitiveness. This paper is an original article that presents implementation of “BPM” approach in the healthcare domain that allows an organization to improve and review its critical business processes. This project was performed in “Qaem Teaching Hospital” in Mashhad city, Iran and consists of four distinct steps; (1) identify business processes, (2) document the process, (3) analyze and measure the process, and (4) improve the process. Implementing BPM in Qaem Teaching Hospital changed the nature of management by allowing the organization to avoid the complexity of disparate, soloed systems. BPM instead enabled the organization to focus on business processes at a higher level.

Key words: Business process management, hospital administration, process improvement, quality improvement

INTRODUCTION

In the current turbulent and uncertain economic times,

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organizations need to be more agile and competitive.^[1] Today's businesses not only must meet global competitive threats; however, they also need to do so while complying with ever-increasing government, industry, and internal regulatory requirements. Meeting these challenges requires implementing the most efficient possible business processes, geared to the needs of the industry, and market segments that the organization serves globally.^[2] Over the last decade, the concept of “business process” has entered the business mainstream. Leading organizations in virtually every industry have discovered that by harnessing, managing, and redesigning the organizations business processes, organizations can achieve spectacular improvements in business performance, and customer service.^[3] The continuum of the reform movement starts with a total quality management, then business process reengineering, and after that we saw the emergence of business process management (BPM). All of

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them have been some of the management tools applied by organizations to increase business competitiveness.^[4] BPM technology has become an important instrument for supporting complex coordination scenarios and for improving business process performance.^[5] BPM can be determined as a field of knowledge at the intersection between management and information technology, involving all necessary sources such as humans, organizations, applications, documents, and further information sources.^[6] In a similar vein, employees with high job satisfaction are likely to exert more effort in their assigned tasks and pursue organizational interests. An organization that fosters high employee job satisfaction is also more capable of retaining and attracting employees with the skills that it needs.^[7] BPM is a rather new concept in management that promises many advantages to the organizations;^[8] however, in various forms has been around for the last 10-15 years. During this time, BPM has progressed to a holistic management.^[9] It is a structured method of understanding, documenting, modeling, analyzing, simulating, executing, and continuously changing end-to-end business processes and all relevant resources in relation to an organization's ability to add value to the business. It is the current term utilized to encapsulate a process-driven approach to attain enterprise operational efficiency.^[10] Organizations increasingly recognize the requirement for an increased process orientation and require appropriate comprehensive frame-works, which help to scope and evaluate their BPM initiative.^[11] It requires the freedom to modify organizational structures and free core business processes from non-value adding activities. In business sectors like health-care, there are a variety of legal restrictions and treatment guidelines practitioners have to comply with.^[12] Hence, freedom to reorganize the organization and to omit non-value adding activities is heavily compromised. In business sectors like health-care, on one hand, there are a variety of legal restrictions and treatment guidelines practitioners have to comply with. Hence, freedom to reorganize the organization and to omit non-value adding activities is heavily compromised.^[13]

On the other hand, health-care organizations are faced with increasing complexity of care, diminishing resources, and increased regulatory oversight. Providers are attempting to improve quality and efficiency while trying to decrease costs in an effort to maximize "value".^[14] A main discipline in dealing with this matter is business process modeling. Key elements of the business process modeling discipline are as follows:

- Optimizing the performance of end-to-end business processes that span functions, as well as processes that might extend beyond the enterprise to include partners, suppliers, and customers;
- Keeping the business process model in sync with process execution;
- Empowering business users and analysts to manipulate a business process model to modify instances of the process; and
- Enabling rapid iteration of processes and underlying systems for continuous process improvement and optimization.^[6]

In this context, with this study, we analyze BPM as one of today's prominent management trend for organizational change, in "Qaem Teaching Hospital" in order to examine its efficiency in the mentioned organization. Finally, the survey results of implementation of BPM in the mentioned hospital are presented. "Qaem Teaching Hospital" is one of the main referral health centers, which is located in Mashhad city of Khorasan province in Iran. Its space is 2000 m²; the hospital has 19 par clinic units (physiotherapy, laboratory, radiology, endoscopy, etc.), 21 clinics (General Surgery, Gynecology, Obstetrics, and Plastic surgery, etc.), 20 departments (Surgery, Gynecology and Obstetrics, ENT, etc.), and many research units (Rheumatology, Orthopedics, Endocrinology, Dermatology, and Nutrition, etc.).^[15]

MATERIALS AND METHODS

This study is an original article that is performed in Qaem hospital affiliated to Mashhad University of Medical Science. The project scope included three to five preferable processes that are selected by process improvement committee. Achieving to project goals the action plan identified and determined. Process improvement project was implemented in four phases. The first phase consists of identifying the present situation and the priority processes. To implement business process redesign several best practices can be distinguished.^[16] Then, the processes were organized through the four steps presented below:

- Conducting expert interviews with senior managers
- Teaching the concepts of process
- Holding workshops for pilot-selected processes
- Organizing process's teams.

As mentioned in step 3, workshops were hold in order to select list of top priority processes under the supervision of managers and executives. The selected processes were examined in the project for improvements. A form of prioritization processes has been used to determine the precedence of processes. The results of this step are summarized in Tables 1 and 2.

Business process modeling has gained widespread acceptance as a valuable design and the management technique for a variety of purposes.^[17] The second phase is the modeling of the selected processes, which comprises four steps, which as follows:

- Providing an overview of the processes' concepts,
- Training modeling techniques,
- Holding workshops on modeling and documenting the pilot processes, and
- Teaching developing indicators

The third phase is aimed at identifying issues, summarizing and improving the selected processes. This phase consists of three steps mentioned below:

- Addressing issues, finalizing the processes' information forms and drawing workflow diagrams.
- Instructing improvement techniques.
- Organizing workshops on how to improve the pilot

Table 1: The form of prioritization processes in order to determine the precedence of processes

The process	Direct contact with customer	Repeatability	Time	Distance	Complexity	Related units	Dissatisfaction	Potential to improve	Score	Priority
Dismissing	5	5	3	3	3	4	4	4	31	2
Admission	5	5	3	2	3	3	4	4	29	4
Drug and supply recording in hospital information system	4	4	5	5	2	2	3	4	29	5
Transfer patients from emergency unit to other departments	5	4	3	2	4	2	4	3	27	
Prescriptions recording	0	5	5	2	2	3	5	5	27	
Transfer patients from recovery to wards	0	5	5	4	2	2	3	4	25	
Social worker	5	5	4	5	3	5	4	3	34	1
Admission patient in r radiotherapy department	5	5	1	2	4	4	4	5	30	3
Official correspondence	0	5	3	0	5	4	5	2	24	
Preparation of synthetic drugs	5	5	4	4	2	1	5	1	27	

processes and modify work-flow. This step comprises filling in the “analyze and engineer a process” forms, identifying improvement opportunities, and relevant actions. The recognized opportunities and improvement actions must be confirmed by the pertinent managerial positions.

Last but not least is the fourth phase which is aimed at summarizing and finalizing the documentations of the selected processes? This phase consists of the following four steps:

- Finalization the improvement proposals
- Developing ID for selected processes
- Developing and training the process management bylaws which includes documents' guide, procedures for updating the processes, recording and analyzing the applied procedural information, constructing analyzing tables, measurements and defining the improvement actions
- Presenting the achievements of the improved processes in the organization.

After implementing all the above steps, for each elected process the “process improvement action plan” form is filled out. Finally, the proposed improvement action plan for each process is applied.

In Tables 3-7, examples of “process improvement action plan form” for different units of Qaem Teaching Hospital have been shown. For each unit, the problem and improvement stately and action plan have been defined.

CONCLUSION

The recent push for health-care reform has caused healthcare organizations to focus on ways to streamline their processes in order to deliver high-quality care while at the same time reducing costs. Health-care processes are very complex,

Table 2: The form of Organizing Process's teams and person in charge

Responsible	The processes
Miss.	A Social worker
Miss.	Dismissing
Mr.	Admission of patient in r radiotherapy department
Mr.	Admission
Miss.	Drug and supply recording in health information system

Table 3: The form of process improvement action plan for get medication's discount from social worker unit process

The first process: Medication's discount		
Unit: Social work	Process: Get medication's discount from social worker unit	Date
The problem based on analysis was conducted	Improvement strategy and action plan	Considerations
Much refer to copy	Buying copy machine	
Waiting for record discount in hospital information system due to lack of equipment	Buying computer	
Much refer to the cash	Prepare and publish the notification forms for guiding clients	
Filling forms manually and recording again in health information system	Permits to used automation software	
Lack of standard time	Determine the standard time base on time indicators	

processes, business process orientation, and business process developments. The steadily growing number of published

Table 4: The form of process improvement action plan for dismissing process

The second process: Dismissing process		
Unit: All section	Process: Dismissing	Date
The problem based on analysis was conducted	Improvement strategy and action plan	Considerations
Long time of patient discharge process	Combining the order execution and records' s control Notification in this regard to referrers	

Table 5: The form of process improvement action plan for admission patient in radiotherapy department process

The third process: Admission patient in radiotherapy		
Unit: Radiotherapy department	Process: Admission patient in radiotherapy department	Date
The problem based on analysis was conducted	Improvement strategy and action plan	Considerations
Patients with incomplete documents to admission	Prepare notification' s form to patients Insert in site for notification' s representing doctors	
Repeat radiography and check films and their low quality	Meeting and negotiation to resolve the problem Buying simulator	
Repetition of fish issuance	Automation	

Table 6: The form of process improvement action plan for admission process

The fourth process: admission process		
Unit: All section	Process: Admission	Date
The problem based on analysis was conducted	Improvement strategy and action plan	Considerations
Extra commuter for patient' s transferring	Allocation a doctor or nurse before entering patient to departments	
Excessive delay in par clinic' s units	Allocation one sampler	
Failure to inform customers of how to receive service	Prepare the notification forms for guiding the clients about par clinic services Training nurses	

involving both clinical and administrative tasks, large volumes of data, and a large number of patients and personnel. Health-care processes are also very dynamic.^[18] Health-care processes require the cooperation of different organizational units and medical disciplines. In such an environment, optimal process support becomes crucial.^[19] The main progress has been achieved through emerging concepts of business

Table 7: The form of process improvement action plan for drug and supply recording in Health Information System process

The fifth process: drug and supply recording		
Unit: Health information system	Process: Drug and supply recording in health information system	Date
The problem based on analysis was conducted	Improvement strategy and action plan	Considerations
Failure to timely recorded input and output in system	Training responsible person Control records	

articles in empirical BPM research shows an increase in interest in the research field.^[20] BPM gains importance in the industry as well as in the health-care organization. In this study, BPM was implemented in Ghaem Teaching Hospital in order to examine the resulting outcomes of establishing BMP in the organization. Although, the results show significant improvements in the selected processes, there is still room for more investigations, and we hope that the current study has paved the way for conducting more research in this area, especially in Iran.

REFERENCES

1. Mahadevan K, Samaranyake P. Culture Driven Regeneration (CDR): An alternative approach to business improvement. eBook. Available from: <http://www.bus.uts.edu.au/samaranyake.pdf>. [Last accessed on 2012 Nov 6].
2. Hill JB, Cantara M, Kerremans M, Plummer DC. Magic quadrant for business process management suites. *Gartner Res* 2009;15:164-485.
3. Azemovic J, Music D. Methods for Efficient Digital Evidence Collecting of Business Processes and Users Activity in elearning Enviroments. E-Education, e-Business, e-Management, and e-learning, 2010 IC4E 10 INTERNATIONAL Conference on: IEEE: 126-30.
4. Pual puah KY, Nelson Tang KH. Business process management, a consolidation of BPR and TQM. *Management of innovation and Technology, 2000 ICMIT 2000 Proceeding of the 2000 IEEE international Conference on: IEEE 2000:110-5.*
5. Weber B, Mutschler B, Reichert M. Investigating the effort of using business process management technology: Results from a controlled experiment. *J Sci Com Prog* 2010;75:292-310.
6. Fink K, Grimm D. The Use of Business Process Management during the Implementation of Electronic Records Management Systems. Available from: http://www.ibis.in.tum.de/mkwi08/06_eGovernment/01_Fink.pdf. [Last accessed on 2012 Nov 10].
7. Rad AM, Yarmohammadian MH. A study of relationship between managers' leadership style and employees' job satisfaction. *Int J Health Care Qual Assur Inc Leadersh Health Serv* 2006;19:xi-xxviii.
8. Alibabaei A, Aghdasi M, Zarei B, Stewart G. The role of culture in business process management initiatives. *Aust J Basic Appl Sci* 2010;4:2143-54.
9. De Bruin, Rosemann TM. Application of a holistic model for determining BPM maturity. In: Akoka J, Comyn-Wattiau I, Favier M, editors. *Proceedings of the 3rd Pre-ICIS Workshop on Process Management and Information Systems*. Washington DC, USA: BPTrends February 2005.
10. Chong S. Business process management for SMEs: An exploratory study of implementation factors for the Australian wine industry. *J Inf Syst Small Bus* 2007;1:41-58.

11. De Bruin T, Rosemann M. Towards a business process management maturity model. In: ECIS 2005 Proceedings of the Thirteenth European Conference on Information Systems, 26-28 May 2005, Germany, Regensburg.
12. Peppelenbosch N, Geelkerken RH, Soong C, Cao P, Steinmetz OK, Teijink JA, *et al.* Endograft treatment of ruptured abdominal aortic aneurysms using the Talent aortouniiliac system: An international multicenter study. *J Vasc Surg* 2006;43:1111-1123.
13. Becker J, Fischer R, Janiesch C, Scherpbier HJ. Optimizing US Health Care Processes: A Case Study in Business Process Management. In: Proceedings of the 13th AMCIS Keystone. Colorado:USA; 2007.
14. Use OF business process management technology and lean to improve care. Available from: <http://www.himss.org/content/HIMSS12PhysPosters/AndySteele.pdf>. [Last accessed on 2012 Nov 7].
15. Qaem Educational, Research and Treatment Center Mashhad University of Medical Sciences. Available from: <http://www.mums.ac.ir/quaem/en/index>. [Last accessed on 2012 Nov 3].
16. Reijers HA, Mansar SL. Best practices in business process redesign: an overview and qualitative evaluation of successful redesign heuristics. *Omega* 2005;33:283-306.
17. Bandara W, Gable G-G, Rosemann M. Factors and measures of business process modelling: Model building through a multiple case study. *Eur J Inf Syst* 2005;14:347-60.
18. Anyanwu K, Sheth A, Cardoso J, Miller J, Kochut K. Healthcare enterprise process development and integration. *J Res Pract Inf Technol* 2003;35:83-98.
19. Lenz R, Reichert M. IT support for healthcare processes—premises, challenges, perspectives. *Data Knowl Eng* 2007;61:39-58.
20. Houy C, Fettke P, Loos P. Empirical research in business process management—Analysis of an emerging field of research. *Bus Proc Manag J* 2010;16:619-61.

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