

The Survey of Management Information Systems in the Project, Plan and Budget Deputy of the-Baqiyatallah University of Medical Science in the Perspective of Supervision and Architecture and By Using the Rational Methodology

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Abstract

Introduction: Today, decision making in the management of large organizations is of paramount importance that some researchers have identified the knowledge of organizational management as decision net and management as decision-making. All experts are aware of the importance of decision-making.

Methods: This is a descriptive-analytic and cross-sectional research. The target group was the project, plan and budget deputy of the Baqiyatallah University of Medical Science. The Rational Rose software (2003 version) was used for analyzing and designing the system.

Results: In general, essential infrastructures were prepared for setting up the system. And managers as main users of the system notified that the management information system is one of their most essential needs.

Discussion and conclusion: as there are necessary infrastructures for applying IT in the university, and determining the minimum standards based on the advancing methods and analyzing the organizational systems through the scientific methods, providing software that are able to exchange information with each other are needed.

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Introduction

In recent years, the development of sciences and technologies especially in communication and information leads to big changes in organizations and societies (1). The current ever-changing world and the permanent need of organizations to promptly coordinate with the changes have revealed the importance to access accurate and timely information for top managers more than ever (2). Due to the logical assessing of the situation and better resource allocation, the organization can be effectively manage (3).

So far, several structures and object-oriented methodologies have been presented to develop software and to implement the management information systems in organizations. The Rational Unified Process (RUP) is one of the newest that uses the iteration and evolutionary approach (3). In RUP, the best procedures of the previous methodologies have been used (4).

Enterprise architecture and enterprise information architecture:

Enterprise architecture is a set of processes, tools and structures needed for applying IT in organizations that support the professional operations in the present and future (5). These questions about organizational information should be

answered: what, how, when, where, who, why. UML is a standard industrial method for modeling the software system. If the method is properly used, the direct and inverse engineering can be provided. UML can unify the design, coding and documentation (6).

RUP and the iterative cycle:

Nowadays, many software groups are using the waterfall method, i.e. a combination of requirements are recognized in each step, then these requirements are analyzed, designed, implemented and finally tested (7). Sometimes researchers use the waterfall method with the feedback. Unlike the above systems, the RUP is using the iterative methods (8,9). In this method there are a number of steps to reach the goal and each iteration consists of development principals (requirements, analysis, design, implementation) (10).

Key modeling elements of RUP:

1. Rules- Who are going to do the work?
2. Actions- How is the work going to get done?
3. Outputs- What should the results be?
4. Workflows- When should the work be done?(11)



Study method:

This study was based on descriptive-analytic, cross-sectional and practical methods (12,13). The target group consisted of all the processes and staff in the studied environment (14). Because there was the possibility of studying the entire population, we did not use any sampling methods; therefore there was no sampling error in the study (15,16). Data was collected through a standard questionnaire of system analysis that existed in BabakKazemi's management information system (17). BSP and process Matrix techniques were used for reforming the processes (18).

Work methods:

The process was based on steps identified in both RUP and diagrams within the Rational Rose software (v.2003). The fourth step which was designing the software was not conducted in this study. The needed data were collected from questionnaires, observations and studies. Finally, the data were analyzed.

Step 1- survey the current status:

In this step, the current status of the organizational management information system was analyzed and a report about storing the data, current databases and data flow in organization are prepared. Afterwards it was studied from the software and hardware perspective. The problems and faults of the current systems are also identified in this step.

Step2- details

The preparation of the vice-chancellor's demands and requirements from the management information system: in this stage, the users' main demands and requirements are identified and defined. Their expectations are considered in determining the information's architecture and are displayed graphically for better illustration.

Step 3- designing

Designing the needed graphs: in the stage, the needed graphs are designed through the Rational Rose software (v.2003). This software is used for analyzing the systems.

Results

As there were 4 units in the studied deputy, 21 processes were identified for the project, plan and budget deputy and were documented based on the following tables. 3 processes needed to be reformed. Finally, the necessary reforms were done and suggestions were presented for the information exchange among software.

Form 1: preparation of process ID

	Process name	Target of process	Process executive
1	The process of the preparation of the university's annual plan and budget	Implementation of the university's strategies into the operational plans	Plan and budget management

Form 2: determining interactions among the processes

Process name	input	from	output	to
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The process of the preparation of the university's annual plan and budget	1.university's strategic plan	President of the University and other stakeholders	Annual plan and budget in terms of plan title, credit, executive and ...	President of the university, deputies of the university, inspection of the university
	2.staff's policies and guidelines			

Table1: analyzing the current status of the management information system in project, plan and budget deputy in terms of the designed questionnaires

	problems	Problems related to the current information system(a)			Problems related to the organization's affairs and methods(b)			Problems related to processes and actions(c)		
		n	partly	yes	n	partly	yes	n	partly	yes
1	Total	4	27	1	0	4	1	3	13	1
2	per cent	8	54	3	0	27	7	1	43	4
	t			8			3	0		7

* 0-33% = no; 34-67% = partly; and 68-100% = yes

The table above shows that the current information system has a moderate to high score. According to the questionnaire, 54% of the participants stated that the management information system is partly implemented and 38% of them said that there is management information system in some cases only.

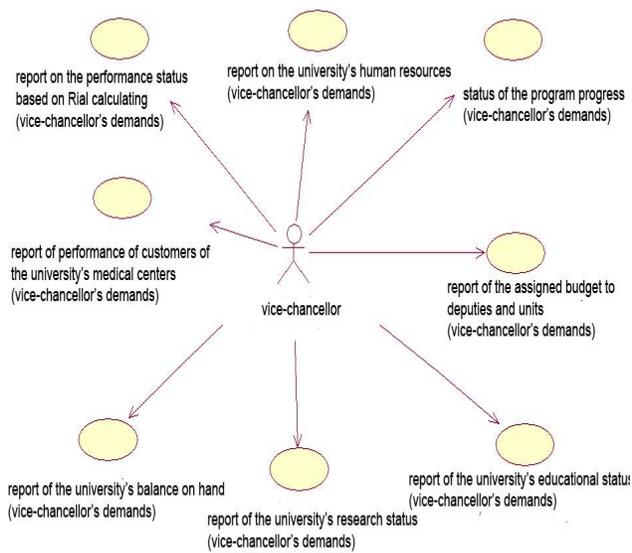
In regards to the organization affairs and methods, respondents stated that job description is at high level in the organization and the duty of each staff has been well assigned. Therefore there is no work interference among the staff and respondents given the score of 73.

The score given to the processes and actions was in a high level and 47% stated that the processes had been identified excellently.

The vice-chancellor's expectations from the designed management information system:

- 1.Receiving the program progress report of the university's deputies.
- 2.Survey of the human resource according to the separation of the problems and various reports.
- 3.Equipping the university and affiliated centers
- 4.The university's credit status
- 5.A report on the resource allocation to the deputies
- 6.A report on the performance status of the university's medical centers
- 7.A report on the status of the research and education in the university.

Figure 1: Use case diagram of project, plan and budget deputy



Discussion and conclusion

Based on the analysis of the questionnaires, most of the respondents stated that the management information system is one of the most important and necessary tools for their professional operations. This is because the managers need information for planning, monitoring and controlling (19). Thereby they can manage physical resources through conceptual resources (data). In regards to the requirements and facilities for setting up a management information system based on monitoring, we should say that there are corresponding infrastructures including computer networks, suitable hardware and training staffs to set up the automated information system (20,21). According to the analysis that was conducted in this study, conceptual information including key user's requirements (university's president and vice-chancellor), the vice-chancellor's interaction with other deputies, processes, actions and data fields are identified (22). According to the study's methodology, these questions (what information, how, where, who and for what) were answered. By providing the data dictionary, the basis for the same interpretation from the demands of the project, plan and budget deputy with the other interacted deputies and centers have been established (23).

Suggestions:

1. The activation of the data and statistics unit and the preparation of the information requirements and using the computer and management expertise.
2. Developing a data bank in the plan and budget management, updating the data periodically and applying the available requirements in the university's portal for digital information exchange.
3. Developing a XML standard output as a shortcut for the software available by creating the software interface to unify the software which is interacting with the vice-chancellor.

References

1. Aliahmadi, A. ICT Strategic Planning, first edition, 2009,47,152-145. [Persian].

2. Saqebtehrani, M. IT management, first edition, 2011.34(5),23-18. [Persian]
3. Farahani,A . Management information system and database, payamnoor publication, 2006.12(2),83-74. [Persian]
4. Khamesi, M. RUP (Rational Unified Process), Naghoos press, first edition, 2005.84.45-38. [Persian]
5. Beheshtiyani, M. Management information system, Tehran, Pardis publications, 2009.66.1-10. [Persian]
6. Jasebi, A. Principals and Fundamentals of Management, publisher: Islamic Azad University, 1998.5,25-18. [Persian]
7. Rezaeian, A. Management Information System (Information Modeling), Tehran, SAMT press, 2010.18,45-38. [Persian]
8. Manochehrimoqadam, Zh. survey on perspective and administrators's perspective of Tehran about the management information system (MIS) ans providing the appropriate pattern for designing a management information system through the BSP methodology, MSc thesis, Tehran University, 2008. 66,12-8. [Persian]
9. Zargarnataj, M. An Investigation into Enterprise Architecture Style, MSc thesis, Tehran University. 2012.45.66-58. [Persian]
10. Rezaei, R. A Method for Enterprise Architecture Assessment, MSc thesis, Islamic Azad University, 2006.14,45-36. [Persian]
11. Zamani, M. Management information system in Jamaran Hospital By BSP technique, MSc thesis, Baqiyatallah University, 2001.18,13-9. [Persian]
12. Valizadeh, M. Pattern-Oriented Software Design Documentation, MSc thesis, ShahidBeheshti University, electrical and computer engineering school, 2013.67,34-28. [Persian]
13. Ajami S. TavakoliMoghadam O. The study of information management system of medical records office in Kashani hospital based on the existing standards. Health Information Management 2006; 3(1): 63-72. [Persian]
14. Kimiafar KH. Moradi GR, Sadoughi F, Hosseini F. A study on the user's views on the quality of teaching hospitals information system of mashhad university of medical sciences-2006. Journal of Health Administration 2007; 10(29): 31-6. [Persian]
15. Kahouei M. Soleymani M, Ghazavi S, Aalaei SA. Views, behavior and satisfaction of the nurses and other hospital ward personnel about the effectiveness of computer systems of hospital information on caring process. Health Information Management 2009; 4(2): 193-202. [Persian]
16. Borzekowski R. Measuring the cost impact of hospital information systems: 2005-1994. J Health Econ 2009; 28(5): 938-49.
17. Majidi, A. a framework and methodology for enterprise architecture, 12th International ISC Conference, ShahidBeheshti University, electrical and computer engineering school, Tehran, March 2011.8,134-125
18. Yusof MM. Papazafeiropoulou A, Paul RJ, Stergioulas LK. Investigating evaluation frameworks for health information systems. Int J Med Inform 2008; 77(6): 377-85. [Persian]
19. Baraani-Dastjerdi , A. A reference Application for RUP Methodology to Develop Software Systems, University of Isfahan, 2004.9,45-39. [Persian]
20. Dehbashi N, Rajaei Pour S, Salimi G. The Managers Decision Making Strategies and the Staffs Job Satisfaction in Isfahan Hospitals. Health Information Management 2010; 2(2): 39-46. [In Persian].
21. Qazi MS, Ali M. Pakistan's health management information system: Health managers' perspectives. J Pak Med Assoc. 2009;59(1):10-4.
22. Borzekowski R. Measuring the cost impact of hospital information systems: 2012-1994. J Health Econ 2009; 28(5): 938-49.
23. ministry of health and medical education –deputy of health and treatment-cancer for disease control and prevention-cancer National report of cancer . Comprehensive national cancer.2009