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Optimal Strategies of Increasing Business Alignment, in Social Security Organization, with Quality Function Deployment (QFD) Approach

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Abstract. Considering the importance of the concept of strategic alignment of information technology (IT) in today economic organizations, this study attempted to extract the organization's IT strategies in order to increase the degree of strategic alignment and consequently the optimal strategies in the field of marketing and service delivery for social security organization. Using QFD technique and hierarchical analysis, the results of the study showed that among the IT strategies collected, three strategies of introducing the application of new technologies to operation department employees of the organization, standardizing software problem solving methods in the organization, and increase the organization users' sense of responsibility for IT costs were the top three priorities of IT strategy in the Social Security Organization to increase strategic alignment. Also based on the other results of the study, three strategies of forming a specialist team for emerging technologies, increasing the share of not-in-person services and enhancing the quality of information in the organization's electronic port are among the most desirable marketing strategies, and three

strategies for improving the quality of electronic services, create a unity of working procedure among the employees and review and updating of services delivery processes, have been among three most desirable strategies of the organization in the field of service delivery.

Keywords: Marketing Strategies; Service Delivery Strategies; Quality Function Deployment (QFD)

1. Introduction

The role of IT as a key and strategic factor in the success and even survival of organizations and businesses in today dynamic and turbulent business environment is obvious. but the important point is that the organizations must manage their IT strategies in a way that effectively and efficiently supports the business-level strategies and processes of the organization and meets the business goals and requirements. Today, aligning IT with business at strategic levels is one of the most important challenges for the executives and one of the ways to gain the competitive advantage. The alignment of business with IT has attracted a great deal of research interest since the late 1980s (Wang & Tai, 2003). Because achieving strategic alignment leads to a stronger business performance and the value-creation of IT for the organization. The first step in aligning IT with business is to integrate IT with the overall strategic planning processes of the organization. The business alignment with IT can affect IT business value, firm agility, firm performance, and firm competitive advantage through creating more focus and strategic use of IT (Wang & Tai, 2003). In this regard, one of the main concerns of business executives over the past years has been the application of IT in a timely and appropriate manner consistent with business strategies, goals and needs. This concern points to both the alignment of IT with business and the alignment of business with information technology. The results of recent surveys show that in the most companies, IT is not aligned with the business strategy. Therefore, alignment between business needs and IT capabilities has been significantly considered, and despite of the executives' attention to alignment field over the past twenty years, this goal is still unattainable. Lack of alignment in addition to decrease the strategic role of information technology, makes

heavy damages such as reducing the effectiveness of information systems, lack of integration of information, lack of timely support of IT for business processes, lack of support of IT for timely organizational decision-making, etc. Such costs, as well as the economic pressures resulted from it, necessitate support for IT and applying an approach to integrate business with information technology. Strategic alignment leads to achieve sustainable competitive advantage, improve business performance and better understand of the value of IT investments as well as improve the strategic planning of information systems (Maniyan 2013, 173). Therefore, considering the importance of optimizing IT strategies for increasing strategic alignment and subsequently pursuing marketing strategies and providing services related to increasig alignment in organizations.

2. Literature review

Looking at the internal studies on the subject of research, it is observed that Manian and Arab Sorkhi (2010), in their study determined the critical success factors for strategic alignment of IT and business in organization and expressed that the strategic alignment of IT and business in the organization is not easy, and awareness of the areas and the critical factors for managing it will play an undeniable role in enhancing the success rate of this area operations. In his study, he used Loftman's strategic alignment model to identify these factors, the reason for using this model is the comprehensiveness of the model, and to advance the study, he used the questionnaire and asking opinions from 16 information systems planners of active corporates in the field of the IT strategic planning and information systems and 29 faculty members who have published books, compilations or articles in IT strategic planning and strategic alignment. In their study, the authors concluded that the field of communication had the most impact on the success of strategic alignment in organizations, followed by the domain of organizational competence, organizational management, partnership and technology, respectively, which had the highest impact on the success of strategic alignment. According to the results of their study, human resources have had the least impact on the success of strategic alignment in organizations. In a study, Ali Ahmadi et al. (2012), assessing the

alignment of IT in business based on cumulative indices that have been surveyed in the petroleum industry pension fund, believe that IT alignment in business, performance and IT effectiveness, improve the organization's business and improves the goals, strategies, resources, integration, investment, and the other business-related factors. The authors emphasize that due to the existence of different alignment models, each with its own criteria for evaluating this alignment, the well-known and commonly used models have been studied and with comparative comparing of these models, their indices have been extracted. After aggregation of indices, their overlap is eliminated and finally a conceptual model is obtained that expresses the alignment indices more comprehensively than any of the models. Mohebbi and Heydari (2016), in their study "An Approach to Alignment of IT Strategies with Business Strategies" believe that effective implementation of IT is one of the factors of organizations success in gaining competitive advantage and better service to customers, and consequently alignment of IT strategies with business strategies is always one of the top ten issues among the executives in this field. The authors believe that the technology roadmap approach in organizations has always been considered as one of the most effective approaches to aligning organization strategies with technology planning, so far this approach has been less used to solve the problem of aligning IT and business strategies in the country. Peak et al. (2005), in their study on the strategic IT alignment planning have attempted to implement the alignment process for a US corporate using expert opinions and roadmap techniques. This technique employs 58 mid-level and upper-level executives from five different areas of the corporate (including 49 executives and 9 specialists) and some plans have been proposed to create this alignment. Aversano et al. (2012), in their study on reviewing the strategies related to strategic alignment of IT and business of organizations have pointed out that in recent years, alignment debate has been discussed in many studies and various methods, techniques and tools have been introduced for this purpose. They emphasize that today it is a fact that the business performance of organizations has intertwined with the performance of the organization in the field of IT and an organization cannot achieve competitive advantage in its business

without strategic alignment in IT and business. The authors intend to explore the similarities, trends, and capacities of measurement, modeling, evaluation, and emergence of alignment by evaluating published studies of alignment and summarizing the different attitudes that existed in each study. One of the most important findings of the study was that the views expressed in studies of modeling, measurement and the emergence of the alignment process in published studies were not sufficiently explored and analyzed. Bhattacharya (2017), in his study "The Modeling of Strategic Alignment of IT and Business of Organizations Through Enterprise Architecture" believes that in the past decade, it has always been assumed that enterprise architecture (EA) can have potential effects on strategic alignment of IT and business of organizations. He believes that his study has been able to pursue two major goals theoretically. He argues that the perspective presented in his study has been able to integrate the enterprise architecture model with the business motivation model (BMM) to provide a more sophisticated model of the strategic alignment of IT and enterprise business. He also suggests that the new model introduced in his study can explain the mechanisms of the impact of enterprise architecture on the alignment of IT and business. In a study on the impact of innovation activities on strategic alignment in new ventures and in search of a balance between organizational actions, Street et al. (2017) concluded that health-focused corporates have causality and entrepreneurship measures while technology-based corporates focus on direct entrepreneurship. In addition, both agencies understand and pursue strategy adaptation as activities that support and promote strategic alignment. The results of this study indicate that there is definite evidence on the medium and high level of strategic alignment in the surveyed organizations over the time periods studied. This study was conducted for the first time in the Social Security Organization, one of the most important economic and social institutions in the country. The scope of this study have been among a few studies that have simultaneously covered different areas of business such as marketing and service delivery.

3. Method

According to the expert team, to collect the voice of IT customers who are users of information systems in the operation department of organization, a 35-question questionnaire of the most important IT needs cited by Favaretto (2015) was used among 40 users and their opinions were formulated. After obtaining the initial comments from the statistical sample under study, 8 of them, with the highest score of Likert scores, entered the EXPER CHOICE software for pairwise comparisons, so that after extracting their weight in this software, enter to the Quality Function Matrix (QFD) as the voice of customers. In order to gather the information and communication technology strategies of the organization that can be used to meet the IT needs mentioned in the previous step, 38 separate strategies were obtained by conducting separate interviews and surveys from the Qualification Specialist team, which were later reduced to 12 strategies with merging the same cases and deleting similarities of these strategies.

4. Findings

Table (1) shows the quality house with the aim of extracting the prioritize IT strategies in the social security organization.

Table 1. Inconsistency rate and organization IT strategies in order of preference

Organizational IT Strategies	W_1	Standardize ways to fix software problems	Training the benefits and application of new technologies to the operation department employees of the organization	Efforts to encourage innovation in the organization by reducing technology control	Creating a department to collect and pay attention to the experiences of the users of organization	Investigate the more use of information resources and databases in the organization	Doing mobile works using ICT tools	Moving toward standardizing the use of new emerging technologies in the organization	Ability to work on collaborative projects in the organization	Increase the sense of responsibility of the organization users' regarding the ICT costs	Transparency of organization policy on how to obtain reports from the IT department	Increasing the efforts of organization executives to discipline IT budgets	Increasingly focus on increasing the profitability of IT activities in the organization
documentation of experiences	.186	.048	.147	.043	.161	.077	.056	.113	.045	.044	.157	.051	.060
Introduction to new emerging technologies	.143	.042	.168	.061	.053	.066	.101	.193	.067	.057	.057	.064	.070
IT training	.079	.080	.145	.048	.073	.062	.108	.053	.083	.047	.047	.129	.124
Facilitate obtaining IT reports	.112	.052	.059	.057	.084	.183	.058	.066	.061	.063	.170	.071	.076
More executives' roles in the IT process	.139	.125	.141	.051	.043	.089	.075	.090	.049	.043	.043	.140	.110
Encouraging the innovation	.152	.039	.143	.151	.104	.083	.062	.108	.058	.054	.094	.043	.060
Motivate the staff	.093	.042	.128	.040	.101	.074	.063	.120	.057	.178	.089	.052	.056
Using IT capabilities	.095	.043	.125	.055	.102	.220	.118	.093	.046	.047	.075	.038	.038
Relative importance		.061	.136	.067	.094	.098	.076	.107	.057	.061	.095	.074	.075
Average correlation coefficient		3	5.4	1.6	3	9	2	5	3	3	3	1	3
Final priority coefficient		ninth	first	twelfth	fifth	third	sixth	second	tenth	eleventh	forth	eighth	seventh

It is worth noting that the relative importance of each strategy was calculated using the Eigen vector with respect to the relative matrix of communication and the weight of criteria through the AHP method in Expert Choice software version 11. The average correlation coefficient was also calculated through a fuzzy approach and with the opinions of experts in QFD team. The diagram is also provided in QFD Designer software.

Fig. 1. Inconsistency rate and organization IT strategies in order of preference of AHP analysis

Table (2) shows the matrix of absolute weights of different strategies in the hierarchy method.

Table 2. Absolute weights matrix of different marketing strategies

Strategies	Application of new technology	Using new technology	Using database	Transparent reporting policies	Gathering experiences	Doing the other works	ICT Profitability	ICT budget discipline
Forming a new technology team	1.00	1.00	0.27	0.35	0.40	0.87	0.44	0.44
Database development	0.45	0.52	1.00	0.51	0.69	0.44	0.43	0.44
Increase the employees' productivity	0.30	0.42	0.40	0.45	0.72	0.41	0.41	0.44

Technology Management in Marketing Decision Making	0.54	0.54	0.29	0.50	0.37	0.44	0.93	1.00
Identify new investment areas	0.53	0.25	0.30	0.47	0.36	0.43	0.86	0.44
Increase not-in-person services	0.45	0.62	0.63	1.00	0.38	1.00	1.00	0.47
Internal network and Internet quality	0.49	0.39	0.41	0.47	0.38	0.55	0.55	0.47
Development of covered medical departments	0.24	0.19	0.26	0.47	0.37	0.38	0.38	0.47
Increasing IT in the portal	0.40	0.34	0.48	0.87	0.38	0.99	0.82	0.47
Increasing communication with the other government agencies	0.41	0.26	0.39	0.54	0.38	0.54	0.86	0.47
Identify the dynamic strengths and weaknesses	0.27	0.20	0.33	0.48	1.00	0.60	0.86	0.84
Various payment methods	0.54	0.42	0.48	0.62	0.42	0.55	0.82	0.64

Table (3) shows the quality house with the aim of extracting the priority marketing strategies of the social security organization.

Table 3. Quality house

Moving toward standardizing the use of new emerging technologies in the organization	Training the Benefits and Application of New Technologies to Enterprise Operation department employees	Organizational IT Strategies
0.107	0.136	W_5
0.207	0.178	Establishing a team of new emerging technologies in the organization
0.107	0.081	Improvement of databases for the organization clients
0.086	0.053	Increasing productivity of the organization employees
0.111	0.096	Involvement of IT manager in marketing related decisions
0.051	0.094	Identify new areas of investing in the organization
0.066	0.08	Increase the share of not-in-person services in the organization
0.08	0.087	Increase the speed and quality of access to internal network and internet in the organization
0.04	0.042	Expand and improve covered medical departments
0.07	0.071	Enhance the quality of information in the organization's electronic portal
0.053	0.073	Strengthen the organization's integrated electronic communication with other relevant government agencies
0.042	0.048	Identify and evaluate the strengths and weaknesses of business systems in the organization
0.087	0.096	Using a variety of online payment methods

Paying attention to increasing the profitability of IT activities in the organization	Doing mobile works using ICT tools	Creating a department to gather the experiences of the clients of the organization	Policy transparency on how to obtain reports from IT	Make more use of data sources and databases
0.075	0.076	0.094	0.095	0.098
0.053	0.121	0.068	0.051	0.051
0.051	0.061	0.118	0.076	0.191
0.049	0.058	0.123	0.067	0.077
0.111	0.061	0.063	0.074	0.055
0.103	0.059	0.062	0.07	0.057
0.120	0.139	0.065	0.149	0.121
0.065	0.076	0.065	0.07	0.079
0.046	0.053	0.063	0.07	0.049
0.098	0.138	0.065	0.129	0.092
0.103	0.074	0.065	0.08	0.074
0.103	0.084	0.170	0.072	0.062
0.098	0.077	0.072	0.092	0.092

Increase executives' efforts to discipline the organization's IT budget	0.074	0.067	0.067	0.067	0.152	0.067	0.071	0.071	0.071	0.071	0.071	0.127	0.098
relative importance		0.102	0.091	0.070	0.091	0.072	0.102	0.075	0.054	0.093	0.075	0.086	0.09
Average correlation coefficient		3	3	3	3	3	5.5	4.5	3.85	3.75	3	4	6.6
Final Priority Factor		firs t	fift h		fort h		seco nd	eigh th		thi rd		seve nth	sixt h

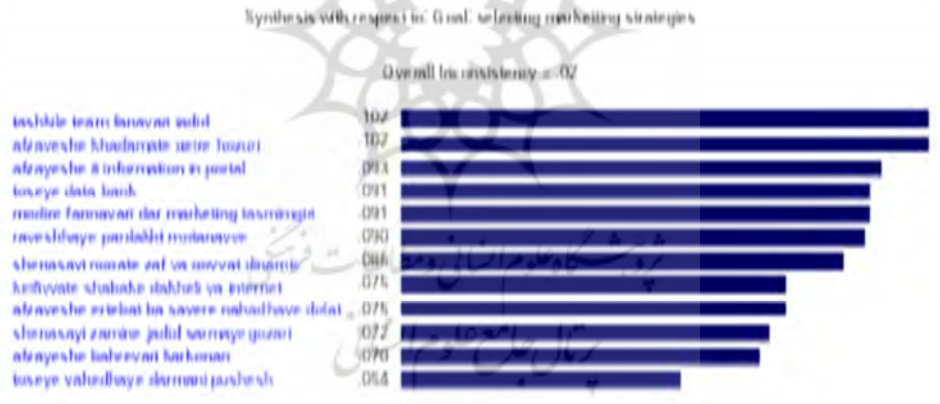

Fig. 2. Inconsistency rates and optimal marketing strategies

Table (4) shows the matrix of absolute weights of different strategies in the hierarchy method.

Table 4. Absolute weights matrix of different service delivery strategies

strategies	Application of new technology	using new technology	using database	Transparent reporting policies	Gathering experiences	Doing the other works	ICT Profitability	ICT budget discipline
Documenting IT software problems	1.00	1.00	0.27	0.35	0.40	0.87	0.44	0.44
Providing services in new emerging technology	0.45	0.52	1.00	0.51	0.69	0.44	0.43	0.44
IT Documentation	0.30	0.42	0.40	0.45	0.72	0.41	0.41	0.44
Development of new services	0.54	0.54	0.29	0.50	0.37	0.44	0.93	1.00
IT management in service delivery decisions	0.53	0.25	0.30	0.47	0.36	0.43	0.86	0.44
IT Infrastructure Reconstruction	0.45	0.62	0.63	1.00	0.38	1.00	1.00	0.47
Development of wireless platform in the organization	0.49	0.39	0.41	0.47	0.38	0.55	0.55	0.47
Unity of business procedure	0.24	0.19	0.26	0.47	0.37	0.38	0.38	0.47
Review the service delivery process	0.40	0.34	0.48	0.87	0.38	0.99	0.82	0.47
Improving service quality	0.41	0.26	0.39	0.54	0.38	0.54	0.86	0.47
Decreased physical evidence	0.27	0.20	0.33	0.48	1.00	0.60	0.86	0.84
Presenting performance reports to the community	0.54	0.42	0.48	0.62	0.42	0.55	0.82	0.64

Table (5) shows the quality house with the aim of extracting the priority marketing strategies of the social security organization.

Table 5. Quality house output for prioritizing service delivery strategies

Organizational IT Strategies	W_5	**Identifying and documenting software problems and errors**	**Increasing use of new emerging technologies in delivery service to clients**	**Documentation of affairs in the organization's IT department**	**Develop new services for organization clients**	**Involve the IT manager in service delivery decisions in the organization**	**Reconstruction and modernization of the organization's IT infrastructure**	**Developing and improving the infrastructure of wireless network communication in the organization**	**Creating unity of work procedure among employees of the organization**	**Review and update service delivery processes in the organization**	**Improving the quality of the organization's electronic services**	**Reduce the policy of obtaining physical evidence from the clients of the organization**	**Providing comprehensive and media performance reporting to the community and public opinion**
Training the benefits and	0.136	0.094	0.150	0.105	0.085	0.038	0.046	0.061	0.101	0.094	0.111	0.073	0.042

application of new technologies to enterprise operation department employees													
Moving toward standardizing the use of new emerging technologies in the organization	0.107	0.050	0.096	0.058	0.0688	0.055	0.055	0.060	0.1334	0.122	0.151	0.107	0.043
Make more use of data sources and databases	0.098	0.068	0.095	0.076	0.0744	0.066	0.072	0.092	0.0722	0.066	0.141	0.109	0.068
Policy transparency on how to obtain reports from IT	0.095	0.050	0.100	0.060	0.0711	0.069	0.058	0.058	0.1166	0.116	0.130	0.116	0.056
Creating a departm	0.094	0.60	0.060	0.162	0.0600	0.060	0.062	0.062	0.1500	0.119	0.089	0.063	0.055

ent to gather the experiences of the clients of the organization													
Doing mobile works using ICT tools	0.076	0.050	0.159	0.053	0.0755	0.054	0.111	0.139	0.052	0.078	0.106	0.058	0.056
Paying attention to increasing the profitability of IT activities in the organization	0.075	0.053	0.101	0.048	0.116	0.049	0.079	0.097	0.112	0.116	0.127	0.058	0.044
Increase executives' efforts to discipline the organization's IT budget	0.074	0.058	0.058	0.117	0.058	0.117	0.058	0.058	0.117	0.117	0.80	0.102	0.058
relative importance		0.062	0.103	0.084	0.076	0.63	0.065	0.076	0.108	0.105	0.119	0.088	0.052
Average correlation coefficient		3	4	4.5	5.5	5.5	4.5	5	4	4.5	7.3	4.7	5.4

Final Priority Factor		for th	six th	seve nth			eig hth	seco nd	thi rd	firs t	fift h	

Fig. 3. Inconsistency rate and optimal strategies for organization service delivery

5. Conclusion

This study attempted to examine the strategic alignment of IT with business strategies in one of the major organizations in the country, i.e. the Social Security Organization, and extracted the optimal organization strategies in the fields of IT and business. It should be noted that the lack of similar studies to examine the strategies mentioned in the Social Security Organization was another reason for the importance of the present study. Therefore, this study attempted to extract information technology, marketing and service strategies needed to enhance the degree of current alignment of the organization using QFD and AHP techniques. As revealed from the analysis of the information collected in the fourth part of study, it was observed that among the IT strategies collected, three strategies of introducing the application of new technologies to the operation department employees of the organization, standardizing methods for resolving software problems in the organization and increasing the users' sense of responsibility for IT spending, respectively, have been the top three priorities of the Social Security Organization's IT strategy to increase the strategic alignment in the organization. Also based on the results of the study, three strategies of forming a team for emerging technologies, increasing the share of not-in-person services and enhancing the quality of information in the organization's electronic portal are among the most desirable marketing

strategies and three strategies of improving the quality of electronic services, creating unity of work procedure among the employees and updating of service delivery processes, have been among three most desirable strategies of the organization in the field of service delivery.

References

Aliahmadi, A. R. Karimzadegan, D. Izadbakhsh, H. R. and Ghourchiyan, R. (2012). "Evaluating The Alignment of ITin Business Based On Cumulative Indices (Survey On Oil Pension Fund)", IT Management, Vol. 4, No. 12, Pp. 135-164

Alipourbijani, A. and Akbari, M. (2006). "Measuring the Approximation of IT Strategy and Business Strategy of the Organization", Business Research Quarterly, No. 41, pp. 151-180

Aversano, L. Grasso, C. and Tortorella, M. (2012). "A literature review of business/IT alignment strategies". Journal of procedia technology, 5(2012), pp. 462-474

Bhattacharya, P. (2017). "Modelling strategic alignment of business and IT through enterprise artichetcure: augmenting archimate with bmm". Journal of procedia computer science, 121(2017), pp. 80-88

Brancheau, J. and Wetherbe, J. (1987), "Key issues in information system management", MIS quarterly, 11(1)

Chan, Y. and Reich, B. (2007). "IT alignment, what have we learned", journal of information technology, 22 (4).

Chen, H. Chiang, R. H. L. and Storey, V. C. (2012). Business Intelligence and Analytics: From Big Data to Big Impact. MIS Quarterly, 36(4), 1165-1188.

Davenport, T. H. and Patil, D. J. (2012). Data scientist: The sexiest job of the 21st century. Harvard Business Review, 90(10), 70-76.

Favaretto, J. R. (2015). "Stage level measurement of information and communication technologies in organizations", M.A. thesis in information systems, sao-paolo colledge. Accessed at: http://researchgate.net/publications/311966246

Friedman, A. (1994). The stages model and the phases of the IS field. Journal of Information Technology, 9(2), 137-148. doi:10.1057/jit.1994.14

Galliers, R. and Leinder, D. (2013). "Challenges and strategies in managing information systems", Butterworth-Heinemann

Henderson, J. and Venkatraman, H. (1999). "Strategic alignment: leveraging ITtransforming organizations", IBM systems journal.

Hierholzer, A. and Herzwurm, G. and Schlang, H. (1998). "Applying QFD for Software Process Improvement at SAP AG". Proceedings of the World Innovation and Strategy Conference, Sydney, 1998.

Liu, X. and Sun, Y. and Kane, G. and Kyoya, Y. and Noguchi, K. (2005). "QFD Application in Software Process Management andImprovement Based on CMM". ACM SIGSOFT Software Engineering. SESSION: Software Quality (WOSQ), 2005.

Luftman, J. and Brier, T. (1999). "Achieving and sustaining business-IT alignment", California Management Review, no.1.

Meirelles, F. S. (2014). Administração de recursos de informática: tecnologia de informação nas empresas – panorama e indicadores, 25ª ed. Centro de Tecnologia deInformação Aplicada (GVcia). São Paulo: FGV-EAESP-CIA.

Mohebi, A. and Heydari, A. (2016). "IT Roadmap Mapping: An Approach to Align IT Strategies with Business Strategies", Information Management Quarterly, Vol. 1, No 1 & 2, Pp. 15-37

Mutsaers, E. Zee, H. Van Der, and Giertz, H. (1998). The evolution of information technology. Information Management & Computer Security, 6(3), 115-126.

Niederman, F. and Branchaeu, J. and Wetherbe, J. (1991). "Information systems management: issues for the 1990s", MIS Quarterly, 17(4), pp. 475-500

Nolan, R. L. and Koot, W. (1992). Nolan Stages Theory Today: A framework for senior and IT management to manage information technology. Holland Management Review. 31, pp. 1-24

Peak, D. and Guynes, C. and Kroon, V. (2005). “IT alignment planning-a case study”. Journal of information and management, 42(2005), pp. 619-633

Peterson, B. (1995). “Transitioning the CMM into practice”. Proceedings of the European Conference on Software Process Improvement, Barcelona, 1995.

Rezaiyan, A. Ghelichli, B. and Darvish, F. (2012). "The Influence of Maturity of IT Processes on the Fulfillment of Business Needs with Qubit Approach in Municipality of Isfahan", Management Research Journal, Vol. 16, No. 4, pp. 63-78

Richardson, I. and Ryan, K. (2001). “Software Process Improvements in a Very Small Corporate”. Quality Management, 2001.

Seyyedi, M. Gahromi, S. Amin, S. and Karami, E. (2012). "Comparative Evaluation of the Relationships between (BPR, 6∂, TQM, QFD, Process Management) and (Cost Reduction, Increase in Volume and Production Quality) (Case Study: At White Reed Cement Factory)", Vol. 6, No. 21, pp. 129-147

Wang, E. and Tai, J. (2003), “Factors Affecting Information Systems Planning Effectiveness: Organizational contexts and planning systems dimensions”, Information Management; 40: 287–303