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Evaluation and Selection of Organizational Enterprise Information Systems with Phase QFD Approach

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Abstract: ***Withregard that automation factory inguided by information technology, so concentration for improving soft wareEnterprise for getting optimal Enterprise information systems is increasing. Anyway, low studies were done for this sybject. In this study, it wastried to evaluate NFR in organizational enterprise information systems by using QFD method. The proposed method studied large amount of information in aproductive company. According to the study results, it was cleare that the main factor in developing software enterprise was customer oviented.***

Keywords: Enterprise information systems. Organizational phase QFD – architect; NFR

1. Introduction

Today, information technology (IT) has dominant role in technological automations. Information technology (IT) in clued computer, software and giring services [1]. The salient role of it is comlite, process, storage (save) and distrilouting the information as united system Several organizations, have decveased their allocated budjets of it unit, because they belive that, investement in it, has not proper turnover ratio, although they havenotsuffucuent documents [1&2].

1) In addition, the stablishment of clear results of investment ratio for designing developing and implementing computer based information system for managers of organizations is so difficult.
2) But it should now that Enterprise information systems (EISS) is a worthy element in it for technologyical organizations for organizing, planning and controlling the labor processes.
3) EISeaistence in different technologies causes productivity and effectiveness. An element of architectoral EIS is software. Architecttoral software is adescription of system elements as its topologic relation in EIS.
4) Dueto importance of architecture, the software of stody in this term is increasing. In designing and implementing EIS, software architecture has key role in developing business and should support the business drive. These drives need high quality characters and nonfuctional requirements. During selection of software architecture for WIS, the mdostrialengineers, should consider various NFRs that sometimes have contradiction. So considering technical requirements importance in RFN is the most important issue is selecting software architecture [3]. In some studies user-based, method is designed as a method for selection of software architecture.
5) But this method couldn't in vestigate the coefficient correlation and the relations between NFR and we can say that this is not complete procedure. So in this survey, we used quality function deployment (QFD) for investigating the relations and correlation of technological requirements. Since in real world we face non certainty, using Fuzzy is useful.

2. Literature Review

The main reason for global approach to organizatronal architecture is the increasing need of cooperation. In fact, this subject is one of the most issue that couses the difference of farmer approaches in planning informations systems (as it) with architectural perspective [4]. This requirement doesn't lead to the cooperation between information systems of unique organization, when an organization as agovernment intends to use the advantages of organizational architecture, it should be preapered a base for evaluation the accuracy and preciseness of architecture in every section and the cooperation amonge these architectures. So, the importance of organizational architecture is clear Zackman.

1) introduced organizational architecture for commerce and industry. He stated this by introducing general pattern (paradigm) in information a architecture frame work and because believed in organization analysis by using architectural frame work, different dimensions of planning a system in terms of content meaning, logic, physic and non precise contents descriptions as a series of questions in view point of input, duty, network, how, where, who, when and why of activeness of future organization.
2) Cartolsa and his colleagues introduced a coding frame work for helping the decision making of element selection for constroctprochase via non functional elements accrording to meaningful model. BaBar and et al.
3) Evaluated software architecture with requard to the quality characters as maintenance, function and soon accotding to SA seravio comparison show that most of procedores have similar constroctions, but some differences were between activities and techniques. Jeo and et al.
4) evaluated the software architecture by EJB pattern. Peng and et al.
5) Used hierarchy analysis for prediction pattern of software architecture failure. They result showed that their group decision making can categorized the results and help the improvement of soft ware failure. New and et al.
6) evatuated software architecture in information systems to functional procedure they identified NFR criterion, but didn't consider their relations and correlations. With literature review we can see. That up to now, there was no

subject that could evaluate non functional elements in software architecture on the base of correlation and expansion of function. So, in this survet, we noticed to using phase QFD for evaluating the software architecture in information systems.

3. Metholology

In this research, we investigate the comparative technological requirements by investingating functional descriptive requirements and nonfunctional descriptive requirements and their their indicators, because NFR are good elements for software architecture selsction in hierarchialconstroction of EIS [5&6]. In this research, we got the end by developing QFD. Next we explain method and the oreticalsteps.

3.1 Phase QFD

QFD kenick is a systematic process for identifying the needs and requirements of customers and modern procedure of quality in all steps including planning, development and constroctingthe product is used.

12) But, in addition to product development, as the reason of hige capability in evaluation the relation ship of technical requirements. It turned to decision making method that can compare the criteria with factors influencing the selection and distingguish them.

13) The main important step in QFD is HO Q framer. Quality. HO Q is a meaning full diagram that prepares inter functional planning. HO Q made of seven elements as figure (1)

What in this survey include requirements and needs of customer in software production.

Whos in this survey include nonfunctional NFR for attaining EIS partial importance of customer needs: the customer needs should be compiled, organized and prioritized. So, the company can act according to the main requirements and ignore the partial on important elements.

The relation between whats and hows: the relation matrix shows that how technological requirementsaffects customer need. Its constraction is as a standard two dimentional matrix with related cells in combination of personal costomerrequirementsand technological necessities. Everycombination is considered as costomer needs and technological necessities. In answering the question: how much technical necessities A are Important? In meeting the customer requirements 1? Level or mutual dependency of these two, are identified in four point of weight scales as hige, medium, low and none.

Inter dependency among technical necessities (NFRs) : inter dependency is used for the condition of the relation amonge used NFR and the positive or negative relution ship for every cell, the following question matrix is asked: is the improvement of a need cause the dissolution or improvement in the other technical necessities? These different levels of positive or negative cooperation are shown by different symbols. In this study, we use the following level and symbols:

(-or +) week (- - or + +) medium (- - - or + + +) powerful
The recorded information in level matrix is usedful for planning team.

First; it emphasizes that, concentration on planning improvemetnt can lead to vast perspective of advantages in this pack. Second: this concentratesan positive and negative relation of plan that can introduce the opportunity for initiative solution. Total priorities of NFR, optimizing competitiveness and objectivies.

A. Total provities: For taking the total priorities, we should notice to the relation matrix and partial importance of customersnneds. Every mutual relation ship is multiplied with respect to particle importance of customer requirements [7].

B. competivie optimizing: is every technical necessities that is identified as the importandmolicators of productions, can be measured for two existing product of company and competitive.

This shows partial technical situation of existing products and helps the identifying the goal level of function for attaining the new products. In this study, we analyse the requirements of NRF scenarios for attaining the EIS optimization C, the last out put of phase HB Q is a complex of designing goals for making software planning according to organizational architecture [1&8]. For this aim, we notice to customer requirements and their partial importance, relation matrix, total priovities, competitors function and existing organizational function that these item sinourcase are our real abilities for improvement. Since phase linguistic function can consider optimistic and pessimistic attituses, its recommended that for measuring the ideality, phase data be used. As a result, using QFD techniques in phase situations is more rational than traditional procedure [9].

In recent years, more attempts were done for encountering non certainty and in skept in decision making. In this study, we use uncertain amount of phase data.

4. Application of phase QFD in EIS
Considering NFR by drives in selsction of proper software architecture can be dangerous error that was established in recent decade. So the importance of them in software architecture for customer satisfaction is considered. In this study with regard to 4 , 3 , 16 , 17 .

The RFNs were identified that are [10-11&12]:
H1: integration H2: extensibility
H3: customer oriented H4: performance
H5: agility H6: reliability H7: security
H8: usability H9: modularity
In the other hand, the customer requirements are identified as below interms of experts idea.
W1: customer satisfaction via fast delivering of useful software.
W2: accepting the neediness changes, even in the last of development
W3: The soft warebe delivered at short intervals.

W4: Functional software is the main eviteria a of development
W5: Permanent (sstable) development can preserve stable race.
W6: Close and daily cooperation amonge business and development team.
W7: Face to face dialogue is the best communication form.
W8: Continus attention to technical priority and good planning
W9: The art of maximizing undone performance isnecessary
W10: matching with limitations change requlerly.
So, for investigating NFRs in telation to customer requirements, in FIS frame, the quality was shaped as Figure 2. Al last, the NFR priority was done as follow:

Customer oriented > security > agility > performance > modularity > reliability > integration > extensibility >usobility

4. Concusion

Large group of technical information engineers concenfrateon software equipments for EISs, since art, mation factory is guided by information technology. In special state, investigation in software architectore for EIS as facing to technologe-based industrial automation remained in sufficient to day [13&14]. So, a vital need is for evaluating software architecture that should be selected for matching the business necessities and customer satisfaction. In this study we noticed to NFR and ohallenged them. Software architecture development in EIS is a method based scenario for analyzing the proposed software architecture changes. (exchanges). The study was done in aproduction company that had useful conelisions and in other word, architecture exchange was explored and experts ideas were executed and ended to EIS planning and their evolution.

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