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Presenting an Approach for Establishing Information Security Project Management Based on PMBOK Standard

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Abstract: Management of information technology projects is one of the most novel management in current world. In this kind of management, the main endeavor has three fundamental principles: 1) collecting and storing of information 2) processing and organizing of information 3) transferring and presenting of information [3]. by growing extension of technology in the world, management of twenty first century need more distinctive skills and capabilities, relative to other management area. This research is aimed at presenting a model for management of information security project, and defining under information technology based on one of the most authentic project management standards, that is PMBOK 2012 standard. The framework of this model has 5 fundamental processes: the process of recognizing needs and expectations of customers-the process of designing work flows-group work process-evaluation and completion process-information security projects management [1,12]. In the process of determining the needs and expectations of customer, the main activity is concentrated on more and better recognizing of customer needs in implementing of related project based on the newest technology in the world, in the second process that is designing of work flow, it carried out by informing and recognizing of abilities and existing technologies capabilities and organizing work for implementing project. In the third process, this organizing, would be implemented, such implementing activity followed by permanent evaluation and control. In the fourth process, final evaluation and project completion would be carried out by presenting transferable items based on information technology and in the fourth process, we evaluate nine items of information security as follows: area management, provisions, price, time, risk, communications, integration, quality and management of human resources and will present a flowchart based on them. The writer, and also attempt in the whole mentioned process, observes the systematic framework of PMBOK standard consist of input, tools, technique and output.

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1-Introduction:

The importance of project management appeared in the most organizations than ever. This process based on following reasons found out strategic role in information technology area. During 1960 through 1970 there were different titles such as programmer, operator or manager in computer industry, but after a time, companies and organizations found out, they need a person, to be able to communicate with users, understand their words, and then by making communication with technical group, transform commercial needs in to the technical specifications. In research, which was carried out separately by Standish Group research institute during 1995 through 2001, the following table results are presented [5]:

Table 1: comparison of the results of information technology projects during 1995 through 2000

Description	1995	2001
Amount of canceled projects before work completion	31%	Not evaluated
Amount of successful completion of IT project	2,16%	28%
percent of violating approved price, time or both of them	88%	Not evaluated
percent of violating approved price, time or both of them	59 billion \$	22 billion \$
price of not completed projects in IT	81 billion \$	75 billion \$
percent of projects which is started again	94%	67%
Percent of violation from approved time	222%	63%
Percent of violation from approved time	189%	45%

Considering the following results, we can find out how proper management in this project is effective in reducing projects problems. In this paper, considering the importance of the subject have been attempted to present a model for managing information security projects based on the framework of information technology projects management, in which its basis of is standard of PMI institute that is PMBOK standard. In this direction, it is necessary, to be familiar with working basis of this standard as the main focus of this paper.

2-Projects Management Based on PMBOK Standard:

Project management institute (PMI) established in 1969 with the aim of gathering records and experiences of different management areas. This institution during a seminar in 1976 in Montreal, presented, the view on documenting of experiences in standard basis, and this is became a starting point for explaining "project management". At the beginning of 1980 s a project was explained by this institution for making procedures and necessary concepts of projects management with three main pivot "determining the scientific and professional features of ethics", the concepts and structure of projects – standard," determining of the method of turn professional-certificate [1].

2-1 project concept: project is set of successful temporary attempts for making a commitment for applying a product or services. The word "Temporary" means projects start and complete in determined time. The word "determined" means the mentioned service or product is completely defined and clear, and is different from the results of implementing other projects.

2-2 project management concept: project management is utilizing science, skill, necessary device and techniques in making activity in order to resolve projects needs by achieving starting points,

programming, implementing, controlling and completing

2-3 project management process: this is set of integrated activities, so the result of each project management is effective in other activities. Interaction between areas, have positive and negative results for them.

2-3-1 the structure of project management process: for implementing of each project, we need set of different process include set of enforceable activities for accessing to the result. These processes are carried out by projects managers.

2-3-2 processing groups: the process of project management is carried out in following five groups: starting process-programming process-implementing process- controlling process- and completing process. The mentioned processing groups are connected to each other by the results of each project implementation, and used in the form of input and output results. Such communications at the beginning till the end of project are permanent and multi way as figure 1.

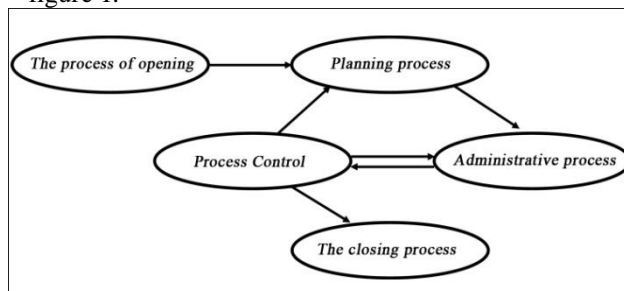


Figure 1: interaction between processing groups of project management

In one stage of implementing project, finally after enough interactions between different processes, the results completely utilized as input of the next stage. This set is presented in figure 2.

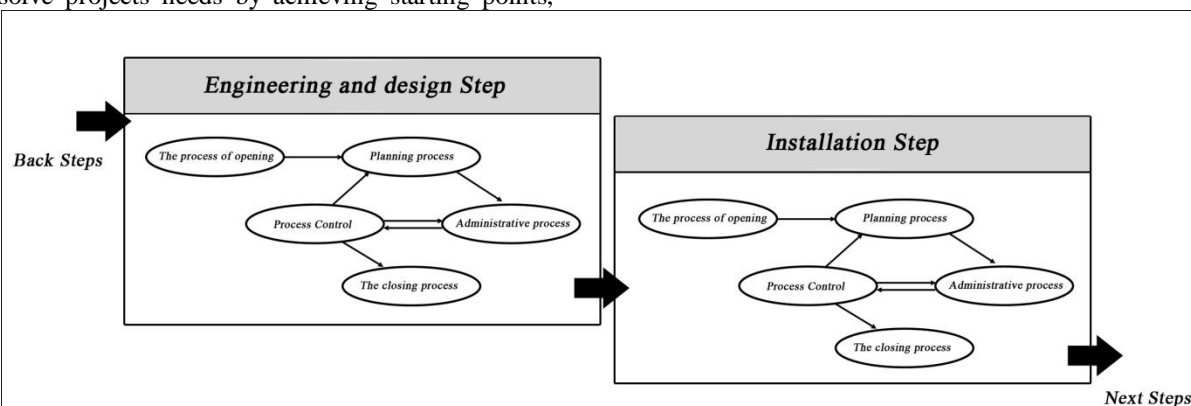


Figure2: interactions between the stages of implementing project

At the beginning of project stage, enough consideration of some starting process is effective in project aims and managers commitment. Although in figure 2 the stage of project implementation and the process of project management are presented sparsely, but in real during project implementing, such stage are not separated from each other.

2-3-3 interaction between processes: each processing groups (five group) consists of complete determined process), which is related to each other in the form of output. Each process include three separate section: inputs -device and techniques –outputs

3-Information technology:

Technology is communications and information, in which raw data without understandable meaning and concept was analyzed and evaluated and then understandable and change in to the information [7].

4-Fundamental components and definitions in information technology (IT):

Information technology includes three main components and abilities: information systems (IS)-computer networks (CN)-communication systems and telecommunication-this section constitutes three vertex of IT triangle [3]:

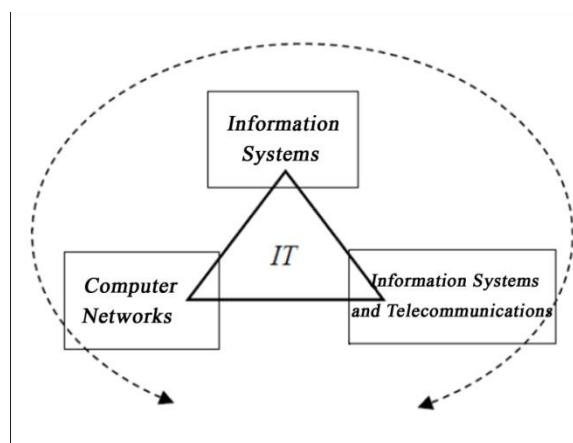


Figure 3: fundamental components in information technology

5-Characteristics of IT projects managers:

Information technology projects management, is utilizing necessary science, skill, device and techniques that enable the managers of projects for programming, organizing, evaluating and managing of information technology, by accomplishing the starting, programming, implementing and completing process. This management, include each project, in

which its aim is completion, development or computer hardware and software implementation and also video, audio and data communication. The main endeavor in these projects concentrated on learning existing concepts in area management, price risk, and time and project quality. And also it is necessary, considering exact definition of project life cycle, apply proper scheme for management in different stage. So, the project manager must have following characteristics: personal, technical, managerial, and supplementary capabilities. The project life cycle have following general specifications: 1-amount of pricing and utilizing human force which was lower in the preliminary stage of projects, is increased and in completion stage of project it rapidly decreased.

5-1 at the beginning of project, the possibility of success in doing commitment and complete access to predetermined result is lower, and in this way amount of risk and lack of decisiveness is more [1].

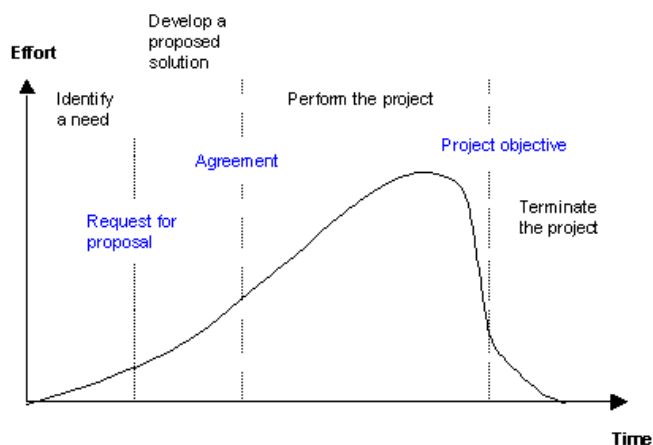


Figure 4: project life cycle

6-The model of information technology projects:

In the model IT project management based on PMBOK standard, based on the specifications of such projects and related process, four process of determining the needs and customers expectations, designing of workflow, work groups and finally evaluation and work completion have been considered. In this section describe these process and input specifications, techniques and related outputs. The whole

Processes are related to each other, such communication is limit to each area of IT project management[6].

Table 2: the process of IT project management

IT project management			
First stage	Second stage	Third stage	Fourth stage
The process of determining the needs and expectations of customer	The process of designing work flows	Work group process	Evaluation and completion of the work
1-inputs	1-inputs	1-inputs	1-inputs
1-describing project output product 2-strategic program 3-related information and record 4-identifying customer needs	1-project charter 2-the structure of work breakdown 3-describing project product 4-main theories 5-work and environment limitations 6-related information and records	1-Project temporary program 2-work breakdown structure 3-personnel specifications 4-external reflection 5-work model 6-work and environment limitations	1-Documents of performance evaluation 2-documents of work results 3-other documents of project
2-techniques and devices	2-techniques and devices	2-techniques and devices	2-techniques and devices
1-holding common sessions 2-votes and comments of experts	1-votes and comments of experts 2-evaluation of possible selection 3-models 4-workind methods and procedures 5-organizational theory 6-architecture of organization information	1-group work 2-controlling forms 3-management general skills 4- training 5supervision 6-performance evaluation	1-results auditing 2-performance evaluation
3-outputs	3-outputs	3-outputs	3-outputs
1-project charter 2-selecting of project management 3-identifying work and environment limitations 4-identifying main theories	1-project temporary program 2-detaild documents 3identifying potential risky events	1-work results 2-on time temporary program 3-reformatory operations 4- documenting the experiences	1-project file keeping 2-confirmation issuance

6-1 the process of determining customer needs and expectations: in this process, by evaluation and necessary study, the customer request is completely confirmed with project output product (hardware or software).

6-2 he process of designing of workflow: in this process after evaluation and necessary study about customer request, the implementing of program is started, in this direction, other process of

programming would be gathered in an integrated and unit set.

6-3 group work process: considering different experts in IT projects, such as programmers, engineers, technicians and ... Though, effective utilization of such experts is inevitable. The group work is processes that do this important activity, by utilizing necessary human resource, and entrusting duty for project activity.

6-4 the process of evaluation and completion of the work: this process is completion of a project or a stage of a project, after achieving of aims and predicted results or even by other reasons. This process include inspection of project results by owners key involved, even customers and also documenting

7-Presenting Model of Information Security Project Management Based on PMBOK Standard:

We evaluate the flowchart of IT project management now. Though based on evaluation we add the process of information security project management according to ISO 27000 as follows [13,4]:

Table 3: the process of information security projects management

Information security project management based on PMBOK standard:			
First stage	Second stage	Third stage	Fourth stage
The process of determining the needs and expectations of customer	The process of designing work flows	Work group process	Evaluation and completion of the work
Security management process Provisions and areas of project	Security management process Price and the time of project	Security management process Project communications and Risk and human resources	Security management process Project quality and Integration
1-security project provisions management 2-security projects area management	1- security projects price management 2- security projects time management	1-security projects risk management 2- security projects communication management 3-projects human resource management	1- security projects integrations management 2- security projects quality management

7-1 First stage:

7-1-1 security project provisions management: provisions management in each project, supply necessary good and services of project out of organization. A point about security projects shows this subject is a reason for communication of involved persons in security project with out of organization. Though, recognition and confidence of responsible organization of provisions personnel is so vital, because from simple communications, the information of one security project could be revealed and effects on project success. In the first stage, must identify the needs out of project organization and determine that whether apply such provisions or not? If so, must determine how could do it, how much, and when we need it. Then, for accessing to this request, provisions group prepare its documents, in the next stage, must receive suggested price and plans from future sellers about resolving of project needs. After this stage must select a provision resource out of organization based on important scale on order to select that resource. In security or non security projects with security application, amount of recognition of project organization from provisions resource and its confidence is one of the main scales in evaluation of provisions resource in security projects. In the last stage, based on a method must be

assured that seller performance (provision resource) achieve contract obligations and finish provisions by evaluation of product, recording and updating organization performance for better reflection of final results[15].

7-1-2 security project area management: in real this management must determine the limits of satellite and exclusive company for security set, after by exact and vast evaluation of satellite and exclusive company, the next stage is official approval of project, and documenting of its detail. Each section must be carried out personally and manager is responsible of the whole project. in compiling of the sections, each part must be independent from other part in order to control and manage them. After determining the limits, the next stage is official acceptance of these areas by organizations or beneficiary legal persons in project. The result of this stage is security reviewing of security work by different responsible parts. In final stage, there would be an occurrence that change security project area or have no effect. In case of occurrence that security project management approve it s effect, the above mentioned discussion must be reviewed again. In the final stage, the top rank official of organization must attend in decision session in order to take responsibility and its consequences [15].

7-2 Second stage:

7-2-1 security project price management: it include necessary process for assuring project completion by approved budget, as whole organizations considerably intend to reduce final price in each project, and opponents may attempt to administer one section of project freely, in order to penetrate in to the team and access to the information. This is so important point in security project price management. In this direction, we need programming of what and how much resource is necessary for project activities. In the next stage we must estimate price in order to access to total project price. Then must allocate this price to activities or working packages for establishing price basis in order to evaluate breakdown project performance and then in case of possible change , this change accepted by project beneficiary and controlled by management [2,15].

7-2-2 security project time management: as you know, each work that practically take long time, cannot work well and causes main problem, here possibility of revealing project information and documents are increasing because of time delay. Though, in security project time management must prevent from delay in work. Time management in each project includes necessary process for assuring of on time project success completion. In this regard we must know, the whole project include which works and each work include which sections. All of these items must be identified and its documents must be prepared in which the best resource for this work is work breakdown structure (WBS).

7-3 Third stage:

7-3-1 security project risk management: this management guarantees the maximum positive effects of events and minimum negative effects on projects. There is process in order to identify and analyze projects risks and then find out proper reaction. But in security projects, the effective events have especial features, for example must answer them as quickly as possible, and in case of losing time and time delay, the previous answer is not proper solution. Therefore good reaction against identified risk and its proper evaluation is very important. In the next stage we must increase opportunities and reduce threats, and in this regard, we must identify and determine persons or sections for accepting of responsibility of reaction against risk. This program must be proportionate to the risk intensity, be cost effective against challenges, be on time for success, be optimistic considering project conditions, be agreeable by involved sections in the final stage must have a control and supervision on risks which is include the process of following identified risks, supervision on existing risks and identifying new

risks for assuring implementing risk programs and their effects on reducing risks. This is clear that management scope is the most sensitive area of security project that apply positive results by correct management and cancellation of project by incorrect management[10].

7-3-2 security project communications management: communications management in projects is coordinator of relations between persons, views and in formations, which is important for project success, and what is important in security projects, is that if we could complete the puzzle of mental information near to each other , then it is possible to reveal project information , so it must be prevented. In the first stage we must program for such communications in the next stage , for understanding the method of using resources, in direction of project aims must gather project performance information for reporting, and finally the project results must be documented , and the investor, officially approve the project product[4,14] .

7-3-3 security project human resource management: in projects usually, human resource management consists of process that is necessary for accessing to the most effective application of involved people in project. The important point in security project is that , the whole human resource project must be the official personnel of that organization who want to implement security project and in case of lack of knowledge must hold training sessions for them, because work technique is transferable , but confidence and assurance is not transferable by holding a session, in this regard , in first stage must apply identification, documentation, and assigning of duties and responsibilities in project for a people or group works.

7-4 Fourth stage:

7-4-1 Security project integration management: in this section , there is process of PMBOK standard that assure proper coordination between different components of security project, for coordination we divide work in to three section:1-codifying a program for this control: a program that could control and coordinate project different components.2-implementing this program: in codified programs, precision in implementing , assure the quality of work output.3- controlling of possible change: in controlling , the first stage is recognition and determining of possible change., then controlling and managing of change is important and finally assuring that whether it is approved or not.

7-4-2 security project quality management: it includes process that applies for project need resolving. The main point in security project is that, if the quality of work is reducing we don't say it has

low quality, but it may conceal the whole project, because of security problems, though, applying project quality in security project have doubled importance[8].

8-Conclusion and Future Works:

This research is aimed at evaluation of information security projects management in information technology (IT) scope based on PMBOK standard. In this direction the special management of projects was considered based on reliable standard that is PMI institute. Though, by reviewing of mentioned standard, the main discussions about information technology project management such as project definition, different project process and the method of comparing them based on this standard was evaluated. After evaluation of IT history, the management model of these projects was extended and codified based on PMBOK standard consist of four process of determining customer needs and expectation, the process of designing work flow, work group process and evaluation and work completion process, then by entering the stage of information security based on ISO27000, a model for such project management was presented based on nine detailed process. Future works related to this field are as follows:

- Extending and developing mentioned model for optimizing project fundamental factors (time-price-risk)
- Practical evaluation of mentioned model in implementing conditions
- Analyzing and evaluating mentioned model based on other project management standards.
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