

Suggesting a Methodology of Project Management by Effective Human Resource Management Approach Complied by PMBOK

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Abstract: Projects follow given objectives in a specific framework. Managing them should be different from the organization's management according to their circumstances. In every project, human resources are regarded as an inseparable part of project resources. In some kinds of projects, which are considered in the article, volume and performance of human resources constitute a considerable part of the project. Therefore, paying attention to appropriate management of these resources will have considerable impact on the progress trend of the project. This kind of projects needs a different management. Considering the existing experiences, here we study and design an appropriate algorithm in this respect.

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Introduction

Project management is using knowledge, skills, tools, and techniques related to the activities in that project to meet the needs in that project. Projects enjoy different resources in order to obtain their designed objectives. Human force, machinery, equipment, and consuming materials are some of these resources. In this study, we concentrate on the projects which use high volume and different human forces to be carried out. High volume of human resources which are used in the project's framework, has a considerable effect on the progress trend of the project. This kind of resources, unlike other types, has a series of characteristics that causes the appropriate management on them be essentially effective in the resulted value obtained from using and consuming of these resources.

In order to make the following discussions more clear, this trend would be associated with emphasis on a type of project which is complied with the desired structure to make better understanding and reflecting the related experiences and achievements possible. "the project on information collection and surveying from different sport area in Isfahan" is one of the projects which is different in nature from construction or software projects.

This type of projects is carried out in the given time, by the given cost, and in the required quality and accuracy. In these projects, high volume of human force is applied, and the progress trend, achievements, problems, and dangers of the project are highly related to this kind of resources. Using project management techniques and methods in such projects would affect

the final result. To explain the subject more and suggest an appropriate framework, we study different components of these projects. To do so, we try to recognize the components and the effective factors in carrying the projects out, in order to design an appropriate methodology for such projects, and simplify the path for project managements in the similar cases.

The components of a management system for projects are:

- The project manager,
- Human forces and resources,
- Financial resources,
- Time of projects,
- The required tools and methodology,
- The risks and dangers in project,
- And other resources.

Now, by considering these elements and components, study the suggested methodology.

The project manager:

An essential component of every project is a qualified project manager. In this kind of projects, in addition to the needs similar to every project, the presence of high volume human force, indicates the necessity of choosing and appointing a powerful and influential project manager more clearly.

Considering the type of project, the factors which are necessary for being appointed to this position, and the candidates are determined. The best candidate would be chosen according to the current capabilities and conditions. Based on the time and circumstances, different methodologies can be used for choosing that

person. In the following, the process for choosing the manager is discussed. In analyzing the candidates, based on the past records (if existed) a basic choice is done, and then the methods are applied to choose the final manager.

In some references, the capabilities of a manager is suggested under the title of sextet capabilities, here we give the name of these capabilities:

- Knowledge,
- Understanding,
- Applicability,
- Analysis,
- Combination,
- Evaluation.

number	choices	High public relations	Proficiency in project management techniques	Comprehensive planning	Having systemic viewpoint	total	The selected choice
1	A	7	8	6	7	28	-
2	B	8	9	8	8	33	√
3	C	7	9	7	8	31	-

So, a basic step for such projects is to select the manager according to the existing methods and tools.

After this step, most responsibilities in the project are under the manager's. he/she, as the most influential person, involves in all trends and can be very effective in the appropriate progress of the project.

The project's limits

Determining the project's limit and framework is one of the most essential and basic steps in every project. In projects which are not accurate in this respect, the results would be affected in an undesirable way.

Project's limit management is determining the necessary processes to guaranty that every project includes all and only the required actions to be carried out successfully. In this respect, all required attempts should be done to clear all commitments and requirements of the project. Therefore, the project charter, which is a document that includes all product's commercializations and descriptions and issue the permission for start a project is designed.

In this process, in order to define and plan the project limits accurately, tools such as WBS and cost and benefit analysis are used in order to design the desired objectives properly, and move toward them.

It should be noted that project limits might be changed during the projects, and by the assistance of a control system that includes official actions, track systems, and the stages for issuing necessary permissions these changes should be corrected. The

The factors are considered for this project include: high public relations, proficient in project management techniques, comprehensive planning, having systemic viewpoint.

Candidates: A-B-C.

Considering that the factors in this regard are qualitative, we need to quantify our criteria. To do so, we have used a general method which is called space bipolar scale, and after quantifying all criteria, we use dominance method for choosing the best candidate.

Range of bipolar scale:

1. Very low, 3. Low, 5. Average, 7. High, 9. Very high

corrective actions are the actions that change the project limits and adjust project objectives in order to harmonize the efficiency of projects with the planning based on the current circumstances.

Human resources

Human resources management in the project includes the required processes in order to achieve the most effective method for applying the people involved in the project. In this respect, the appropriate forces should be recognized and recruited, and individual and group competitions should be set in order to enhance the effectiveness of the project.

The process of recruiting the qualified forces is similar to the process of choosing and appointing the project manager. The related criteria and current choices are determined, and based on the limitations and desired methodology, the human forces would be selected.

In our project, the required criteria are:

- High public relations,
- Working personality,
- Perseverance,
- Accuracy,
- Deduction power.

People, to be recruited, should have a least of the above criteria. This limitation depends on the desired methodology. In order to simplify this, a filtration process is used. Therefore, all candidates are evaluated and scored based on the criteria.

number	criteria	Quantification method	The least extent of criteria
1	High publicrelations	Space bipolar scale	3
2	Working personality		3
3	Perseverance		4
4	Accuracy		4
5	Deduction power		3

In order to use the individuals effectively, we should have two points in our mind:

1. Combination of individuals and forming appropriate groups:

Forming the groups should be done in a way that makes a good synergy among people. It means, in addition to the fact that the group members not only covers each other's weak points, but also mutually increase the efficiency of all individuals and the total group. Also an appropriate organizational planning should exist to assign the duties and responsibilities of each member and report the progress trend of projects.

2. Creating a reward and punishment system in order to make a positive and effective competitive environment among the groups

Obviously, making good incentives for people can accelerate the performance of such projects, and having control on this trend can increase the quality of the final product.

Costing and financial resources management:

Costing management includes the processes to carry out the project with the approved budget. The first step for a project to be successful is having a good estimation on the costs of the project. In this estimation, factors such as using tools like WBS and having the resources and their rate, estimations on time, and the probable risks in the project. In this regard, different tools such as parametric modeling, bottom up estimation, and so on can be used. In the case of having sufficient time and intangibility of the cost for this part, it is better to use other methods for confirming this estimation. In the desired project, estimation method was bottom up, which was finally associated with analysis of the amount suggested by the employer.

In this step, budgeting of the project is certain, since this budgeting is effected by the basic estimation. A common problem in most projects is lack of financial resources in the beginning of the project, or lack of a proper trend to be sure about financial trend of the project. This is in turn one risk in the projects that should be regarded accurately. Since most resources in this kind of projects are human force, these risks and probable problems can be considered in an important tool such as contract. During the project, it is recommended to do some other estimation in order to review the costs, and update the budgets. To do so, tools such as project management softwares and broadsheets can be used.

Time management

Completing the project in time is mostly depends on works of individual people in the project, controlling the risks accurately, and proper time estimation. Defining the activities accurately by the information of past records is in some ways a base for estimating the project costs.

Estimating the duration of activities has an important role in completing the project in time. In ever project, according to its conditions and objectives, a specific method is used in this respect. In this project, we used some expert judgments and deductive estimations. In fact, it is better that this estimation be reevaluated a few days after the beginning of project based on the way members act. Due to the risks in a project, considering timesavings is an important point that should be regarded in the timing of the project. Project management software or broadsheet has an essential effect on completing the work. In this project, we used broadsheets in order to track the people in order to accurate control of the works and also evaluate the functions of individuals and groups.

Quality management

Quality management includes all activities related to the performance of the comprehensive management that assigns qualitative policies, objectives, and responsibilities, and implement them by using quality planning, quality control, and quality improvement. In this kind of project, in which large numbers of people are involved, and the implementation trend is highly dependent on individual's performance, the final quality of project is affected by these factors and should be managed accurately in order to meet the employer demands. Cost and benefit analysis is one of the tools used in quality planning and guaranty. The main profit obtained from qualitative requirements estimation is reduction in resources that in turn requires more efficiency in the people, and will result in less costs and increase consent in the project's shareholders. Accurate definition and assignment of the involved people, accurate determination of the project limits and demands, and accurate control on the performed work can guaranty the final quality of the project.

Risk management:

The systematic process of identification, analysis, and accountability to the project risk is called risk management. One factor that leads every project

to its objectives well is accurate control and management of its risks. Specially, in the projects deal with human resources, there is a specific kind of risks, from choosing the involved people which is a risky process, to the end of the project, different risks may exist. The project objectives are effective on its risks. Accurate and proper definition of the project charter which is a document announce the permission for starting the project and includes commercial requirements of the product and its final description, is very important in risk planning of the project. WBS and the roles and responsibilities are prerequisite for entering this arena. During the planning sessions, and by tools such as brainstorming, surveying similar projects, interviews and so on, the project's risks should be predicted. In the following, based on the type of project, and assigned objectives, the probability and effects of the risks should be evaluated. This survey can be in the form of risk ranking tables, and probable project analysis. Finally, the response to these risks should be planned, and according to the probability of each risk, the risk should be accepted, prevented, transformed, or reduced. In this kind of projects, a large amount of risks are related to human resources. Lack of available appropriate force, lack of efficiency, problems might face the people during the work, and so on are some of these risks. Considering reserved forces, appropriate contracts for efficient use of people, determining a good reward system, and controlling the work trend can prevent the project risks in a good way. Also, doing cautious actions such as considering discretionary time and cost can be effective in reducing the impacts of risks.

Knowledge management

Despite the differences between the projects, the same experiences are repeated for them. Considering these experiences and the knowledge resulted from these projects for the future ones can help the projects to progress. Creating a knowledge and experience database can make the basis for such a process

By establishment of this database in processes and components of project, the knowledge and information transfer and exchange is always carried out between this database and people, and the required guidance would be available for the related authority. Also in the case of new knowledge and experience creation during the project, the knowledge packages would be added to the database. Generally, information transfer between information demand and production resources has always been fluent during the project and makes better guidance of the processes.

The project management algorithm

In this step, the desired algorithm is divided into two parts:

- Steps before starting the project
- Steps after starting the project.

a. Before starting the project:

As mentioned above, paying enough attention to some parameters and arenas are very important in the project planning and management. Accurate assigning the project's limits, choosing and appointing a qualified project manager, financial and budgetary planning, time planning, qualitative planning for achieving the defined objectives, and creating a context for information and knowledge exchange are important factors in this respect. The following algorithm considers these factors.

b. After starting the project:

By starting the project, the full notice would be on the progress trend to accurately survey the activities and make sure about the progress according to the planning in order to achieve the project objectives. Therefore, a reporting and observing procedure would be done. In the way that some sensors would be placed in the project (contractual rather than physical) which are either periodic or accidental .

Periodic sensors are the sensors which are considered in different phases of the project from the beginning and according to the previous planning, in order to have an appropriate control on the project's progress trend, while accidental sensors are the sensors which are activated due to the views of the project manager, or the experts, or according to the obtained results, and announce the desired message.

Based on activation of each sensor, either A or B algorithm would be followed During running of these processes, the appropriate information transfer would be carried out between the database and processes in order to support new achievements.

Conclusion

Appropriate project management, in addition to financial and time resources, needs to enjoy appropriate managerial resources in order to advance the project actions. Using a qualified manager who has harmony with project conditions, existing algorithms and processes, having a look to previous experiences, and using effective and efficient tools can guaranty the success of every project. In this methodology, considering different and necessary aspects of the project in this type, the effective components and tools were determined, and by systematizing these components in an algorithm, a model was designed to better implementation of the project.

In this way, based on the high volume human resources in this type of projects compared to other applied resources, we tried to design an algorithm and framework in order to take a step in designing comprehensive model for this type of projects.

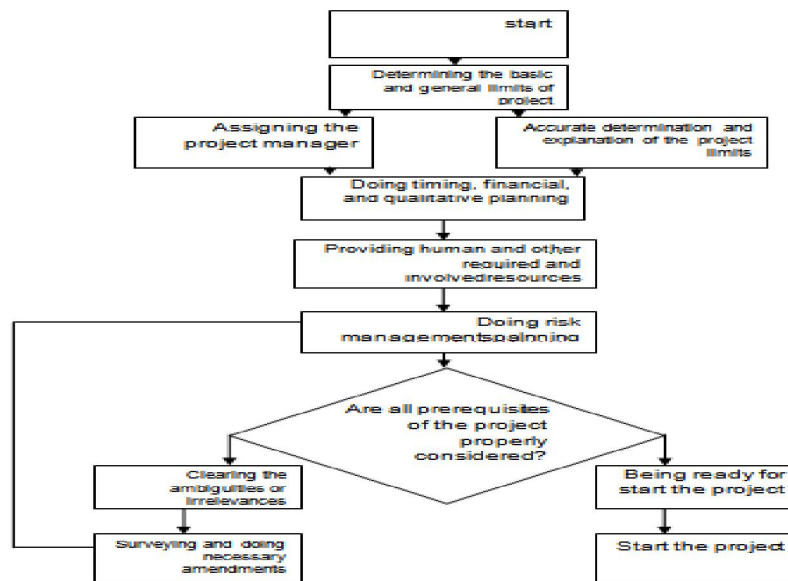


Figure 2: the algorithm related to the time before starting the project

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