

Projects in Organizations

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Abstract—Due to the ever growing popularity of projects in organizations, a great deal of research has been carried out and continues in the project management space. This article looks at the current state of play for projects in today’s organizations and highlights the main key findings that have come out of research over the last decade.

Keywords—*projects, project management, phases, success factors*

I. Introduction

The purpose of this article is to look at the current state of play of projects in today’s organizations. A great deal of research has looked at various components of project management, from styles of project management, phases, complexity through to key decision making factors. This article brings together research that has been undertaken and documented in the project management space, to highlight the key factors that are in play in today’s projects.

The first section will give a brief overview of projects including key concepts such as project, project management and how projects are broken down into phases. The next section introduces the complexity that projects need to contend with. The next section looks at how breakdown structures are employed in projects. The next section looks at key decision making factors for projects. The next section looks at what impact a project manager has on the success of a project. The next section introduces the concept of the generic project phases. The next section introduces the three most commonly used project types. The next section then looks at the critical factors that influence a projects success. This is followed by the conclusion.

II. Project Overview

A. Project

As defined in [1], projects are characterized by their specificity: an endeavor that has a start and a finish, a precise and unique aim that is carried out by a team set up for the purpose of the project. It can be considered to be the achievement of a specific objective, which involves a series of activities and tasks which consume resources [2].

B. Project Management

According to [2], project management can be defined as the process of controlling the achievement of the project objectives. The function of project management includes defining the requirement of work, establishing the extent of work, allocating the resources required, planning the execution of the work, monitoring the progress of the work and adjusting deviations from the plan.

C. Project Phases

All projects consists of a number of different phases that form the life cycle (or life span) of each project [3]. Technical projects can be broken down into phases, also commonly referred to as stages or steps. These phases can be further divided into subphases, then sub-subphases and so on [1].

III. Project Complexity

In today’s ever changing project landscape, the level of complexity of any given project is influenced by the following factors as specified in [4]:

- (i) Presence of uncertainty and risks
- (ii) Complex project composition
- (iii) Complex network of relationships
- (iv) Multiple systems
- (v) Demanding regulatory environment and public

The first factor that influences a project’s complexity is the presence of uncertainty and risk. Unfortunately this is a result of the ever changing landscape of today’s organizations and their respective industries. The presence of uncertainty and risk can affect all aspects of the project from initiation and delivery through to implementation.

The second factor that influences a project’s complexity is its complex project composition. Project work by its nature breeds a complex web of phases and subphases, with set deliverables at each project gate, all of which require effective management, to ensure the success of the project.

The third factor that influences a project’s complexity is its complex network of relationships. Projects have a large project resource base which they will utilize, both insourced, outsourced resources to work on the project deliverables. This is also coupled with the identified project and organizational stakeholders that need to be kept abreast and provide input into the project, add another layer of complexity to the project.

The fourth factor that influences a project’s complexity is the need to support multiple systems. All of which, need to work in harmony, to deliver the project deliverables.

The fifth factor that influences a project’s complexity is the demand that particular project’s by their very nature generate, is that of a demanding regulatory environment, for regulatory

projects, and by an alert public, where the nature of the project may be highly sensitive to clients.

All of these five factors add additional complexity to an already complex project environment.

iv. Structured Breakdown

All work that is undertaken in a project has been deemed sufficiently large and complex enough to warrant its own project. This in itself clearly indicates that projects by their very nature of existence are complex undertakings. Managing a project as a whole can be quite daunting for a project manager, and can be hard to manage simply due to the magnitude of work and tasks that will be carried out over the duration of project phases. Today's project managers are embracing the idea of breaking down their project into tree-like structures that are easier to manage. As introduced in [1] the commonly used project breakdown structures include:

1. Project Breakdown Structure (PBS)
2. Functional Breakdown Structure (FBS)
3. Organizational Breakdown Structure (OBS)
4. Work Breakdown Structure (WBS)
5. Cost / Control Breakdown Structure (CBS)

The PBS attempts to break down the final deliverable of the project based into systems, then subsystems, then subassemblies, until it can no longer be broken down any further.

The FBS is similar to a PBS, however instead of being oriented around systems it is oriented around the functions that the final deliverable will satisfy.

The OBS attempts to break down the project in terms of organizational responsibility.

The WBS attempts to structure the work into a list of work packages and activities that will need to be carried out in order to complete the project.

The CBS attempts to break the project down into a cost control or a contract monitoring view point.

v. Decision Making Factors

A great deal of planning, and monitoring is conducted in projects. Clear project phases are defined. Multiple stakeholders are involved and all decisions are made with multiple stakeholders providing important and signoff. However, even with all the planning and monitoring that is undertaken in a project, inevitably there are always critical decisions that need to be made.

Decisions made in projects may at times seem insignificant however they can have huge implications for the direction a project may take. It is therefore important that decision-making is undertaken in a project by employing the correct set of decision making criteria. The following objective functions are employed as criteria for decision-making throughout the project life cycle [4]:

- Financial objectives
- Performance objectives

- Environmental objectives

By employing this set of criteria, when making decisions in a project, it will help to ensure that the decisions are made in the most objective manner to ensure the right outcome for the project.

vi. Project Manager Effectiveness

A great deal of research has been carried out that looks at reasons why certain project managers perform better than others. As highlighted in [A10], project managers may find that they are more effective when they are able to:

- Identify key project stakeholders at the beginning of the project
- Develop and maintain good relationships and effective communication with stakeholders
- Avoid using single-point indicators for project success
- Ensure their project success indicators include both efficiency and effectiveness measures over the span of the project life cycles
- Remain mindful that success measures change over the project life cycle
- Remain mindful that some indicators used at the initial project phases may not be the ones assessed at the closeout phase

The above factors are seen as some of the key factors that help a project manager manage a project more effectively.

vii. Generic Project Phases

A great deal of research has been undertaken which looks at the various project life cycles that exist and are in use in today's organizations. The underlying theme that resonates throughout this research is that there is a generally held understanding of four broad generic phases that exists in projects. These four broad generic phases are highlighted in [6], as given below:

1. Starting the project
2. Organizing and preparing
3. Carrying out the work
4. Closing the project

Other terms commonly used for this phase include: handover of the project results to the user, project termination, sometimes including post-completion evaluation

The first phase, that is, of starting the project includes support for conceptualization, authorization, initiation, identification, selection of the project, developing the project charter, business case, planning and scheduling.

The second phase, that is, of organizing and preparing the project includes support for feasibility confirmation, development, demonstration, design prototype and quantification.

The third phase, that is, of carrying out the work includes support for the execution, implementation, realization, production and deployment, design / construct / commission and installation and test of the project deliverables.

The fourth phase, that is, of closing the project includes support for the handover of the project results to the user, project termination and post completion evaluation.

viii. Project Types

There are many projects that are undertaken at any one time in an organization. These projects can be classified into different types of projects based on how the project work is structured. Three of the more commonly employed project types are that of Waterfall, Iterative (Incremental) and Agile.

Waterfall is the traditional life cycle method that has been around for decades, it is a sequential development model with clearly defined deliverables for every phase [7]. It is seen as the traditional, robust and sequential development life cycle. However its sequential nature makes it resistant to change. Iterative (incremental) allows more flexibility than waterfall, in that it allows flexibility in accommodating new requirements or changes thereof. It also provides room for improvement in succeeding iterations based on lessons learned from previous iterations [7].

Agile arose from the need to develop software applications that could accommodate fast based and ever changing development. Agile, is in some ways, a variant of iterative life cycle where deliverables are submitted in stages, the main difference is that agile cuts delivery time from months to weeks [7]. Due to the ever changing project landscape, the need to get to deliver projects more quickly are making an agile project type are more populate project type.

ix. Project Success

The widespread use of projects in organizations today is the driving force in the search for factors that influence project success [8]. In spite, of extensive research in recent years, there has been little agreement on the critical factors of project success [9].

As highlighted in [A10], projects are about managing expectations, and expectations have to do with perceptions on success. Project success is a complex and evolving attribute that continues to evolve during the various stages of the project life cycle.

Much research has been undertaken which documents many factors that influence the success and failure of a project. However it cannot be denied that without the willingness to perform and dedication to the project success by the manager and the team members, competencies are useless [10]. It is important that all project team members and project stakeholders are all on board and are committed to the success of the project. It has been highlighted in the literature [10] that a clear understanding of the project goals, objectives and mission are important factors to ensure the project team is motivated.

x. Project Manager Influence

A great deal of research has been undertaken that looks at the reasons why projects succeed, with particular focus on what are the key factors that influence a project success. However one less obvious factor that influences a project's success is the impact a project manager has on a project's success. As discussed in [11], research in this field suggests that the following project manager attributes may influence a project's success:

- Competence as a project manager
- Different leadership styles appropriate for each stage of the project life cycle
- Specific leadership styles appropriate for multi-cultural projects
- Leadership role in creating an effective working environment for the project team
- The preference for task-oriented to people-oriented leadership styles
- Leadership style that influences his or her perception of success in different situations

Although not formally quantified as direct factors that influence a project's success, one does need to assume that the individual that leads a project must in some form or other have some influence over how successful a project is.

xi. Success Factors

A great deal of research has been undertaken which looks at what are some of the factors that drive project success. As highlighted in [2], the success of a project is dependent on support for the following key success factors:

- A realistic goal
- Competition
- Client satisfaction
- A definite goal
- Profitability
- Third parties
- Market availability
- The implementation process
- The perceived value of the project

However these factors are very generic and high level. More concrete analyze and research has been undertaken and documenting as late. As highlighted in [12], 136 European executed projects where analyzed in detailed, from this analysis, the following twelve project success factors were identified:

- F1 - Adequacy of company-wide education on the concepts of risk management
- F2 - Maturity of an organization's processes for assigning ownership of risks
- F3 - Adequacy with which a visible risk register is maintained
- F4 - Adequacy of an up-to-date risk management plan

- F5 - Adequacy of documentation of organizational responsibilities on the project
- F6 - Keep project duration as far below 3 years as possible
- F7 - Allow changes to scope only through a mature scope change control process
- F8 - Maintain the integrity of the performance measurement baseline
- F9 - The existence of an effective benefits delivery and management process
- F10 - Portfolio- and programme management practices that allow the enterprise to resource fully a suite of projects
- F11 - A suite of metrics that provides direct “line of sight” feedback on current project performance, and anticipated future success
- F12 - An effective means of “learning from experience” on projects

XII. Failure Factors

As highlighted earlier, a great deal of research has been undertaken which looks at factors that drive project success. Conversely research has also looked at factors that drive failure in projects. As highlighted in [2], factors that may cause a project to fail to achieve its objectives include:

- Inadequate basis for project
- Wrong person as project manager
- Top management unsupportive
- Inadequately defined tasks
- Lack of project management techniques
- Management techniques mis-used
- Project closedown not planned
- Lack of commitment to project

XIII. Conclusion

As shown in this article a great deal of research has been undertaken in the last decade which highlights key factors relating to projects and project management. This article introduced five complexity factors impacting projects in today’s organizations, they being: presence of uncertainty and risks, complex project composition, complex network of relationships, multiple systems and demanding regulatory environment and public. This article then introduced the concept of a structured breakdown. As more and more of today’s project managers are embracing this concept, it was important to introduce the five breakdown structures that are in play at present. Breakdown structures help project managers to have a more structured breakdown of the work that is to be undertaken in the project. This article then looked at factors that influence key decision making in a project setting. The three main decision making factors were perceived as having a financial, performance and/or environmental objective. This article then looked at what impact the competence and leadership style a project manager

has on the success of a project. It also noted key attributes that would help a project manager be more effective in their role. The four main generic project phases of starting the project, organizing and preparing, carrying out the work and closing the project were introduced, along with three of the more commonly used project types. This article then introduced the broad factors that influence the success of a project and conversely its failure. The twelve project success factors elicited from the findings of an in-depth study of 136 European executed projects were also presented.

As highlighted in this article, organizations use projects extensively in their organizations at present. Much research has been undertaken in this field to deeply analyze, document and report on various concepts of projects and how project management is supported in organizations at present. This article attempted to summarize the key findings and research that has been conducted in the past decade and highlights the key attributes of projects in organizations at present.

As highlighted in this article, a great deal of research has been undertaken, which has been documented and invariably articulated in various formats from research articles, technical papers, forums and white papers. This has enabled a greater awareness in the project practicing community of the manner facets that make up their project world.

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