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Three Meta-Phases of a Project

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ABSTRACT

This paper proposes three high-level project meta-phases to enhance the understanding of how projects are created and their long-term impacts after completion. It extends the traditional view of the projects to include activities which occur before the initiation of the project and after the closeout phase. These meta-phases are project conception, project execution, and deliverable use. These meta-phases are described and explained in terms of their usefulness for project management research.

Keywords

Project Management, Risk Management, Project Lifecycle, Product Lifecycle

INTRODUCTION

It is the premise of this paper that projects do not occur in a vacuum – they are very much an extension of the history and nature of the organizations which sponsor them. To fully understand a project, prior literature has described the environmental and organizational factors which will impact the selection and goals of a project well before a project's inception (Marchewka, 2015; PMI, 2017). Also, because the impact of project deliverables does not stop when the project closeout phase is complete, it is also important for project organizations to consider the long-term consequences of project activities (Marchewka, 2015; PMI, 2017; US DoD, 2015). From this perspective, activities which are important to the goals of the project occur much sooner and continue much longer than commonly thought. As projects are influenced by pre-existing conditions and have outcomes that are realized in their aftermath, a wide temporal view is warranted. Projects can be said to have an extended life, and it is the goal of this study to describe projects using an extended horizon. Therefore, the research question posed by this paper is *how does one describe the temporal phases of a project's extended life?*

The question is important for researchers because it focuses attention on the different sets of factors that come into play during a project's extended life – specifically those which occur outside of the execution phase. Each of these sets of factors may be important to a project's overall success and failure, and with regards to organizational impacts.

This research effort proposes three high level project meta-phases to parsimoniously describe a project's extended life. Such a model promises to more fully capture and describe the interaction and influence of the host organizations and cultures, the activities and near-term impacts of project execution, and the lasting impacts of project outcomes to individuals, organizations, and society.

Projectification

The extended temporal view of projects can be seen in previous literature related to the evolving role of the project organizational structure in modern organizations. Since the 1960s, firms have seen the need for rapid innovation as a key to retaining competitive advantage (Midler, 1995). Projects as an organizational structure have been adopted by firms as vehicles for innovation (Midler, 1995). This process is called "projectification" according to Midler, who presents a case study documenting the 30-year process of Renault's transition from traditional skill-based departments to a project-oriented organizational structure. This process included transferring people *and decision-making authority* to focused teams dedicated to specific unique goals within the organization. Enhanced cross-professional communications were observed to be a key outcome. Prior to projectification, these communications occurred at the highest levels, but afterwards they occurred at the lowest levels within dedicated project teams (Midler, 1995). This enhanced communication seems to be a catalyst for facilitating rapid innovations.

The projectification process provides an example of how activities which occur well before a project is conceived can have a profound influence on project goals and success. In the above case study, there was limited project team success in early phases, until it was realized that decision making power had to be increased for project teams (Midler, 1995). Along with supporting innovation, the projectification process was described as having far-reaching and, at least in the short-term, destabilizing changes to the overall culture and structure of the firm (Midler, 1995).

Projects and Pre-existing Conditions

Projects themselves, like children, inherit many things from their parent organizations. Examples include financial and human resources, political issues, cultural influences, and structure (Marchewka, 2015). For the project management practitioner, these factors are important to understand as they may drastically affect the goals and the methods needed to conduct the project, as well as inform key decisions. It may affect whether projects are selected, and the level of support by stakeholders (Marchewka, 2015). For the researcher, these variables are key to understanding project team behaviors, as well as explaining project outcomes.

Other research efforts (Hanisch and Wald, 2011), project management texts (Marchewka, 2015), and practitioner bodies of knowledge (PMI, 2017) have described how projects are influenced by the culture, the environment, other organizations, and various individuals (called "project stakeholders") who have an interest in the project (PMI, 2017). As with individuals, projects come into existence saddled with environmental factors and organizational characteristics which will influence both the overall goals of the project (PMI, 2017), as well as their likelihood of achieving those goals. This latter consideration may be less understood by many organizations, because it can require organizations to consider their own deficiencies – understandably a contentious topic of conversation amongst management.

Projects cause changes, whether intended or not, in the organizations and stakeholders they touch (Marchewka, 2015; PMI, 2017). This can lead to varying levels of support and opposition by different project stakeholders (PMI, 2017). Inevitably, not all stakeholders will view the project goals as desirable, and may even actively opposed the project (Marchewka, 2015; PMI, 2017). Finally, many people who will use the project deliverables will not be involved until well after the project concludes (e.g. future customers who purchase products or services). These people are also project stakeholders, in terms of evaluating long-term project success.

Finally, as projects become more important in organizations, the existence of project teams can destabilize and change the permanent host organization. This happens through diverting resources and decision-making authority from existing departments to the temporary project organization (Midler, 2015). This can cause a fundamental change in the structure of an organization, which will in turn also affect current and future project efforts.

PMI's PMBOK (2017 p. 37), groups these influences as follows:

- Enterprise Environmental Factors (EEFs) – conditions that are outside control of the project team – may be internal or external to the organization
- Organizational Process Assets (OPAs) - internal factors which include policies, procedures, and knowledge base
- Organizational System Factors - people, politics, power and other organizational structure issues.

These influences, described in detail, can have "significant impacts" on a project, which can be "favorable or unfavorable" (PMI, 2017, pp. 37-47).

Project Outcomes Outlive the Project

The overarching goal of project activities is to produce unique outcomes or deliverables (Marchewka, 2015; PMI, 2017). Because these deliverables often outlast the project, the results of these project activities and decisions made during the project execution can also have long-lasting and widespread impacts.

For example, supply chain decisions made by project team members can have impacts that are not realized until well after the project closeout phase (Windelberg, 2016; Boyson, 2014). A recent high-profile example of this occurred when cybersecurity vulnerabilities were uncovered in a commercially-available microchip which was used in a variety of military and critical civilian applications (Skorobogatov and Woods, 2012). For a project where the goal is to design a life-critical system such as an aircraft, component choice decisions can have long-lasting, widespread, and potentially catastrophic impacts long after the project team has completed and disbanded.

Projects are often sources of lasting organizational change (Marchewka, 2015; PMI, 2017). In fact, organizational change in one form or another is usually the motivation for a project. Change is needed to create new value within the organization – the desire for more profit, the ability to offer better customer service, the need to reduce costs through organizational improvements, need for new products to increase sales, or even the betterment of communities that the organization serves (Marchewka, 2015).

To accomplish this, the organization will have to identify the change needed (referred to as the project deliverable in this effort), organize a project, and then dedicate scarce resources (e.g. time, human effort and financial investments). The organization's stakeholders will certainly want to determine if this investment has been worthwhile – that is, whether the expected value of the project has been achieved.

Project managers are often expected to demonstrate the value of their projects (Musawir, Serra, Zwikael and Ali, 2017) within the context of the organization's overall values and goals (Marchewka, 2015; PMI, 2017), but this is complicated when project success is interpreted differently by individual stakeholders and groups. What constitutes a successful project, or whether the project deliverables are even desirable, is not always well understood or agreed to by all stakeholders (Marchewka, 2015). Organizational factors present during the project conception phase are key to understanding the initial goals – but these factors can change over time. Priorities often change, as do external environmental factors.

Even if all stakeholders agree on the project deliverables, it may still be very challenging to evaluate whether the project deliverables are providing the expected value. It may take considerable time to determine whether a project deliverable is adopted by the intended beneficiaries (Rogers, 1995). The acceptance of the project deliverables, whether it be a new product, service, or organizational change, may delay the realization of benefits to the sponsoring organization. One model which has been used extensively is the diffusion of innovations theory (Rogers, 1995).

Rogers' innovation development process model seems appropriate for studying projects across time periods before, during and after the actual project activities. It also offers considerations which may assist project managers to better plan activities needed to promote the eventual acceptance of project outcomes. The stages of the innovation development process model are as follows (Rogers, 1995):

1. Recognition of need or problem
2. Basic and applied research
3. Development
4. Commercialization
5. Diffusion and adoption
6. Consequences

A broader temporal view of projects is needed to consider these activities, many of were not found to be covered in detail by existing project management literature. The following project meta-phases were then defined by the research team to provide a foundation for further research efforts.

WHY PROJECT META-PHASES

This effort proposes three overarching project meta-phases based on the following premises:

First, to fully understand how a project operates and eventual goals, it is necessary to consider the conditions present prior to the projects conception. For example, which organizations are involved in identifying the need for the project? What are their long-term strategic goals? How do the project activities and outcomes align with these goals? Are the goals understood and agreed to by the individuals who will be performing the work? Do project participants understand the downstream impacts of the project deliverables?

Second, to understand the real impact to stakeholders, and therefore the long-term success of a project, one must look well beyond the completion date of the project itself. For example, what effect will the project deliverables have on the people who use them, whether it be a new product or services? If the product deliverable is the design of a new product, will that product be safe to use? Will it contribute to the betterment of society? Will it pollute the environment, or will it be easy to dispose of and recycle when its end of life has been reached? Does the deliverable create additional risks to its users?

Many of these questions are at the root of what motivates organizations to undertake projects and how they evaluate the results. These phases look beyond the project activities to consider the context in which projects are conceived, the environment in which they are executed, and the eventual usage of products or services created by the project.

The proposed project meta phases are therefore intended to extend the temporal horizon when considering variables which influence the project. It is important to note that these phases are not intended to replace existing project management frameworks or models, nor are they a comprehensive prescribed approach to managing project activities. Instead, they are expected to be used in conjunction with other bodies of knowledge and standards such as the PMBOK (PMI, 2017), which is used by this effort to describe activities which occur in Phase 2 – Project Execution.

The remaining phases are added to help the researcher to further describe the time periods before and after Phase 2. Phase 1 Project Conception, is defined to provide a context for studying variables and events which originate prior to the actual project

activities in Phase 2. Phase 3 – Deliverable Usage is then defined to describe the time after the close-out of the project, when important events occur (e.g. usage and adoption of deliverables) that will ultimately determine whether the project meets its expected goals.

PROJECT META-PHASES

Meta-Phase 1: Project Conception

Meta-Phase 1 includes the activities leading up to, and including, the selection of the project for development and execution. This essentially includes all social, cultural, political, and organizational factors which precede the project. To extend the previous analogy, this is the project's parent, grandparents, neighborhood, and extended family.

Pre-existing organizational and environmental factors described in the earlier sections may determine whether new innovative ideas are pursued, and whether they will receive attention needed for further development. This in turn could determine what types of projects are considered, the process to receive approval, and the level of support they will receive. Before the project is even approved, the overall health, strategic goals, and culture of the organization will influence the project goals and how the project will be organized and conducted.

This meta phase would include the following activities, which are performed by members and leadership of the host organization(s) and others who will eventually become the primary stakeholders for the project.

1. Identification of an unmet need or goal (Marchewka, 2015; Rodgers, 1995)
2. Idea for an innovation (PMI, 2017; Rodgers, 1995)
    a. New product
    b. New service
    c. Optimized processes
3. Evaluation of potential value to the organization, based on alignment with organizational objectives (Marchewka, 2015; PMI, 2017)
4. Develop business case, high level scope, project definition (Marchewka, 2015; PMI, 2017)
5. Project selection based on cost/benefit, other analysis (Marchewka, 2015; PMI, 2017)
6. Decision to invest (Marchewka, 2015; PMI, 2017)
7. Assignment of project manager (Marchewka, 2015; PMI, 2017)
8. Start of risk management processes (US DoD, 2015; Marchewka, 2015; PMI, 2017)

Conditions for exiting this meta-phase will be the go-forward decision for the project by someone with the appropriate level of authority. This would include the commitment to apply resources to move the project forward. In some projects, the scope may still be in flux, but the central goal of the project should be recognizable as a unique product, services, or organizational change. In practice, the commitment to proceed is rarely a single meeting or memorandum, but this phase concludes when there is a recognizable "reasonably firm" commitment by management to proceed with the project.

Meta-Phase 2: Project Execution

This metaphase is where current project management practices and research tends to focus and is sometimes referred to as the "project lifecycle" (PMI, 2017, p. 548). This meta-phase therefore includes the generic lifecycle activities described by PMI:

1. Starting the Project
2. Organizing and Preparing
3. Carrying out the Work
4. Ending the Project

The activities during this meta-phase are performed by the project team to realize the project's unique purpose in accordance with the project schedule and budget. These activities are well documented by current project management bodies of knowledge and textbooks (Marchewka, 2015; PMI, 2017). For illustration purposes, examples of specific activities include:

1. Finalize project planning, procurement of resources, and project team formation (Marchewka, 2015; PMI, 2017)
2. Scope is elaborated, refined, clarified, and finalized (Marchewka, 2015; PMI, 2017)
3. Project in-scope deliverables (e.g. new services, processes, or new product designs) are created (Marchewka, 2015; PMI, 2017)
4. Key decisions are made, which can impact future risk and maintenance (Boyson, 2014; Windelberg, 2016)
5. Project closeout (Marchewka, 2015; PMI, 2017)
6. Delivery of final project report and collateral (Marchewka, 2015)

The main criteria for exiting this meta phase is the disbanding of the project team as a formal organizational entity. Certain team members may continue to work on the project deliverables after the project is over, but project resources and assets will have been released and the tracking of project activities (i.e. the project schedule) will have ceased. Ideally, a formal project closeout process will be completed (PMI, 2017)

Meta-Phase 3: Deliverable Use

After the project closeout, the product deliverables are transferred to the organizations or teams who will implement the changes or produce the products or services that were produced during project execution – usually the organization which initiated the project (Marchewka, 2015). This meta-phase begins when project deliverables begin their useful life. In this meta-phase, the final assessment of project success will be determined through the use (or non-use) of the project deliverables.

The types of activities in this meta-phase are specific to individual projects and host organizations. In the case of a new product introduction, this meta-phase might include the following activities:

1. Manufacturing of the new product
2. Ongoing support, warranty and servicing
3. Marketing and advertising
4. Customization and updates
5. Disposal and/or recycling, including documentation of regulatory compliance

Similarly, new systems and processes produced by project teams will also require ongoing support, maintenance and updates. These are significant factors in terms of the eventual success of project deliverables. In at least once case, the expected cost of these activities caused a software vendor to abandon a new product just before it was delivered. This caused the project to fail to meet its goals even though the team had been successful in creating the deliverable (Nightingale, 2014). Understanding this phase therefore is vital, because it ultimately determines whether the project will achieve the goals set during the project conception period.

In summary, Figure 1, below, graphically depicts the three project meta-phases proposed by this paper, along with a timeline of common project activity threads.

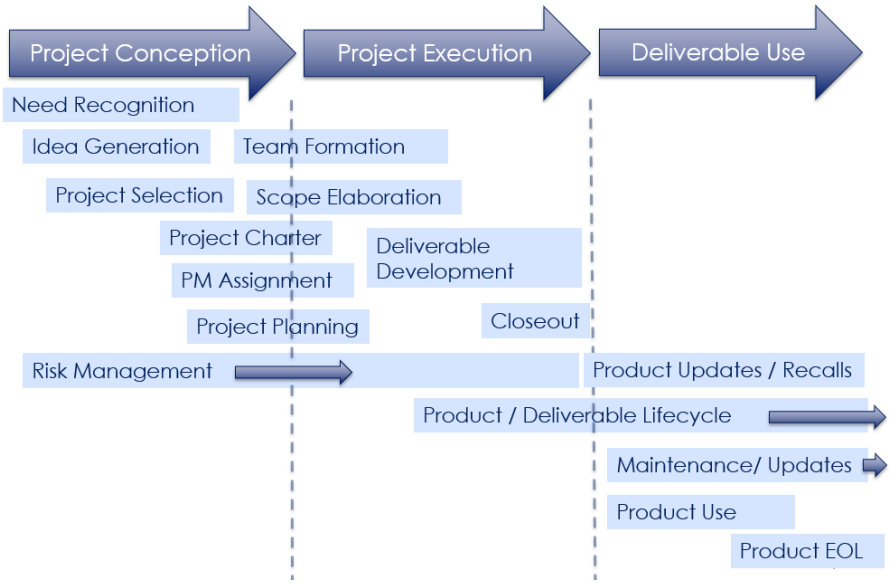

Figure 1 – Project Meta-Phases

CONCLUSION

These meta-phases are intended to supplement existing project management models, and are not intended to replace existing bodies of knowledge such as the PMBOK (PMI, 2017). Rather, they provide a common frame of reference for extending the temporal horizon for project management research to consider influencing factors, conditions, and outcomes. To this end, they are intended to simplify, and supplement, similar observations made by other researchers and frameworks (Hanisch and Wald,

2011; Marchewka, 2015; PMI, 2017). It is intended that these meta-phases will facilitate a holistic approach to project management research.

This is expected to be useful for research efforts into projects where there are significant influences prior to the project conception which may predict project success. Compared to Rogers' innovation development process model (Rogers, 1995), our framework emphasizes more of a project (rather than innovation) orientation, has fewer phases, and defines phase boundaries where there are shifts in job responsibilities and organizational issues.

Another possible area of application is in the identification and management of certain types of risks. Increasingly, project organizations require early and ongoing risk management efforts for cybersecurity risks, and ongoing monitoring after delivery (US DoD, 2015; Presley and Landry, 2016) Other research has shown how risk assessments can be performed prior to the project execution phase on critical systems using tools such as threat trees and Monte Carlo simulation analysis (Pardue, Yasinsac and Landry, 2010). Future efforts may demonstrate the use of tools and research to evaluate and manage risks during the Project Conception meta-phase, and the continuation of risk management activities during deliverable use meta-phase.

Opportunities for further research into the interplay between these meta-phases may be particularly interesting and reveal relationships which may have escaped notice when viewed through the lens of tightly-focused project execution timelines.

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