Project Portfolio Management And Portfolio Performance In Construction Industry: A Conceptual Framework

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ABSTRACT

Nowadays, construction companies have dealt with many projects at one time. One project can be managed successfully through the project management mechanism. However, the complexity of project portfolio is no longer sufficient to be managed effectively and efficiently through project management. A right strategy is required by construction companies to successfully manage the portfolio of projects effectively. Project Portfolio Management (PPM) can be considered as a relevant strategy in organizing and managing project portfolio. This paper reviews the concept of project portfolio management, critical success factors and project portfolio performance in the construction industry. The framework relating project portfolio management and project performance was established and recommended for future study in the construction industry.

Key words: Project portfolio management, project success, critical success factors, construction companies, construction industry

INTRODUCTION

Construction industry is well known as a project based industry within which individual projects are usually custom-built to client specifications [1]. These projects are typically delivered by temporary project alliances involving designers, consultants, contractors, specialist sub-contractors and suppliers, often characterized by adversarial and litigious relationships. Nowadays, most of the construction companies are continually investing and implementing several projects at the same time. As a result of this progress the project landscape of the construction companies have become increasingly complex. One project can be managed through the project management mechanism; however, the increasing complexity is no longer sufficient to manage single projects effectively and efficiently to be successful [2]. A right strategy is required by construction companies to successfully manage the portfolio of projects effectively. Project Portfolio Management (PPM) can be considered as a relevant strategy in organizing and managing project portfolio [3].

Project portfolio management deals with coordination and control of multiple projects pursuing the same strategic goals and competing for the same resources, whereby managers prioritize among projects to achieve client’s requirements [3]. Project portfolio management has received a stable and central position both in project management research, product development management research, and companies’ management practices during the past decade. Project portfolio management has been developed into global standards [4] as well as practical tool books [3] that are expected to assist companies organize and implement their own project portfolio management.

Effective project management techniques are vital to ensure successful project performance. A poor strategy as well as incorrect budget or schedule forecasting can easily turn an expected profit into loss [5]. This
is especially true for the construction industry where projects have a relatively short life cycle and the project activities are non-repetitive with rather complex interrelationships, so that there is little opportunity to improve on a wrongly chosen or adopted strategy [5]. Therefore, the right strategy to manage multiple projects at one time is a critical issue in the manager’s mind. In a single project, companies need to complete the project on time, within budget and within of a set specification that required by a client. In project portfolio, the manager has to plans a right strategy in completing various projects that share and compete for the same resources and are carried out under the sponsorship or management of an organization [6]. Project portfolio management can be considered as a dynamic decision process, where a list of active projects is constantly updated and revised [3].

Specifically, project portfolio is a set of projects that share and compete for limited resources and are carried out under the sponsorship and management of a particular organization. The coordinated management of a portfolio delivers increased benefits to the organization [3]. Previous literature highlights the importance of project portfolio management in evaluating, prioritizing, and selecting projects in line with strategy [6]. It is pre-eminent in choosing the “right projects” and therefore an important part of strategic management in organisations [7]. Up to date, there are a few studies exploring single aspects of the linkage between strategy, project portfolio management, and portfolio performance. Müller et al. [8] show the positive relation between project portfolio management and project portfolio performance. A few other studies found project prioritization as part of the portfolio management process to be a key success factor [3]. Although, project portfolio management is a crucial concept to manage complex project landscapes, however PPM is still a relatively new in construction industry and most of construction companies are more familiar with project management rather than project portfolio management. Thus, this paper attempts to provide a comprehensive review on the concept of project portfolio management practices and portfolio performance in construction industry.

**Project And Project Portfolio:**

Project can be considered as an achievement of the specific objectives. Furthermore, it can be defined as a set of activities that must be completed in accordance to specific objectives which involve the utilization of a company’s resources. More precise project was defined as temporary endeavor, having a definitive beginning and definitive end, undertaken to create a unique product or service [4]. Project portfolio is a group of projects that are carried out under the sponsorship and management of a particular organization. Project portfolio must compete for limited resources (people, finances, time, etc.) available from the sponsor, since there are usually not enough resources to carry out every proposed project which meets the organization’s minimum requirements on certain criteria such as potential profitability, etc [6].

**Project Portfolio Management:**

The Project Management Institute [4] defines project management as a set of processes that are applied to a project to deliver a unique product or service. Project management is designed to provide sustained, intensified and integrated management of complex ventures and to pull together a combination of human and non-human resources into a temporary organization to achieve the client’s requirements [7]. Whitty and Maylor [9] added that project management is recognized to be the key enabler of business change and a vital contributor to future business success. The purpose of project management is to apply skills and techniques to the organization and control all aspects of the project and to optimize the use of resources to produce a well-designed and soundly constructed facility which will meet the client’s requirements of function, cost, time and future operation as well as maintenance [7]. Contrary to Project Management, which focuses on single project, project portfolio management considers the entire portfolio of projects a company is engaged in, in order to make decisions in terms of which projects are to be given priority, and which projects are to be added to or removed from the portfolio [10]. In simple word, project portfolio management is an activity that addresses the project landscape at large [11]. According to Heising [12] project portfolio management is viewed as a more strategic level capability than project management, and part of its strategic role is to enable organization to respond and adapt to changing environmental condition by monitoring and altering the project portfolio.

The ultimate goal of project portfolio management is to maximize the contribution of projects to corporate success. Thus, project portfolio management can be considered as the simultaneous management of the collection of projects that make up an investment strategy of a company [13]. The main objectives of project portfolio management are maximizing the value of the portfolio, balancing the portfolio, and linking it to strategy [3]. According to Teller et al.[14], the project portfolio management is focus on effectiveness and the execution of the right projects.

Recent contributions to the related literature stress the importance of project portfolio management in evaluating, prioritizing, and selecting projects according to the overall strategy [15]. In this context, some researchers consider project prioritization as part of the portfolio management process to be a key factor for success [3]. Cooper et al. [3] contend that an important part of project portfolio management is resource allocation to achieve the company's objectives. This view is shared by other researchers who considered
resource allocation among simultaneous ongoing projects to be one of the primary themes in project portfolio management [16].

According to Killen et al. [17], the level of project portfolio management is largely developed around the following elements: providing a centralized view of all the projects in an organization, enabling a financial and risk analysis of projects, modelling interdependencies between a family of projects, incorporating constraints on resources shared between projects, enabling prioritization and selection of projects, ensuring accountability and governance at the portfolio level, allowing for portfolio optimization and providing support in the form of standardized processes and software tools. De Reyck et al. [18] identified three stages of project portfolio management adoption namely portfolio inventory, portfolio administration and portfolio optimization and linked the stages to the level of PPM adoption. De Reyck et al. [18] concluded that PPM adoption level has a significant positive impact on the return on the projects in the portfolio and stated that organizations do not have to implement all the elements of PPM to create benefits because its depend on the right elements to adopt.

According to Muller et al. [8], a further important objective in PPM is portfolio steering, which includes all the recurring tasks that must be undertaken to keep the portfolio on track and to permanently coordinate the portfolio. The PPM process proposed by Jonas [19] incorporates these aspects. He suggests a chronological sequence of four interdependent phases: (1) portfolio structuring, (2) resource management, (3) portfolio steering, and (4) organizational learning and portfolio exploitation. As an important body for project management discipline, Project Management Institute (PMI) suggests project portfolio management process into 14 processes which had been break down to 2 groups namely process groups and sub-processes with details on the activities along with their inputs and output.

Project Portfolio Management Quality:

Project portfolios are collections of single projects that run concurrently [6]. Fundamentally, these multiple projects must be operated efficiently. However, project portfolio management focuses on effectiveness: the execution of the right projects. If a project portfolio were regarded as an organization's investment strategy, the right projects would be those that yielded the most return on investment for this organization [19] based on consideration of single project and project portfolio level risks. Thus, project portfolio management is a decision-making process that steers the right projects from idea to successful implementation. These decisions are made on present and potential projects and include selection, prioritization, and termination as well as reallocation of resources across the collection of projects [3]. PPM quality measures the quality of the process execution in project portfolio management [19]. Teller et al. [14] listed three of PPM quality namely information quality, which concerned with the availability, comprehensiveness, and transparency of information. Second, resource allocation quality is related to the speed of assignment, reliability of commitment, and avoidance of conflicts during resource endowment. Third, cooperation quality implies the empathy and readiness to help fellow project managers and other project teams (cross-project cooperation).

Critical Success Factors Of Ppm:

Critical Success Factors (CSFs) is classified as inputs, distinct characteristics and conditions which, in the appropriate environment, interact as independent variables and play an important role in project portfolio performance. Initially CSF was related to concepts such as size of project, the skills of the manager [20], and the size of the organization [5]. Papke et al. [21] divided CSFs into factors related to internal and external environment of projects. The time available for the implementation, is a factor that plays an important role in the success because it affects the relationships between the project team [7]. Researchers set a prerequisite for project success: a) the development of flexible planning mechanisms, b) the integration of change systems, and c) the selection of a competent team [7]. Ika et al. [22] focus on two CSF which are the confidence and the communication between stakeholders. According to Barccarinili [23] cost performance is a key success criterion for project sponsors. Qiao et al. [24] identified eight independent CSFs for project portfolio management that include, appropriate project identification, stable political and economic situation, attractive financial package, acceptable toll/tariff levels, reasonable risk allocation, selection of suitable subcontractors, management control, and technology transfer. Jefferies et al. [25] identified five CSFs for project portfolio management which are solid consortium with a wealth of expertise, considerable experience, high profile and a good reputation, an efficient approval process that assisted the stakeholders in a very tight timeframe, and innovation in the financing methods of the consortium. Innovative technical solutions [26] and ‘Soft’ critical success factors also regarded as critical for project portfolio management. The ‘soft’ CSFs are social support, commitment and mutual benefit [26].

The importance of procurement transparency and competitive procurement process can also be considered as CSF, for some project portfolio management [27]. Effective management of constraints of the stakeholders, leadership styles, and work environment are also revealed as factors behind the success of project efforts [28]. Chau et al. [29] conducted study on CSFs in construction projects, where the factors were divided into four categories namely project characteristics, project participants, contractual arrangement and interactive process.
In that study, monitoring and feedback factor was identified as most influencing CSFs under interactive process factor. In their study Chau et al. [29] concluded that further work can be carried with limited sets of success related factors discarding less important factors. Ironically, being an established field, construction projects are subjected to huge public debate due to its time and cost over runs.

**Project Portfolio Performance:**

The objectives of project portfolio management are: maximization of the financial value of the portfolio, linking the portfolio to the firm's strategy, and balancing the projects within the portfolio in consideration of the firm's capacities [3]. Most research in project management literature still focuses on the single project level [30] and limits its attention to the performance criteria of budget, schedule, and quality compliance [7]. However, more and more research takes on a wider project perspective going beyond this “iron triangle” in assessing the project performance [15].

Several additional project performance criteria, especially covering the fulfillment of customer and market needs, have been proposed [3]. Martinsuo [11] documented in their study that project management with a broader set of success criteria has a strong and significant effect on project portfolio efficiency. Martinsuo [11] shows that successful single project management is a necessary but not sufficient condition for successful project portfolio management. Hence, Cooper et al. [3] divided project portfolio performance into four separate dimensions: (1) the average single project success of the portfolio regarding the fulfillment of time, budget, quality, and customer satisfaction objectives, as well as (2) the use of synergies between projects within the portfolio, which covers the interdependencies between projects. The portfolio's (3) overall fit with the firm's business strategy and (4) the portfolio's balance are the third and fourth dimensions on project portfolio performance as suggested by Cooper et al. [3].

**Ppm In Construction Industry:**

Within the construction industry, the concept of project portfolio management is still relatively new. The discussions on project portfolio management both in theoretical and empirical study in construction industry context are limited. Perhaps the nature of construction industry is based on project, however the implementation of project portfolio management are more familiar in other sectors including manufacturing, financial services, information and communication technologies [14]. Currently, many organizations in construction industry had realized on the benefits of implementing project portfolio management in multiple projects. Killen et al. [17] noted that the practices of project portfolio management such as strategic methods and portfolio maps are associated with better project portfolio performance. The implementation of PPM is not an easy task for organizations in construction industry because it needs to consider the costs, time and efforts, but it is in final rally worthy of all efforts and money.

Project portfolio management implementation results are many short term and long term benefits for organization able to complete it successfully. These benefits, especially the long term ones, make up for all investments in the process. Project portfolio management implementation benefits are, in fact, answers on the key dilemmas and questions of projects oriented and on projects dependent organization such as construction industry players. Generally, organizations able to implement project portfolio management benefit on it in many ways. All efforts and money returns soon as multiple positive effects. Such organizations become more flexible, impulsive, dynamic, innovative, creative, communicative, strategic oriented, efficient and motivated.

**Research Framework:**

Based on literature review, the dependent variable of this study is project portfolio performance which is measured by average single project success, use of synergies, strategic fit and portfolio balance [14]. The independent variables that may influence the dependent variable are the PPM quality [14] and critical success factors (CSFs) of Project Portfolio Management. Figure 1 shows the relationship among PPM quality, CSFs of PPM and Project Portfolio Performance.

**Conclusion:**

This paper has highlighted the important concept of project portfolio management, portfolio performance and suggests a research framework for further study. Project portfolio management is a relatively new in the construction industry context. Most of researchers more focus on the discipline of project management in various studies. Currently, majorities of construction companies deal with several projects and the practice of project management is not relevant to manage more projects at one time. A right strategy is required to manage the portfolio of projects effectively to achieve project success. Thus, it is vital to study the relationship between project portfolio management and project performance in the construction industry.
Fig. 1: Research Framework

REFERENCES

To understand where project portfolio management and project management differ, we must first define each and explore the areas where they diverge. Use the built-in reporting tool for a deep dive into project data to see progress and measure performance. A portfolio status report is perfect for stakeholder presentations. If they have questions, the status report can be filtered to bring up just the information they’re interested in. Project management methodologies need further improvement, including development of portfolio management processes applicable to investment projects developed and implemented in the construction industry. The article considers General approaches to the formalization of the management of portfolios of investment—construction projects. For the main groups of processes portfolio management (Formation and alignment, Monitoring and control, Support and development) deals with their constituent sub-processes. The proposed decomposition can be used for both portfolio construction and investment management processes portfolio management framework for the construction industry. 3.1. The First Dimension: Project Type. 3.2. The Second Dimension: Project Phase. A Three-Dimensional Project Portfolio Management Framework for Construction Companies. Yunna Wu, Haobo Zhang and Hu Xu. * North China Electric Power University, Beijing, China. A portfolio in project management refers to a grouping of projects, and programs. It can also include other project-related activities and responsibilities. The purpose of a portfolio is to establish centralized management and oversight for many projects and programs. The purpose of creating and managing a portfolio is to ensure the business takes on the right projects and that they align with the company’s values, strategies, and goals. How does a portfolio relate to programs and projects? Programs are created to group similar or related projects. Let’s say your company builds and repairs ships. The construction of a naval ship would be a project. The repairs of a commercial ferry would be another project. Project portfolio management. Planning is a major function of any management system. Project planning in a construction company, therefore means a set of related iterations resulting in a document: a master plan as a combination of specific. Framework for better performance of the management system as a whole, achieving the following objectives: clarify and adjust the goals of all plans, detail the results. Construction development portfolio, a security improvement portfolio, and a portfolio of IT development in the management system. The construction development portfolio is aimed at the main goal of the construction company, which is to satisfy the growing public demand for modern housing.