

Constructions Project Management Risks' Framework

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Abstract

The characteristic and inherent risks in construction projects present key difficulties to stakeholders and project teams. Risk appraisal is a significant step toward potential variables identification and evaluation. In risk assessment, adequate categorization and prioritization aid planning, budgeting and management of project related risks. In this paper, an analysis of the risks associated with the delay sources in the internal environment of Malaysian construction projects have been presented based on risk priority number (RPN) to determine the degree of severity, occurrence and detection. Through literature review, eighty one risks under four main delay sources were extracted for further analysis. From the results, the main risks include contractor's financial problems, poor coordination by the contractor, change orders, client's financial problems, errors and defective work, poor materials management, poor communication between consultant and contractor, unrealistic contract duration, poor procurement tools and methods, unavailability of materials and labors, ineffective coordination by project managers, poor construction site layout, changes in material types and specification, inaccuracies in estimation and budgeting, delays in approvals, respectively. This study would provide a decision tool for prioritizing and categorizing risks in construction projects to build a realistic and rational resources allocation guide.

Keywords: construction project, delay sources, project management, risks, risk priority number (RPN), Malaysia.

1. Introduction

Risks are common in several projects around the world, from automobile companies, through IT related businesses, pharmaceuticals, service industries (Ropel, 2011) to the construction sector (Assaf and Al-Heijji, 2006; Iyer and Jha, 2006; Faridi and El-Sayegh, 2006; Lowsley and Linnett, 2006; Sambasivan and Soon, 2007; Alaghbari et al., 2007; Memon et al., 2011; Ibrahim et al., 2012; Memon, 2014; Memon et al., 2014; Zayyana et al., 2014). These increasing risks and the consequential delays over the past decade, has urged research into the key risk factors or variables to ensure effective and efficient control of time overruns in the project development cycle. Among such methods include the use of failure mode and effects analysis (FMEA). Several companies regularly set up a risk assessment procedure (FMEA) for performance improvement and profit maximization.

Projects consist of several risks that ought to be properly scrutinized and address to avoid project failures (Carbone & Tippett, 2004; Abdelgawad & Fayek, 2010; Sorooshian et al., 2010). Basically, these risks are unique and are said to arise from different sources (Norzima et al., 2011; Sorooshian, 2014). The construction industry is heterogeneous, enormously complex in nature and often involves significant budgets, and therefore reducing risks associated with project development should be key for every project manager. Risks are complicated, multifaceted and extremely challenging and seem to have a number of uncertainties that must be dealt with at the early stages of a project (Bing et al., 2005; Sambasivan and Soon, 2007). This is because project involves diverse number of parties and interested groups who have different stake and value system, expertise or experience, and desire outcome (Bing et al., 2005; Ankit et al., 2013). Risk analysis ought to be carried out in projects because every project varies in terms of size, time duration, objectives, uncertainty, complexity, and pace, with key inherent risks that must be critically assessed and mitigated to avoid projects failures (Aziz, 2013; Sorooshian, 2014).

Even so, in most recent years, risk appraisal in construction project management is a significant step toward potential delay sources identification and evaluation (Sorooshian, 2014). In risk

assessment, adequate prioritization aids planning and management of project related risks; this is due to the realization that risk categorization, prioritization, and analysis is crucial for project success and better performance (Project Management Institute, 2004; Thompson & Perry, 1992; Carbone & Tippett, 2004; Abdelgawad & Fayek, 2010; Aziz, 2013). However, there seem to be no general consensus on the sources of risks and its categorization (Memon et al., 2011; Ibrahim et al., 2012; Kikwasi, 2012; Memon, 2014; Memon et al., 2014). Most studies identify either causes or effects without effectively analyzing and grouping the causes thoroughly (Ansah et al., 2016). However, identification of the delay associated risks without establishing their failure modes and priorities would not effectively ensure reduction of failures in projects, or avoid major costly impact of risky variables to projects in terms of budget, time and quality considering the scarce resources of construction companies. The existing body of knowledge has not been able to adequately address the risks causing delays and this is the reason why failures of projects persist (Sorooshian, 2014). Thus, a need for further empirical research that concentrates on identification, categorization and prioritization of individual risks in construction projects development cycles.

In this paper, an analysis of the risks causing delays in the internal environment of Malaysian construction projects have been presented to determine the degree of severity, occurrence and detection. The paper provides a decision tool for prioritizing risks in construction projects to build a realistic and rational resources allocation plan. The findings of this study would facilitate adequate identification, categorization, prioritization, planning, budgeting and management of the related risks in the internal project environment.

2. Literature Review

In this section, we will focus on the analysis of the main body of the existing literature which is positioned at the center of this study; delay sources and associated risks.

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