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Linking project health to project performance indicators: Multiple case studies of construction projects in Saudi Arabia

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Abstract

This research presents an empirical study of the relationship between project health and project performance in the project delivery context. Based on an existing Project Health Check (PHC) framework, the relationship has been tested in terms of a set of predefined indicators through the use of case study approach. The Swiss Cheese model was employed as a guiding principle to represent the links between PHC indicators and project Key Performance Indicators (KPIs). Three cases of construction projects in Saudi Arabia were investigated through a comprehensive review of the project performance history, using current performance indicators to establish the first slice of the Swiss Cheese model. PHC assessments were then conducted to shape the second slice of the model, which represent the maturity level of the project management. The relationships between the two slices were obtained from semi-structured interviews with the project managers. These relationships were analysed qualitatively by tracking patterns across the three cases. The result was used to develop the Swiss Cheese Performance Management Framework, which can potentially serve to help project managers identify the root causes of any shortcomings at the early stage in the project delivery process. This in turn can assist project managers in managing the overall project performance more effectively.

Keywords: Case study; Construction; Project health; Performance measurement; KPI; Saudi Arabia

1. Introduction

Performance measurement is a vital knowledge area. Indeed, it is considered as the force that drives project management improvement. Unfortunately, the majority of performance studies are concerned with Key Performance Indicators (KPIs) that measure project performance outcomes. These traditional measurements fail to provide insight into the means for improving performance, thus having limited use in internal management decision making (Atkinson, 1999; Bassioni et al, 2004). For this reason, the industry continues to suffer from projects that never achieve the outcomes expected by the key stakeholders (Cooke-Davies, 2002; Humphreys et al., 2004). Importantly, Bassioni et al. (2004) postulate that, "research needs to identify the reasons for failure to translate measurement information into action and suggest necessary remedies". Moreover, Sarshar et al. (2000) state that "the industry is unable to systematically assess construction process, prioritize process improvements, and direct resources appropriately". Therefore, the performance management approach that focuses only on project KPIs can no longer be sustained in today's competitive complex environment. Project managers need to manage a project's performance in a proactive rather than reactive manner.

In response to these challenges, many researchers have begun to take a proactive approach in relation to performance management. Such approach involves forward measurement which aims at measuring the state of the process that leads to better results. Some examples of the research framework grounded on this approach include: a business process diagnostics tool for construction projects by introduced by Amaratunga et al. (2002) and Sarshar et al (2004); a model for assessing and correcting construction project health, introduced by Mian et al. (2004); and the Project Health

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Check (PHC) introduced by Jaafari (2007). This research focuses on the last framework, the PHC. Essentially, the PHC has been developed as a tool to diagnose management maturity, aiming to shift the management focus from measuring the performance effect to assessing the enabling factors (Jaafari 2007). This proactive approach provides the opportunity to enhance the project performance and avoid shortcomings. The enabling factors within the PHC emphasise project management roles and practices as the key to the success of any project. While numerous measures can be considered from concept to operation phases of any projects, accurate understanding of the performance of the project team is quite crucial for measuring project delivery success over implementation phase of projects. For example, the way the project team conducts, communicates and performs their tasks determines, to a large degree, the overall success of a project (Cooke-Davies, 2002; Walker, 1996). Indeed, it could be argued that such enabling factors are most important in the context of successful delivery of projects. However, measuring these factors without incorporating performance outcomes might potentially provide the misleading information. Therefore, it is argued in this research that the PHC tool needs to be linked to project performance indicators (results) so that the managers understand the whole picture of the project performance. Jaafari (2007) noted that "the information obtained from the PH-Check and progress reports should be combined and used to judge which of the enabling factors need to be attended to and in what way to address any performance shortcoming". When the project is not progressing as required and gives faulty outcomes, the project manager needs to be able to identify from where such undesirable result emerges and how it develops. In other words, the mechanism of failure has to be understood in order to avoid future failures and to develop an appropriate corrective action. Remedial actions cannot be taken if the root cause is not acknowledged or foreseen (Kangari 1988).

More importantly, to ensure that the project succeeds, it is also important to know which process enablers (management practices) lead to desirable outcomes. Thus, defining the success and failure processes within the project will help to ensure that the success is repeated and failure avoided. Linking process enablers and outcomes is therefore essential for effective performance management. With this in mind, the research presented herein was developed with the primary aim to identify and establish, through a systematic framework, the relationships between PHC core functions (i.e. process enablers) and project outcomes.

The organisation of this paper is as follows. In the next section, details of the PHC framework are presented. This is followed by the sections addressing research objective (Section 3) and research methodology (Section 4). The details of case study method employed for data collection and analysis are then explained in Section 5, followed by the associated results (Sections 6 and 7). Discussion and conclusion are provided in the last section (Section 8).

2. Project Health Check

The PHC framework developed by Jaafari (2007) intended to shift management focus from measuring performance effects to learning about project behaviour as a complex system, and to focus on the state of managerial approaches, e.g. the enabling factors (Jaafari 2007). The aim of the PHC tool is to systematically define how the project variables are being managed in order to determine whether a project is managed systemically (in case of a healthy project) or haphazardly (in case of an ill project). The system approach reflects the critical success factors and proven project management principles (Jaafari 2007).

2.1. Project Health Check framework and components

The framework contains 18 criteria that represent project management core functions and 67 indicators representing the enabling factors for managing each core function. These core functions are grouped into two main sections: Business and Strategic Assessment, and Project Implementation Assessment. Each management area of a project can be assessed against these criteria that correspond to it. The systematic approach means that the project should have secured the tools and process for each criterion based on targets, goals and monitoring mechanisms through project phases.

For the purpose of this research, the assessment was conducted focusing on only the implementation phases for all the cases. Therefore, the performance of the project's implementation is measured and monitored adopting a systematic approach based on the criteria shown in Table 1 below.

As far as the scope of this research, the criteria aim to assess the management processes that are being handled by the project team in the delivery stage. Therefore, the way the project team implements the project and manages the PHC core functions is the concern of this assessment. PHC intends to draw project team's attention from focusing on process results to focusing on process enabling factors. Thus, it enables the project team to watch and control stakeholders' influences. Currently, the framework does not encompass the assessment of the extended stakeholders; although they may influence the project, their influences highly depend on the maturity of project team's management process. Governance and leadership, communication management and the other core functions are responsible for managing stakeholders' influences. The assessment also assumes that the project team is the key function and should manage the stakeholder's influences because the project team has the responsibility to deliver the project as agreed upon. For example if the project underperformed because of one of the stakeholders, the project team should take responsibility in ensuring that this issue will not affect the KPIs. This is addressed by responding to the specific issue and its impact as well as maintaining the project scope.

2.2. Conducting Project Health Check assessment

The project health check (PHC) assessment is an interactive tool that allows the assessor to select the assessment either at the criteria level or the indicator level. The assessor then chooses the most applicable criteria/indicators and sets the target levels for each chosen criterion. The tool then further asks the assessor to rate the management excellence by selecting the descriptions that correspond to the actual management performance, capabilities