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Evaluating success in PPP road projects in Europe: a comparison of performance measurement approaches

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Abstract

This research aims to identify how to measure the level of success of a Public Private Partnership (PPP) projects using case studies along Europe. The analysis is based on a Performance Measurement System (PMS) using a step-by-step approach. Altogether 13 PPP road projects in the EU have been chosen to test the PMS. Two measurement approaches have been used to analyse the performance of these case studies. Herein, altogether 29 performance measures (PMs) and 9 key performance indicators (KPIs) that have been developed systematically have been considered. The first approach used has evaluated the number of successful and failure performance measures in order to show different level of success in projects. In this approach, the weighting used for the performance measures are considered equal. The second approach has been then used to weight the PMs using a Delphi analysis first, and then to evaluate overall performance. The comparison of the results reveal that there are dominant PMs and KPIs that determine the success of a project. The results illustrate how PPP projects may be evaluated to extract conclusions about the success/failure of a project from a global view, showing the areas and elements that need to be considered along this process.

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1. Introduction

There is an increasing interest on the subject of project success both in the academic and managerial community. The concept includes Critical Success Factors (CSFs); and the way to measure the criteria refers to Key Performance Indicators (KPIs). Although analysis of success could vary according to the type of sector and class of project, there is no clear consensus about the method of measuring the success of projects using KPIs.

Many authors define project success in different ways; Ashley *et al.* (1987) describe project success as “achieving results much better than expected or normally observed in terms of cost, schedule, quality, safety, and participant satisfaction”; Shenhar *et al.* (1996) indicates that project success should be perceived as major vehicles for organisational and societal prosperity. Likewise, defining success can differ according to different contextual factors of a project. It takes more of a subjective form depending on what someone wants to look at in a project. For example, a project can be successful in terms of achieving cost targets; however, it may be unsuccessful in the view of time targets. Similarly, a project can be successful from a private partner point of view but it may not be a success in view of user perspective. A project is traditionally being considered successful when it has satisfactorily met the “iron triangle” measures: time – finished on-time; cost – within budget; and quality – finished according to specifications (Atkinson, 1999; Khosravi and Afshari, 2011); or a good combination of these measures (Phua, 2004). Nguyen *et al.* (2004) have measured success of a project using this traditional approach, but also includes the measurement of project development in accordance with stakeholders’ satisfaction. Furthermore, Savindo *et al.* (1992) base the success of the project on the achievement of expectations of different stakeholders, such as the owner, the planner and engineers, the constructor or the operator; introducing, therefore, the participants’ requirements. Authors such as Pinto and Slevin (1988) and Bryde and Brown (2005) also identify the main elements of project success as satisfaction of the stakeholders. Cox *et al.* (2003), however, have evaluated project success based on contract specification; not only technical specifications but also other quantitative measures. On the other hand, some authors identify process performance as the main criteria of project success (Freeman and Beale (1992); Toor and Ogunlana (2008)). Villalba-Romero *et al.* (2015) focus success on road from a sustainable point of view.

This research focuses Public Private Partnerships (PPPs) projects. PPPs refer to arrangements where the private sector supplies infrastructure assets and services that traditionally have been provided by the government. There are many other researchers who have identified different ways and means of measuring project success either in general or specifically with regard to Public Private Partnerships (PPPs). For examples, Aziz (2007) has discussed principles in the implementation of PPP in UK and Canada; Tabish and Jha (2012) has identified a positive interrelationship between success traits and project success. Furthermore, some researchers have developed frameworks for measuring success in PPP projects (Zhang (2005); Chan (2001)). Although attempts such as above remain, strong and independent evaluation of PPPs has been sparse. It appears that insufficient research has been undertaken to be fully informed on outcome of the PPPs to-date, thus, there is a serious need for rigorous assessment of PPPs (Hodge and Greve (2007)). Therefore, research fulfil this gap in presenting a robust assessment of success of PPPs. This assessment is presented as a Performance Measurement System (PMS); and the PMS is tested using selected cases studies from the case database of the P3T3 COST TU1001 action Public Private Partnership in Transport: Trend and Theory networking project.

2. Developing Key Performance Indicators and Performance Measures from case study approach

The case studies approach in measuring success of PPP projects using KPIs is not new in research literature. For instance, Yuan *et al.* (2009) have used a case study approach to select performance objectives and KPIs in PPP projects to achieve value for money.

For the case study methodology, a case template developed by P3T3 COST Action (TU1001) was used to collect data (COST TU1001, 2013). Development of an in-depth template was a challenge initially. This challenge includes the study questions, its propositions, its unit(s) of analysis, the logic linking the data and, finally, the criteria for interpreting the findings. This ultimately leads to developing a theory with respect to the subject under study or identifying the basic factors connecting the various actors and elements of the study. The case template included questions ranging from actors, project specifics to performance monitoring; this is to address P3T3 working group (WG) and auxiliary working group (AWG) objectives along with the aspect of transferability of results. Herein,

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