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International Journal of Project Management 29 (2011) 1044–1056
International Journal of Project Management
www.elsevier.com/locate/ijproman

ISO 9000 certification and construction project performance: The Malaysian experience

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Received 22 February 2010; received in revised form 31 October 2010; accepted 9 November 2010

Abstract

Purpose: This paper explores the relationship between an ISO 9000 certified quality management system (QMS) and elements of performance in construction project environments.
Design/methodology/approach: A survey based approach is used to collect data from project managers working in the Malaysian construction sector in both ISO 9000 certified and non-certified organisations. Three elements of performance are explored: project management (PM) practices, financial management (FM) practices and Project Success. The Project Management Performance Assessment model (PMPA) (Bryde, 2003) is used as the framework for assessing PM Practices. 336 completed questionnaires are analysed, with a group of 73 being from ISO 9000 certified companies (a response rate of 48.3%) and a group of 262 being from non-certified companies (response rate = 32.6%). MANOVA are used to explore differences in levels of performance between the two groups.
Findings: Overall there is significance difference in mean scores at the 5% level in respect of each of the PM and FM Practice elements of performance, indicating that ISO 9000 certified companies have enhanced levels of performance in their project environments compared to those in non-certified companies. The two exceptions are the PM Practice related to establishing partnerships and managing resources and the FM Practice related to allowing for inflation and price escalations. The results also indicate that ISO 9000 certification has a positive moderating effect on the casual relationship between PM Practices and Project Success. Based on the survey results a Project Management Performance Assessment for Construction (PMPAC) model is developed, which extends the PMPA to include performance enablers linked to financial management activities.
Research limitations/implications: The survey focuses on the construction sector in Malaysia and further work is required to see if the findings are applicable to other countries and also to other business sectors beyond the construction sector.
Originality/value: The research reported in this paper is original in that prior research into the link of ISO 9000 certification and dimensions of organizational performance has not explicitly focused on project environments. The research findings provide evidence that those seeking to enhance their project performance could gain benefits from developing a QMS and seeking ISO 9000 accreditation. However the finding also indicate that an approach to performance management based solely on establishing a certified QMS may have its limitations in terms of establishing processes for managing the relationships on a project through partnership approaches and in dealing with uncertainty in the external environment, such as price fluctuations. The PMPAC model presented in this paper provides a framework for those working in construction project environments to ensure their project management systems incorporate the key activities that enable better performance.
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Keywords: Project performance; Project success; ISO 9000; Quality management systems; Construction sector; Malaysia

1. Introduction

Since its inception in 1987 the ISO 9000 series of standards has been adopted worldwide across all types of business sectors as a means of certifying a quality management system (QMS). By the

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doi:10.1016/j.ijproman.2010.11.001

end of 2008 there were 982,832 ISO 9000 certified companies worldwide, representing an increase of 31,346 (3%) since 2007 (The ISO Survey, 2010). This reflects an annual growth rate of 20% (1995–2006) in the number registered with the International Standards Organisation (Martinez-Costa et al., 2009). The certification movement has its origins in manufacturing and is predicated on the theory that the development and application of standards — in the case of ISO 9000 linked to a QMS, enhances organizational development and contributes to performance (Schlickman, 2003, p.12). So quality products are produced through assuring the quality of the manufacturing process.

Whilst having its roots in manufacturing the ISO 9000 standard is now adopted by many business sectors, including service industries. One such sector is construction. In the 1990s the sector was criticized for poor performance, with issues identified including ineffective tendering-based procurement methods and a lack of partnering-based approaches (Black et al., 2000), lack of project management experience, skills and knowledge (Lim and Mohamed, 2000), organization fragmentation (Berggen et al., 2001), and poor change and communication management (Yates and Eskander, 2002). In light of this perception of poor performance, Egan, in his landmark report into the state of the industry and the way forward, challenged construction to learn from manufacturing. He stated that 5 years hence the industry should "deliver its products to its customers in the same way as the best customer-led manufacturing and service industries" (Egan, 1998: p.40). Although there were some dissenting voices, who argued that construction was too different to manufacturing to be a perfect exemplar of good practice i.e. Kazaz and Birgonul (2005), the common response of the sector was to take up Egan's challenge. As such, management techniques initially developed in the manufacturing sector, such as just-in-time and lean production, have in recent years been adopted by construction companies. As part of this adoption QMSs were effectively applied to construction project environments, with desirable outcomes achieved from such application (Serpell, 1999).

It is this desire to adopt practices from manufacturing that has fuelled a worldwide drive, which in some places is continuing apace, for construction companies to have ISO 9000 certification. One country in which the drive has gained great momentum in the last few years is Malaysia. The Malaysian construction sector makes a significant contribution to the nation's economy, with the GDP for the industry showing an increase from RM6.964 billion in 2000 to RM7.133 billion in 2005 (CIDB, 2007). It is now compulsory for all construction companies to be registered with the Construction Industry Development Board Malaysia (CIDB) before undertaking their business operations in Malaysia. New regulations required Grade G7 contractors, the highest grade, to be certified with the ISO 9000 QMS as a compulsory condition of registration by January 1st, 2009. Failure resulted in being downgraded, which adversely impacts on the ability to do business. The Malaysian experience mirrors that of other countries. For example in Australia, Hong Kong and Singapore regulations were imposed requiring construction companies to be ISO certified in order to qualify to bid for public sector building projects (Pheng and Shina, 2000). In Malaysia the perceived benefits of having ISO 9000 specifically relate to providing enhanced functionality and being better able to satisfy project clients (Ali and Rahmat, 2010).

Table 1 provides a summary of studies into the link between ISO 9000 certification and elements of performance. The studies have tended to focus on two broad elements of performance: financial and organizational. Studies interested in financial performance use secondary data sources, such as company annual accounts and national databases that report various dimensions of financial performance i.e. earnings before taxes and return on assets (see, for example, Martinez-Costa and Martinez-Lorenta, 2007). Organizational performance is typically defined as a multi-dimensional construct and data are collected mainly using perceptual-based measures. An example in Table 1 is Martinez-Costa et al. (2009), who surveyed employees to obtain opinions on cost, delivery, timeliness, flexibility and quality of production, and customer and employee satisfaction. The surveys cover all geographical regions, whilst the majority are not industry-specific.

None of the surveys focus exclusively on the link between ISO 9000 certification and project performance. Karim et al. (2005) investigate some perceived project-related benefits but this is part of a wider study of various organizational benefits and does not involve statistical analysis of differences in performance between ISO 9000 certified and non-certified companies. 4 of the studies focus on the construction sector, yet these are relatively small in scale: Ofori and Gang (2001) — $n=33$, Dissanayaka et al. (2001) — $n=33$, Karim et al. (2005) — $n=67$ and Chini and Valdez (2003) — $n=54$. Furthermore none of these surveys undertake statistical analysis to compare levels of performance between ISO 9000 certified and non-certified companies and none consider in-depth the impact of a QMS on a range of project performance dimensions. The detail in Table 1 confirms the view that there has been limited large-scale research focused on analyzing the link a certified QMS and levels of performance in construction project environments (Barad and Raz, 2000) and that the role of certified QMSs in the construction industry is still an under-researched area (Turk, 2006). Given that a gap in the extant literature exists, coupled with the current pressures on construction companies in countries like Malaysia to become certified, there is a timely need for research in this area. Such research should focus not only on investigating if a link exists but also on a more finely grained examination of how any links are constructed. Therefore the objective of the research, which is reported in this paper, is *to understand if and how ISO 9000 certification impacts on project performance.* The remainder of this paper is structured as follows: firstly, the conceptual framework for the research is introduced; then, the research method is detailed; this is followed by a presentation and discussion of the research findings; limitations and areas for further study are then outlined; and lastly, some conclusions are drawn.

2. Conceptual framework

In terms of examining the effects of ISO 9000 certification on project performance there are two broad elements to consider:

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