Contractors’ perception of the use of costs of quality system in Malaysian building construction projects

Samiaah M. Hassen Al-Tmeemy a,⁎, Hamzah Abdul-Rahman b, Zakaria Harun a

a Faculty of Engineering, University of Malaya, 50603 Kuala Lumpur, Malaysia
b Research & Innovation, University of Malaya, 50603 Kuala Lumpur, Malaysia

Received 14 March 2011; received in revised form 1 December 2011; accepted 8 December 2011

Abstract

While conforming on the findings of prior researches regarding quality cost system in building companies, current research successfully illustrates the contractors’ perceptions on the importance of the quality cost system and the barriers that may constrain the implementation of the system for recording and collecting quality cost data. A postal and email surveys were undertaken on Malaysian building companies, focusing on the benefits and difficulties associated with the implementation of quality cost system. Statistical analyses based on Chi-Squared test and Relative Importance Index techniques were used to investigate the significance of the findings and determine the relative importance of the factors. The most important benefit of measuring quality costs is “getting management attention and increase quality awareness” as perceived by the sample of the study. The possible barriers that may affect the management’s decision to implement quality cost system are identified and grouped into three categories, which are culture and knowledge; system; and company. The study suggests that the level of the site staff’s knowledge should be as important as that of the management to successfully collect and record quality costs data. The findings of this research will raise the level of awareness and sensitize managers and those involved with building industry about the importance of quality cost system and collecting quality costs data.

© 2011 Elsevier Ltd. APM and IPMA. All rights reserved.

Keywords: Cost of quality; Quality cost system; Building construction; Quality management; Relative Importance Index

1. Introduction

The main purpose of project management is to address the stakeholder needs and expectations; thus, dissatisfactions of a project’s stakeholders lead to extra time and cost (Tam and Le, 2007). In addition, the successful companies must deliver projects on time and within budget, and meet specifications while managing project risk (Raymond and Bergeron, 2008). Achieving the stakeholder’s satisfaction and the completion of project within predefined time, cost and quality constraints is not an easy task in building construction (Al-Tmeemy et al., 2011). Likewise, the process of measuring quality costs is often difficult due largely to the complexity of construction processes (Aoieong et al., 2002). Hence, many economic and mathematical models have been developed to track quality costs; for example: Quality Performance Management System (CII, 1990); Quality Performed Tracking System (Davis et al., 1989); Quality Cost Matrix (Abdul-Rahman, 1995); Process Cost Model (Aoieong et al., 2002); and Construction Quality Costs Quantifying System (Low and Yeo, 1998). Unfortunately, these models have been of little use and many companies still do not have a quality cost system in place (Kazaz et al., 2005; Love and Irani, 2003; Miguel and Pontel, 2004).

The importance of quality management is quite noticeable in project management literature (Choi et al., 2009; Din et al., 2010). Also the need for companies to capture and assess quality costs data has been well-established in previously published literatures (Abdelsalam and Gad, 2009; Dale and Plunkett, 1999; Morse and Roth, 1987; Tam and Le, 2007). Several researchers (Miguel and Pontel, 2004; Schiffauerova and
produced (Morse and Roth, 1987). The purpose of those costs is to keep defects from occurring in the first place by assuring that standards of organizational quality and customer satisfaction are met.

With appraisal costs come the costs of necessary activities to determine the actual level of quality achieved relative to the desired levels of customer satisfaction and organizational quality standards (Gilmore, 1990). Appraisal costs are incurred to identify nonconforming units before these are shipped to the customer (Morse and Roth, 1987).

Failure costs are incurred resulting from the existence of poor quality. These costs are typically classified as either internal or external. Internal failure costs occur when defective goods are identified before shipment to customers (Morse, 1993). Conversely external failure costs incur when nonconforming products are shipped to the customers (Morse and Roth, 1987).

Crosby (1979) divided quality costs into price of conformance (POC) and price of non-conformance (PONC). POC pertains to the price paid for doing things right, and examples include inspection and quality appraisal. PONC is the cost of poor quality caused by product and service failure, and examples are rework and returns. The opportunity and intangible cost model includes the cost of a missed opportunity, such as profits not earned because of lost customers and reduction in revenue owing to non-conformance (Schiffauerova and Thomson, 2006b). With the PCM, the focus is on the quality costs of a particular process rather than the total quality costs of an entire project (Tang et al., 2004). The last generic model is ABC, which provides data on how costs are actually consumed. The main idea behind ABC is that not all activities (and thus resource consumption rates) are proportional to the number of units produced (Raz and Elnathan, 1999).

To sum it up, COQ is the total of all resources spent by an organization to ensure that the established quality plan consistently achieves or exceeds standards (Bamford and Land, 2006). These resources are spent either for achieving quality or incurred due to lack of quality.

3. The significance of cost of quality

The quality costs are important because these costs can be extensive and could be 20% of the total sales turnover (Dale and Plunkett, 1999). Previous studies in North America have indicated that the costs of quality are typically at 20–30% of the total sales (Campenella, 1999; Hansen and Mowen, 1997; Krisham et al., 2000).

In construction, Lam (1994) has claimed that quality costs can make up from 8 to 15% of the total construction costs. In 1978, these costs were estimated by the UK Government to be 10% of the UK’s gross national product (Low and Yeo, 1998). Low and Yeo further stated that in the USA, direct costs incurred for rework alone have been estimated to be greater than 12% of any project costs. Hagan (1986) has warned that the lack of knowledge regarding quality costs will likely lead to unbalancing the inter-relationship of quality, schedule, and cost. This imbalance will continue to exist as long as the real cost of quality remains hidden among total costs.

2. Review of cost of quality models

Several models have been developed in previous literature. Schiffauerova and Thomson (2006b) classified COQ models into four groups of generic models, namely, prevention-appraisal-failure (PAF) or Crosby’s model; opportunity cost models; process cost models (PCM); and activity-based cost (ABC) models.

A most noticeable categorization model for quality costs is PAF, which was first simplified by Feigenbaum (1956). Prevention costs are incurred to prevent nonconforming units from being produced (Morse and Roth, 1987). The purpose of those costs is...
دریافت فوری
متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات