

# Client satisfaction and quality management systems in contractor organizations

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## Abstract

The construction industry is predominantly project based and quality is one of the client's prime concerns in their construction projects. Many clients, especially those in the Hong Kong public sector, require their contractors to have a Quality Management System (QMS) certified under ISO9000. Also, several contractors as well as clients themselves voluntarily implemented an ISO9000-based QMS in their respective organizations in order to target the various benefits perceived from such initiative. It was considered timely and worthwhile to explore the effectiveness of ISO9000-based QMSs in the Hong Kong. This paper portrays the key findings from a focused study that relate to the client satisfaction aspects from implementation of the ISO9000-based QMSs in the contractor organizations.

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## 1. Introduction

Quality is an essential element for sustainability and customer satisfaction. In construction projects, quality performance of contractors is considered as vital for client satisfaction. Various quality performance focused initiatives have been considered by both clients and contractors, e.g. balanced scorecard, business excellence model, ISO9000, ISO14000, OHSAS18001, six sigma, and total quality management systems (QMSs). Amongst such quality initiatives, ISO9000 certifications related to construction are popular in several countries and the application of ISO9000-based QMSs in the construction industry has been studied by several researchers, e.g. Love and Li [1] in Australia; Serpell [2] in Chile; Henry [3] in France; Kam and Tang [4] and Kumaraswamy and Dissanayaka [5] in Hong Kong; Hiyassat [6] in Jordan; Saraiva et al. [7] and Ribeiro and Curado [8] in Portugal; Bubshait and Al-Atiq [9] in Saudi Arabia; Low et al. [10] and Ofori and Gang [11] in

Singapore; Landin [12] in Sweden; Giles [13] and Moatazed-Keivani et al. [14] in UK; and Lindsay and Peoples [15] and Chini and Valdez [16] in USA. Furthermore, some researchers established potential linkages of ISO9000-based QMS with various other management systems such as just-in-time productivity [17], total quality management systems [18], safety management systems (e.g. [19,20]), and maintenance management [21].

ISO9000-based QMSs have been widely adopted in the Hong Kong construction industry, and many Hong Kong based construction contractors have chosen ISO9000 certification for more than a decade [22]. However, the majority of the contractors were reportedly led into ISO9000-based QMSs mainly by client initiated mandatory requirements for contractor selection, e.g. by the Hong Kong Housing Authority (HKHA) and the Works Departments under the Environment, Transport and Works Bureau (ETWB) in Hong Kong. While clients (both public and private clients) may have favored an ISO9000-based QMS for their contractors as a basic thrust in their quality drive,

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it is also chosen by some contractors themselves in anticipation of various tangible and intangible benefits, e.g. reduction of rework and wastages, improvements in documentation, marketing tool. While the client led quality initiative for construction contractors on ISO9000-based QMSs has been in place for about a decade in Hong Kong, their eventual effectiveness has not been studied in detail before. With an aim to better understand whether the implementation of ISO9000-based QMSs could effectively improve the quality of construction and benefit the stakeholders, a research exercise was recently conducted to examine the quality related impacts brought by the use of ISO9000-based QMSs. The study covered various aspects of the implementation of the ISO9000-based QMSs, such as client satisfaction regarding quality performance; end-user satisfaction with respect to quality of constructions, costs and benefits to the contractors from their implementation of ISO9000-based QMSs, and impacts on maintenance costs aspects. This paper focuses on discussing the perceived quality related impacts of ISO9000-based QMSs with respect to some ‘identified’ client satisfaction aspects only.

The main research methods adopted in this study are (i) an extensive literature review, (ii) a series of focused interviews with experts from a cross section of stakeholders (e.g. clients, project supervisory personnel, contractors) and (iii) collection and analysis of project related datasets from different projects that were completed ‘before’ and ‘after’ the implementation of ISO9000-based QMSs in contractor organizations. Accordingly the discussions in this paper are presented in the following three sections—(i) essential extracts from the relevant literature on the significance of clients’ assessment of contractor performance and contractors’ quality management initiatives such as application of ISO9000-based QMSs; (ii) key findings on impacts of contractors’ ISO9000-based QMSs on client satisfaction levels—from the analyses of client maintained datasets on contractors’ performance records in pre- and post-ISO9000 implementation periods; and (iii) a basic summary of perceptions from project supervisory staff on the implementation of ISO9000-based QMSs in contractor organizations.

## 2. Overview of knowledge mining from previous studies

Commonly perceived project-specific problems such as rework, wastages, defects, claims and disputes could be attributed to low quality and/or poor management of contractors (e.g. [23–26]). Several studies conducted by various researchers (e.g. [10,22,27–31]) outlined a cluster of significant benefits from ISO9000-based QMSs such as (a) improved quality system; (b) improved customer satisfaction; (c) continuous improvements; (d) standard

processes, structured documentation procedures and better control; (e) reduced costs; (f) reduced wastages; (g) reduced rework; (h) less conflicts, claims and disputes; and (i) enhanced consistency and better image. The pitfalls/problems in achieving the above-mentioned perceived benefits of ISO9000 may originate from several factors such as (a) lack of commitment; (b) problems of interpretation; (c) misconceptions over costs and benefits; (d) non-value adding/avoidable additional burdens (e.g. non-useful documentations) and (d) cultural inertia.

However, ISO9000 standards themselves are not expected to define or dictate the contents of organization-specific quality systems. Neither is ISO9000 a product nor service quality label. ISO certification, by itself does not give any guarantee that the quality of products or services of an organization is better than the quality of other organizations [32]. Hellard [33] argued that the quality required for customer satisfaction is in the end product and not in the separate QMSs of the stakeholders. Still, certification is expected to indicate the presence of a well-structured QMS and a disciplined business management process, and secondly to be helpful to increase customer satisfaction, competitiveness, and trigger continuous improvements. For example, Low et al. [10] provided some empirical evidence to support their argument that there should be some relationships between ISO9000 certification and achievement of higher quality standards in the Singapore construction industry. Thus, this study focused on investigating the effectiveness of ISO9000-based QMSs in the Hong Kong construction Industry. Kam and Tang [34] discussed the quality assurance initiatives of some public clients in Singapore and Hong Kong. Chan and Tam [35] studied the factors affecting quality of building projects in Hong Kong. Based on the knowledge distilled from such literature review, a suitable research methodology including questionnaires, interviews and analysis frameworks were formulated for this research.

## 3. Clients satisfaction from contractor performance

### 3.1. Background

Contractor performance is usually considered as a significant contributor to client satisfaction [26]. The construction industry is mainly project based and construction projects are mostly one-off in nature. Even within a single client’s project procurement transactions, the team of stakeholders such as designers, contractors, subcontractors, suppliers and end-users are mostly unique for every project. The study identified the fact that hardly any clients have comprehensive sets of comparable data on contractor performance and project

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