

# Development of a customer satisfaction evaluation model for construction project management

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## Abstract

Construction project management (CPM) is a technical-oriented service for construction project clients. Evaluating the performance of service providers is beneficial both to purchasers, enabling them to appraise the services received, and to providers, helping them to improve their services. However, no appraisal system for such services exists. This study developed a novel customer satisfaction evaluation model for CPM services that was developed using a questionnaire-based survey and statistical analysis. Test results show that the developed model is a feasible system. Research using this model reveals that CPM services in Taiwan are satisfactory with acceptable performance for clients. The developed model is a good reference for evaluating and assessing CPM performance.

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## 1. Introduction

With the ISO 9000 standard gaining popularity worldwide, total quality management (TQM) has become a strategic and survival approach for most firms in every industry. TQM is a complete management philosophy that emphasizes overall satisfaction through the continuous improvements to products and processes. Notably, TQM is concerned with customer satisfaction and is not merely a slogan [1]. Since 1988, TQM has been codified in a national award (the Malcolm Baldrige National Quality Award) in the United States, “customer satisfaction,” once the most criteria in TQM evaluation, has been transformed into “customer relationships and satisfaction” in the category of customer and market focus [2]. Obviously, customer satisfaction is a key factor in achieving quality improvement. The construction industry has many characteristics common to manufacturing and service industries. In the construction industry, customer satisfaction demands on contractor’s performance are in accordance with contractual duties, obligations and responsibilities. Total customer

satisfaction has never been a goal for designers, construction managers, subcontractors and material suppliers [3]. It is hard to achieve higher satisfaction level by any single project participant. However, there is no doubt that making customer (client) as satisfied as possible is an essential task for any firm in the construction industry regardless of the construction-related products or services they provide.

The application of professional construction management (PCM) has increased rapidly since it was first introduced and promoted in the early 1960s [4–7]. In a narrow sense, PCM forms a three-party team, including the owner, the architect/engineer (A/E) and the project manager, to accomplish the owner’s authorized tasks [5]. On the contrary, from a broad perspective, PCM is an effective means of satisfying an owner’s construction needs [4]. Functional PCM tasks consist of the following phases of construction projects: conceptual planning; conceptual design; detailed design; construction; closeout; and, start-up. PCM is now regarded as a professional team for serving all owner needs in a construction project.

In Taiwan, the Government Procurement Law (GPL), promulgated on May 27, 1998, allows several innovative concepts and regulations, including the PCM (the official

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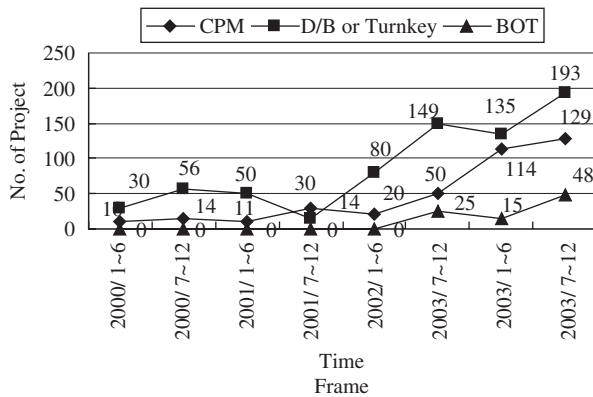


Fig. 1. Trend of new project delivery methods in Taiwan.

term in GPL is project management, therefore, construction project management (CPM is used hereinafter replacing the PCM term) approach and the most advantageous tendering approach [8] for construction projects and procurement entities. As stated in Article 39 of GPL—“*In conducting a procurement, an entity may entrust a supplier, according to this Act, with the project management related to planning, design, supply, or contract performance*”, a construction project can have a CPM contract to serve the consultative and administrative needs [9]. After the GPL of Taiwan went into effect, the number of construction projects with CPM contracts issued has been increasing (see Fig. 1). With CPM stepping into its flourishing phase in Taiwan, it is necessary to appraise the performance of CPM services. This study focuses on developing a customer satisfaction evaluation model for evaluating CPM services and examines its applicability in Taiwan.

## 2. Customer satisfaction

There has been a quite obvious increase in the emphasis on a firm's ability to produce high-quality products and/or provide high-quality services. Identification of high-quality products or services can be achieved by measuring customer satisfaction with these products or services. The concept of customer satisfaction transforms all industries from production centralized to customer based. Several evaluation models or indices exist for assessing customer satisfaction in various industries. To achieve a highly reliable and stable index of satisfaction, the American Customer Satisfaction Index (ACSI) [10] defines the satisfaction as a weighted average of three survey ratings: perceived quality, perceived value, and customer expectations. The ACSI index has been used to measure the satisfaction in the manufacturing/nondurables, manufacturing/durables, transportation, communications and utilities, retails, finance and insurance, services, public administration, and government. Although the ACSI index has an accepted satisfaction evaluation methodology, it is not designed for the construction industry. Generally, the evaluation result for customer satisfaction is highest for competitive products, lower for competitive services and

retailers, and lowest for government and public agencies [11]. The ACSI system criteria cannot be adapted to the construction industry, a new evaluation model must be developed not only for the construction industry, but also for CPM services.

## 3. Related research

Construction projects involve numerous stakeholders that are closely related and interacted during a given project. The level of a stakeholder satisfaction directly influences the current project and subsequent projects and the level of satisfaction experienced by other stakeholders. For contractors, completing a project in accordance with the plans and specifications within budget and on time satisfies owner needs and generates profit. Ahmed and Kangari [12] used six client-satisfaction factors, including time, cost, quality, client orientation, communication skills and response to complaints, to conduct a survey for analyzing the client-satisfaction factors in the construction industry. They concluded that these six factors are equally important when evaluating client satisfaction. Maloney argued that the physical product and service delivery must be considered when assessing customer satisfaction in the construction industry. For electrical construction projects, Maloney proposed a dual-influence model using five dimensions—contractor/customer relationship, project management, safety, prepared/skilled workforce and cost—to evaluate customer satisfaction and for contractor selection decisions [13]. Furthermore, Maloney claimed that labor-management activities at levels of contractor–workforce, contractor–local union and contractor association–local union influence customer satisfaction [14]. Contractors need to establish partnerships with labors to enhance customer satisfaction.

To measure home-buyer satisfaction, Torbica and Stroh [15–17] developed a model, called HOMBSAT, with three distinct dimensions of house design, house and services. The indicators of house design and house are used to rate the product quality of a transaction, whereas indicator of services is used to rate the service quality. The HOMBSAT can provide a total home-buyer satisfaction across three dimensions to the home builders to track the overall quality of their services. Moreover, Torbica and Stroh also confirmed that a home builder can increase home-buyer satisfaction by implementing TQM [18]. In 2002 and 2003, J.D. Power and Associates reported that the quality of workmanship/materials and customer services account for 50% of overall customer satisfaction among buyers of new homes, and the levels of customer satisfaction increased significantly in the highly competitive home-builder industry [19]. Liu, who surveyed residential satisfaction of housing estates in Hong Kong, utilized questionnaires comprising nine categories with a total of 51 questions [20]. That study developed a well-structured post-occupancy evaluation method for measuring customer satisfaction.

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