

# MODELS OF CUSTOMER SATISFACTION AND SERVICE QUALITY AS RESEARCH INSTRUMENTS IN CONSTRUCTION MANAGEMENT

**J G Gunning**

*School of the Built Environment, University of Ulster, Jordanstown, BT37 0QB, Northern Ireland.*

With a few notable exceptions there has been little published on the use of formal Service Quality models in the area of Construction Management. The ServQual approach, or modifications of it, can provide an effective measure of the perceived quality of service performance. It utilises a concise multiple item survey scale with good reliability and validity in understanding the service expectations and perceptions of customers. Originating in the field of business marketing, it has wide potential for application within construction management research, as discussed at the 1996 National Construction Marketing Conference at Oxford Brookes University.

This paper examines a variety of models for measuring perceptions of the quality of service received. The services provided within the construction industry include design, project management, building control and quantity surveying, which provide varying degrees of satisfaction for the recipient.

Services can be distinguished from goods in terms of inseparability from the provider, heterogeneity, perishability, intangibility and the concept of temporary ownership. Research by Parasuraman et al (1988) has identified five underlying dimensions on which service quality is evaluated as being; tangibles (so far as they exist), reliability, responsiveness, assurance and empathy. Perceived quality of service relates to the gap between client expectations and perceptions of performance. Dis-confirmed expectations (active or passive) dictate the degree of customer satisfaction with a particular service.

The original ServQual Model often needs to be modified to take account of the special characteristics of particular construction services and to help identify the performance gaps between service provider and customer. In particular, an A Priori Model developed by Gable (1996) has provided the basis for a number of research projects at the University of Ulster which investigated client satisfaction and service quality in the construction process. Some of these are outlined towards the end of this paper. It is hoped that this paper will stimulate debate on the value of this model as a research instrument in measuring the perceived effectiveness of a variety of services provided by professionals, contractors and regulatory authorities within the construction supply chain.

Keywords: customer satisfaction, service quality, research instrument, ServQual, model.

## INTRODUCTION

Intensifying competition and rapid deregulation have led many service and retail businesses to seek ways to differentiate themselves. One strategy which has been related to success in these businesses is the delivery of high service quality as a prerequisite for success in all service industries. For years, many market-oriented firms have been measuring customer satisfaction and service quality to gauge how well they are meeting customer needs. These measures are often used interchangeably between both constructs indicating a failure to recognise the difference between them.

There is a great deal of similarity between both constructs; however there is a distinction, which separates them. This distinction is “important to managers and researchers alike, because service providers need to know whether their objective should be to have customers who are satisfied with their performance, or to deliver the maximum level of ‘perceived service quality’” (Cronin and Taylor, 1992).

## **PERCEIVED SERVICE QUALITY**

Research undertaken by Zeithaml *et al.* (1990) into how customers view service quality identified common patterns in its findings. They found that the key to ensuring good service quality was meeting or exceeding what customers expect from the service; the study showed that judgements of both high and low service quality depended on the customers’ perception of the service performance in the context of what they expected. From this they were able to define perceived service quality as “the extent of discrepancy between customers’ expectations or desires and their perceptions”. Gronroos (1990) posits that the level of technical and functional quality dimensions does not determine the level of total perceived quality only, but rather the gap between the expected and experienced quality.

Parasuraman *et al.* (1988) concur with this definition; they consider that a customers’ assessment of overall service quality depends on the gap between expectations and perceptions of actual performance level. They have identified four gaps which act as major barriers to the provision of a service which is perceived by the customer to be of high quality. These are differences between;

- Customer expectations and supplier perception of these expectations
- Supplier perception of client expectations and the service quality specified
- Specified quality and the service quality actually delivered
- Service quality delivered, and what is communicated about it to the customer

Further to this they identify five underlying dimensions on which service quality is evaluated. They are:

1. Tangibles
2. Reliability
3. Responsiveness
4. Assurance
5. Empathy

Each of these quality dimensions are said to be quantifiable by “obtaining measures of expectations and perceptions of performance levels of service attributes relevant to each dimension, calculating the difference between expectations and perceptions of actual performance on these attributes, then averaging excess attributes” (Parasuraman *et al.*, 1988).

## **CUSTOMER SATISFACTION**

Customer satisfaction has no universal definition, but is generally described in terms of “an evaluative, affective or emotional response”. The literature on satisfaction focuses on the ideal that the customer will make a comparison between the performance of the product or service and a certain standard. Parasuraman *et al.* (1988, 1993) also argue this point; they claim that the standard of comparison is that of predictive expectations; i.e. what the customer believes will happen. Oliver (1981) defines satisfaction as “a summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer’s prior feeling about the consumption experience”. Churchill and Serprenant (1982) explain

customer satisfaction as a function of pre-purchase expectations and post purchase product/service performance. The pre-purchase expectation held might be conscious, active or sub-conscious, passive expectations.

Customer satisfaction or dissatisfaction is a recognised function of the disconfirmation which arises from discrepancies between prior expectations and actual performance. Customer service literature shows that a customer's expectations and perceptions of performance levels have a direct effect on customer satisfaction and an indirect effect through disconfirmation. The presumption that a customer's pre-purchase expectations determine customer satisfaction is based on the assumption that the expectations are formed on the basis of past experience. In cases where customers have no experience, customer expectations are believed to be more an artefact of the service production process and to have no effect on satisfaction (Gable, 1996). There are two general conceptualisations of customer satisfaction; these are transaction-specific and cumulative satisfaction. The long-term view is a better predictor of customer retention.

The distinctions between customer satisfaction and service quality are as follows:

1. Customer satisfaction is a value dependant phenomenon whereby value is the ratio of perceived quality relative to price (Zeithaml, 1988). Satisfaction is therefore dependent on price, service quality is not generally dependent on price.
2. Cumulative customer satisfaction is based on current experience, past experience and all anticipated future experience. Quality however, is viewed as it relates to a customer's current perception of a good or service.
3. Quality is an antecedent of customer satisfaction (Fornell, 1992; Cronin and Taylor, 1992; Churchill and Serprenant, 1982).

Fornell (1992) proposes that key benefits of customer satisfaction include loyalty, as loyal customers can create a steady stream of future cash flow for a firm. Reduced price elasticities result, as the greater the satisfaction the more willing the customer will be to pay for the benefits and to tolerate any price increases. Lower costs can be achieved in future transactions because a firm that provides high customer satisfaction will devote fewer resources to handling returns, managing complaints and reworking defective items. It promotes insulation of current customers from competition, reduced failure costs, lower costs in attracting new customers and the enhancement of the firm's reputation. Satisfied customers are more likely to recommend the firm thus promoting its image and reputation. A long term perspective is required.

## **MODELS OF CUSTOMER SATISFACTION**

The customer satisfaction literature identifies four model types, which can be used to determine levels of customer satisfaction. These alternative types are referred to as:

- The Disconfirmation of Expectation Model
- The Performance Model
- The Rational Expectations Model
- The Expectations Artefact Model

### **The disconfirmation of expectations model**

The Disconfirmation Model demonstrates how customer satisfaction is affected by the combination of the performance of the good/service and the customer's level of expectation. It posits that in cases where the performance that a customer perceives is deemed to be greater than the expectations held, satisfaction will increase. This is defined as positive disconfirmation. Similarly a perceived performance which is lower than the customer's level of expectation, will result in a decrease in satisfaction; this is negative disconfirmation (Anderson *et al.* 1994, Oliver, 1993). Satisfaction is therefore a function of the difference between performance and expectations; ie, performance - expectations = satisfaction. The Disconfirmation Model indicates a negative relationship between expectations and satisfaction; it predicts that as expectations increase, satisfaction will decrease. These expectations held are recognised as a standard against which performance information is evaluated.

Limitations of the Disconfirmation Model are illustrated by Cronin and Taylor (1992), who argue that "little if any theoretical or empirical evidence supports the relevance of the expectations - performance gap as the basis for measuring service". Jayanti and Jackson (1991) warn that the satisfaction processes with services may be different from those of goods and so the Disconfirmation Model may not be appropriate for the evaluation of a service. Spreng and Mackey (1996) state that "few things are as fundamental to the marketing concept as the notion of satisfying the needs and desires of the customer". This fundamental idea is not sufficiently taken into account by the disconfirmation paradigm, nor does it utilise it as a determinant of satisfaction.

The Model actually suggests that those involved in managing customer expectations should try to lower expectations. It posits that this will allow them to offer a better than expected service, which will then result in increased satisfaction (Davidrow and Uttal, 1989). There is concern that the Model focuses on the negative aspects of expectations, rather than on the positive as the performance paradigm does. A firm which manages customer expectations in this way could also inadvertently lower performance levels. The end result would then be lower levels of customer satisfaction. Several authors have proposed models of customer satisfaction assessment, to address these limitations.

Walker (1995) proposes that the model should incorporate three stages of service evaluation; namely Pre-consumption, Consumption, Post Consumption. This addresses the difficulty of the Disconfirmation Model conceptualising satisfaction at a point in time after consumption. By incorporating these factors the model no longer recognises the evaluation process as a simple post-usage judgement. These three separate stages of disconfirmation give a better understanding of the satisfaction process, and the management of satisfaction. However despite the recognised inadequacies of the Disconfirmation Model, it remains popular within the literature and its principal form has provided the basis for other paradigms including the ServQual model; this paradigm is used to measure service quality, not customer satisfaction.

### **The performance model**

The Performance Model conceptualises the theory that a customer's perception of a product or service performance, and their expectations of that performance have a positive effect on customer satisfaction (Spreng and Mackey, 1996). Performance is defined as the level of quality of the product, or service, as perceived by the customer, relative to the price paid. This perceived performance is described as value i.e.

benefits received for costs incurred. The greater the ability of the product, or service, relative to the cost, the more satisfied the customer will be (Parasuraman *et al.*, 1988), in keeping with the ideal of a value-precept disparity.

Theoretical and empirical support for the inclusion of the direct effect of perceived performance on satisfaction is provided by Tse and Wilton (1988). They even suggest that perceived performance may have a stronger effect on customer satisfaction than expectations. Important information customer expectations are re-evaluated as a result of more recent performance information. The assessment of satisfaction is then closely related to expectations. The Performance Model shows expectations having a direct and positive effect on satisfaction as a result of the part they play as an anchor in the satisfaction evaluation process. The stronger a customer's expectation, relative to performance information, the greater the impact of expectations as an anchor on satisfaction. Should performance information be the stronger construct, the greater the relative positive effect will be on customer satisfaction.

The Performance Model also demonstrates a positive effect of expectations on perceived performance, that is the ability of customer expectations to predict performance. This is felt to be greatest when customers have a lot of experience with a performer who is either predictable or has low variance. The extent of the effect will vary from products to services. Construction Project Management is a complex and heterogeneous service, with which customers often have a lack of experience. As a direct result the expectations held by the client of the construction project team will not be as strongly related to performance as with other services. For this reason this type of model is not appropriate for application to the construction client - project manager type of relationship.

### **The rational expectations model**

The Rational Expectations theory proposes that the mean expectations of agents in a market will be equal to the output of that market. Applying this hypothesis to the construction client - project manager relationship it can be seen that the expectations of the construction client would then be equivalent to the project manager's actual performance when providing his service (Johnson *et al.*, 1996). The client of the construction project team will often have expectations which are inaccurate, weak or non-existent. However it is argued that the expectations of the market as a whole can be greater than the sum of each individual client's expectations. The total expectations of the market are believed to be more rational and accurate. The Rational Expectations theory then leads to the conclusion that perceived performance and expectations are no longer needed, that in fact they equal each other (i.e. performance = expectations), and have a single positive effect on satisfaction.

The first identifiable shortfall of this model can also be seen in the previous two paradigms. They all assume the customers will have well informed expectations of performance. In doing so each model fails as a suitable description of customer satisfaction in terms of the more complex, heterogeneous and infrequently purchased services such as construction project management. Therefore the Rational Expectations Model, as with the previous models, cannot be applied as an appropriate model for the measurement of customer satisfaction in the construction client - project manager type of relationship.

Construction project management has been equated with the description of an infrequently purchased service which is characterised by its inexperienced clients who may have weak, inaccurate or non-existent expectations (Masterman, 1991). This

unique situation has led to the development of a model appropriate to such circumstances. Fornell (1992) and Johnson et al (1996) put forward such a model, which describes customer satisfaction in terms of perceived performance and argue that performance expectations are an artefact of performance and have no effect on satisfaction. This model is called the Expectations-Artefact Model – and assumes that the customer has well informed expectations of the service/product.

### **The expectations-artefact model**

Johnson *et al.* (1996) argue that expectations should not have either a positive or a negative effect on satisfaction, in a unique service like construction project management. This is because in this context expectations do not act as an anchor, as in the Performance Model, or as a standard of comparison, as with the Disconfirmation Model, in the evaluation of satisfaction. Performance will give rise to the expectations reported by customers. The Expectations-Artefact Model shows the direct positive effect of perceived performance on satisfaction, and a positive relationship between performance and expectations. Expectations are not linked to satisfaction; this illustrates the fact that this construct does not have an effect upon satisfaction.

The implications of this Model are simply that to focus on the expectations construct, as encouraged by the Disconfirmation Model, would be counterproductive to the improvement of customer satisfaction. The argument that expectations are only a by-product of the service production process, and have no effect on customer service, would make any efforts to meet or exceed customer expectations pointless. Instead this Model posits that to improve customer service, service personnel should focus on the improvement of performance.

### **Gable's multi-dimensional model**

Gable's Multidimensional Model of Client Success When Engaging External Consultants has been identified as the Model most appropriate for application to the construction client - project manager relationship. This Model was developed by Gable (1996) to assess client satisfaction when engaging an external consultant to help with the selection of a computer based information system. Gable (1996) measured engagement success empirically through a series of case studies followed by a survey of clients and consultants.

On the basis of his literature review and the case studies, Gable (1996) developed his descriptive measurement model. This model predicted six important dimensions of engagement success; it also makes a primary distinction between results, success and performance. Results are based on the improvement in client understanding and the consultant's recommendations; these combined with the performance of the consultant provide the three main areas of assessing engagement success i.e. recommendations, understanding and performance. Gable (1996) proposes that these areas of assessment be measured by usage/acceptance of the consultant's recommendations, change in client understanding and the resource requirements compared with that estimated. These are objective measures; a subjective measure is also applied to each of the three areas in the form of the client's level of satisfaction.

The six dimensions of Gable's revised model are described in terms of an Information Selection Consultancy as follows:

- **Recommendation acceptance** - This is the extent to which the client accepts, uses or intends to use the consultant's recommendations.

- **Recommendation satisfaction** - This measure determines how satisfied the client is with the consultant's recommendation.
- **Understanding improvement** - The improvement of client understanding has been shown to result in a better appreciation of their needs and can aid more effective implementation and an increasing level of general independence.
- **Understanding satisfaction** - This measures the level of satisfaction which the client experiences as a result of the new level of understanding.
- **Performance reasonability** – This is the degree to which the customer views the consultant's performance as reasonable under the circumstances.
- **Performance satisfaction** - When a client is satisfied with the consultant's overall performance, the engagement is considered more successful.

## **MODELS OF SATISFACTION IMPROVEMENT**

O'Donnabhain (1998) undertook research in an attempt to gain an improved understanding of the linkage and relationship between construction clients and their project managers. The first of his objectives was to conduct an extensive literature review and then identify a suitable model which could be adopted and utilised to yield a measure of construction client satisfaction. He used Gable's A Priori Model as a template for data collection. Each of the satisfaction assessment dimensions was re-phrased to make them more suitable for use in a construction context. All six of the dimensions of Gable's Model were then measured from the client's perspective.

He concluded that a mail survey was the most appropriate means of data collection in his analysis of construction client - project manager satisfaction assessment. As a result of the conclusions drawn from this research the following three-construct recommendation model was proposed as a means of increasing client satisfaction.

### **Monitoring perceptions of client satisfaction**

It retains the three satisfaction assessment dimensions of Consultant Recommendation Satisfaction, Consultant Performance Satisfaction and Client Understanding Improvement Satisfaction. These subjective dimensions were found to have the highest association with and influence on the perception of overall satisfaction. He found that the objective dimensions had a limited influence on and association with satisfaction.

### **Identifying areas of satisfaction shortfalls**

O'Donnabhain's (1998) research showed that project managers are ignorant of the perceptions of their clients and so are failing to establish exactly where and with what clients are dissatisfied. This is a failing of one of the primary factors of producing satisfied clients. He points out that identifying areas of satisfaction shortfalls, by monitoring perceptions of construction clients on a detailed basis, must be supplemented by instant informal two-way communication.

### **Taking appropriate action**

O'Donnabhain's (1998) research showed the importance of successfully processing client requirements to be the single most influential factor on overall success. He argues that "the clear definition of client requirements at an early stage will result in a reduction in uncertainty for all parties". He posits that the project manager must adopt

a pro-active approach to client satisfaction by taking appropriate action at the earliest possible stage and ensuring the effective processing of client requirements.

O'Donnabhain (1998) outlined Anumba's (1996) three stages of client requirements processing, which form the third construct of his model, as follows;

**Requirements identification** - Clients are encouraged to identify their requirements to which they attach appropriate weighting.

**Requirement analysis and prioritisation** - The client requirements may be identified by ensuring they are properly analysed and prioritised.

**Requirement translation** - Reviewing the prioritised client requirements in order to develop specifications that fully satisfy them and to remove all necessary constraints to design creativity. The final outcome is the solution neutral requirement specification, which is then used to inform the design process.

McStravick (1999) used the A Priori Model to analyse three case studies and recommend steps for the construction project manager to enhance client satisfaction in terms of involvement and understanding of improvement, as well as satisfaction with the recommendation and performance of their consultant.

Quigley (2000) adapted ServQual to survey a sample of 14 construction clients and 31 building services engineers in Northern Ireland. He added client-focus to the 5 service features normally used as determinants, and identified many gaps between client expectations and perceptions of quality received from their consultants. He identified major shortfalls relating to perceptions of a lack of added value and of creativity/initiative. Dealing with deadlines and scope changes also presented concerns for the engineers.

Morrison (2000) used a simple ServQual-based approach to assess the level of customer satisfaction with the service provided by a local authority building control department. A recent paper by Hoxley (2000) discusses the development of a 26 item scale (based on ServQual) for assessing quality in a UK construction professional service context. It assesses 244 professionals (in the eyes of their clients) in a 4-dimensional contract with proven reliability and validity.

## CONCLUSIONS

There exist a range of models which may be employed in researching the degree of satisfaction of members of the construction supply chain with the quality of service which they receive. Service quality itself has been clearly distinguished from customer satisfaction because the latter is personal and value dependant. Service Quality In Construction must be managed and matched to changing customer expectations over time.

This paper has presented four models which can be used to determine levels of customer satisfaction, and concludes that only the Expectation-Artifact model can be effectively applied to the construction supply chain. In particular, Gable's multi-dimensional model derived from this Expectations-Artifact Model has been identified as being particularly applicable to the satisfaction of the construction client with the various services received during a project.

Research at the University of Ulster by O'Donnabhain (1998), McStravick (1999), Morrison (2000) and Quigley (2000) have used Gable's A Priori model and others to quantify the degree of satisfaction of construction clients with a range of services. It

is hoped that this paper will stimulate debate amongst ARCOM members and other construction researchers about the validity of service quality/customer satisfaction models. More meaningful and accurate research programmes should result.

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