

# Causal Loop Diagramming of the Relationships among Customer Satisfaction, Customer Retention, and Profitability

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**ABSTRACT:** *Customer satisfaction and its antecedents have been investigated extensively in the customer satisfaction and service quality literature, and the consequences of customer satisfaction have received some attention in the research literature. Customer satisfaction research literature contends that higher customer satisfaction increases customer retention and hence organisational profitability. Most of the research examines the influence of customer satisfaction in a linear, open-loop manner. This study aims to adopt a more systemic approach by recognising the interactions among these constructs and other mediating variables, for example market share or disbursement of cash flow from operations. The investigation uses causal loop diagramming to develop one possible model relating customer satisfaction to profitability and suggests some directions for further research.*

*Keywords:* Causal loop diagramming, systems thinking, customer satisfaction, customer retention.

## INTRODUCTION

The concept of customer satisfaction is topical in both private and public sectors. Organisations often include customer satisfaction as an important or even essential objective within their strategic plan. The effort devoted to attaining customer satisfaction depends on the vision management, or the CEO, has of its importance to the 'bottom line'. The implication of the inclusion of statements about achieving satisfied customers is either, that in a maturing market environment ensuring satisfied customers provides a strategic advantage; or, more fundamentally, that satisfying customers is the key to financial growth.

This discussion paper examines the links among customer satisfaction, profitability and an intermediary construct, customer retention. The paper briefly discusses relevant research literature, indicating that most results from the literature rely on linear models. Concepts from systems thinking are introduced that demonstrate the interdependencies of these and other links, and expose the existence of necessary trade-offs in developing customer satisfaction strategy.

## Research Literature

Customer satisfaction and its antecedents have been investigated extensively in the customer satisfaction and service quality literature (Oliver 1977; Oliver 1980; Churchill and Suprenant 1982; Bearden and Teel 1983; Parasuraman, Berry and Zeithaml 1991; Anderson and Sullivan 1993). The consequences of customer satisfaction have received somewhat less attention (Bearden et al. 1983; Anderson et al. 1993; Boulding, Kalra, Staelin et al. 1993; Rust and Zahorik 1993; Anderson, Fornell and Lehmann 1994; Zeithaml, Berry and Parasuraman 1996). Research from the consulting field, concentrating on one possible consequence, has suggested that increasing customer retention contributes significantly to increased profitability (Reichheld, 1993).

Although, it would appear that there should be a natural linkage between customer satisfaction and customer retention, the relationships among customer satisfaction, customer retention and firm profitability have not been fully explained in the customer satisfaction and service quality literature. Few empirical studies have researched the sequential linking of the constructs and much of the literature is bedevilled by inconsistencies in definitions and unsubstantiated assumptions (Fornell and Wernerfelt 1987; Reichheld 1993; Rust et al. 1993; Storbacka, Strandvik and Gronross 1994; Bolton 1998).

The link between customer satisfaction and profitability is often implied, and definitions of customer satisfaction and profitability vary from one study to another (Buzzell and Gale 1987; Capon, Farley and Hoenig

1990; Fornell 1992; Rust and Zahorik 1993; Anderson, Fornell and Lehmann 1994; Zeithaml, Berry and Parasuraman 1996). Bonsu (1998) conducted a metatheoretical review of the literature and concluded that the overall customer satisfaction-performance relationship is theoretically weak. He commented that present studies show only a direct link from satisfaction to a number of mediating outcomes, and that increased financial performance is implied rather than explicitly demonstrated. He emphasised that these intermediary outcomes do not necessarily translate into increased profitability, and concluded that their positive relationships to performance in the literature are questionable.

Storbacka et al (1994) also examined the links from service quality to customer satisfaction to customer retention to profitability. They commented that most of the literature examined only the link between service quality and satisfaction, with a few extending their research to include behavioural intentions, but point out that purchase intentions do not necessarily have high predictive power. Like Bonsu (1998), the 'relationship profitability model' presented by Storbacka et al (Storbacka, Strandvik and Gronross 1994) emphasised that customer satisfaction does not influence firm profitability in isolation. Bonsu included customer satisfaction within the overall marketing strategy, each part of which has an impact on profitability, while Storbacka et al (1994) placed customer satisfaction within a chain linking service quality and profitability.

As can be seen, the research literature on the economic consequences of customer satisfaction has not fully explained the relationships existing from customer satisfaction to profitability. In addition, the literature tends to depict the flow from customer satisfaction to profitability in a unidirectional manner, from customer satisfaction to customer retention, to profitability. Improving customer satisfaction increases customer retention and hence firm profitability. This approach, however, ignores possible interactions, including feedback influences, among the various constructs. Manipulating customer satisfaction may, for example, detract from necessary expenditure on other organisational strategies that, in turn, affect financial decisions or human resource policies, and changes in these may influence, either in a positive or negative way, customer satisfaction.

In this paper, concepts of systems thinking are applied to develop a conceptual model of the customer satisfaction – profitability linkage. The use of causal loop diagramming permits the investigation of feedback loops and enables the development of a deeper understanding of interdependencies among various constructs.

## SYSTEMS DYNAMICS

System dynamics can be regarded as a special approach within General Systems theory (Bertalanffy 1968). The Aristotelian holistic view of the universe, encapsulated in his statement, "The whole is more than the sum of its parts", provides a simple but valid description of the system approach. While the analytical approach was extremely successful in physics in particular, many systems, including more complex organisations, are not amenable to analysis using this method because the essential influence of interaction among elements is not considered.

General Systems theory, as Bertalanffy (1974) describes it, is a 'logico-mathematical field, reflecting the quest for rigour in its deductions and confirmation of its theories.' While the dynamics of a system within the so-called hard sciences (comprising a set of elements interacting amongst themselves and with their environment) may be examined by investigating a set of  $n$  first-order differential equations, similar mathematical analysis is often not feasible for complex social systems, and an alternative approach must be sought.

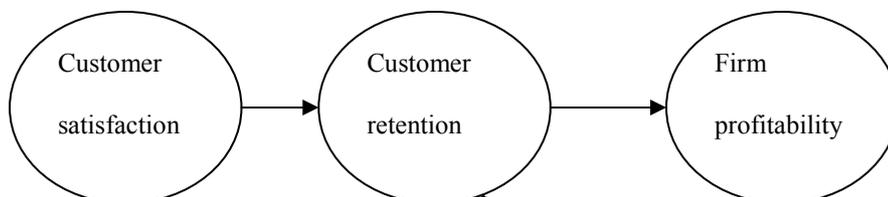
One such alternative, Systems Dynamics, enables the investigator to examine and model the structure and behaviour of complex systems. It retains the essential features of systems thinking, interdependencies and feedback loops, enabling the development of a much richer model and leading to greater insight into the operation of the system under investigation.

A sub-set of system dynamics, viz causal loop or influence diagramming, allows the development and examination of a system structure that highlights the interactions among the variables.

### Influence diagrams

The influence diagram is the basic tool for examining the structure of a system, including the interactions among components. Senge (1990) describes the modelling of these interactions as circles of influence, emphasising that the influence of one construct on another is rarely in one direction only.

The implied linear influence diagram of many organisations' thinking on customer satisfaction can be drawn as:

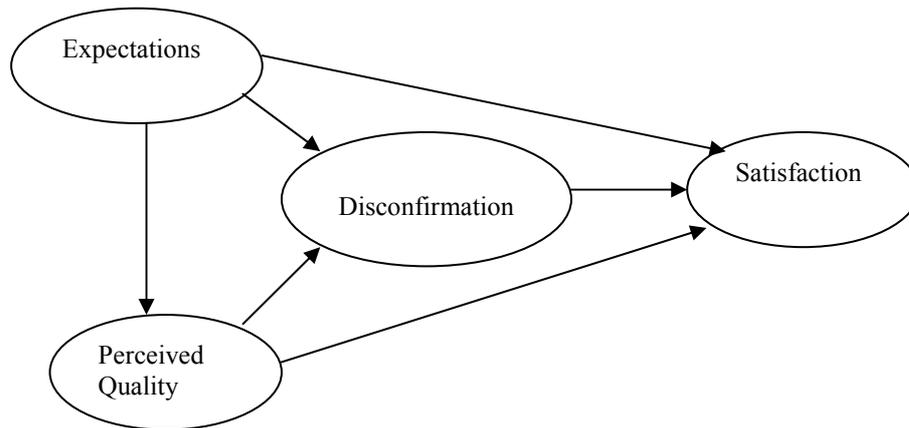


The question this paper poses is: what other antecedents and consequences exist for each construct and what interlinkages exist among them?

Consider the generally accepted expectancy-disconfirmation paradigm shown in Figure 1 that models satisfaction as a function of expectations, perceived performance, together with the discrepancy between expectations and perceived performance, (Oliver 1977; Oliver 1980).

**Figure 1**

**Expectancy-disconfirmation paradigm**

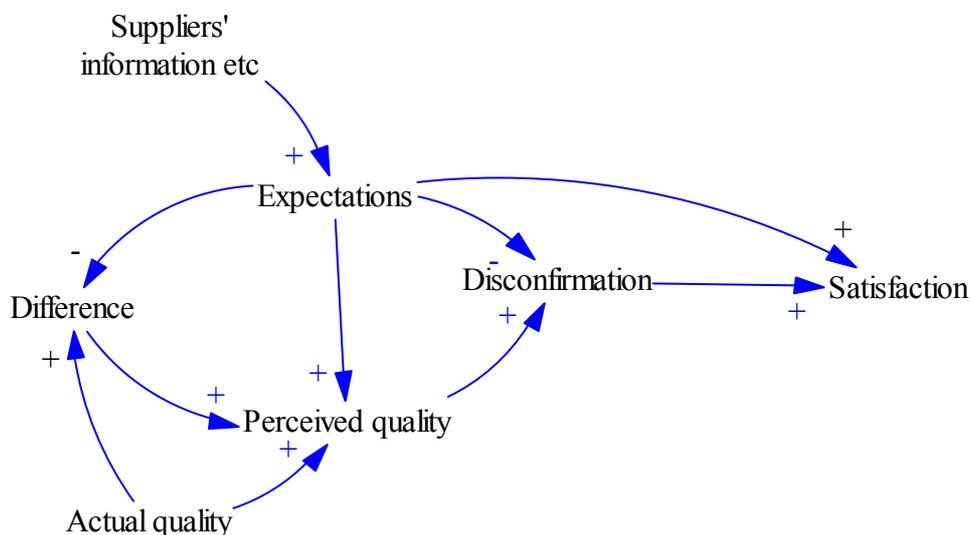


The model operates as follows (Oliver 1980): prior to purchasing a product or service, consumers form expectations based, for example, on information from the supplier, other consumers, or prior experience. On consumption of the firm's offering, the consumer develops a perception of the quality level of the product or service. This perception is influenced by prior expectations if the difference between actual quality and expectations is small: that is, the perceived level will be assimilated by expectations if the difference is small. Perceived quality will confirm or disconfirm pre-purchase expectations, forming either a positive or negative disconfirmation. Satisfaction is then related to expectations, perceived quality and disconfirmation. Thus, if disconfirmation occurs, customer satisfaction decreases from the 'anchor' level established by expectations.

An influence diagram for this model may be developed as in Figure 2.

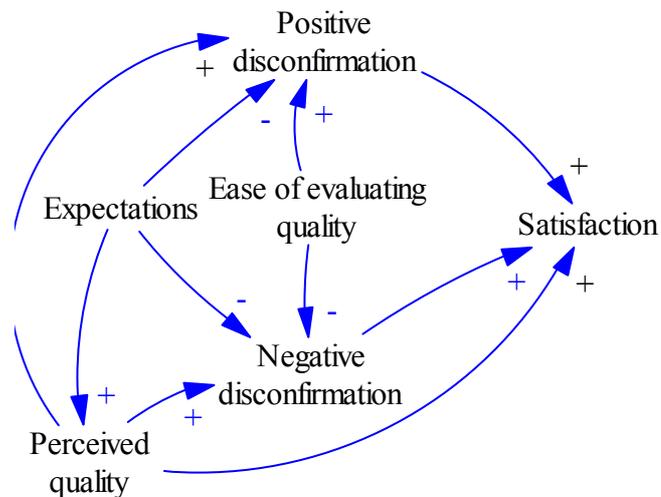
**Figure 2**

**Influence diagram for the expectancy-disconfirmation paradigm**



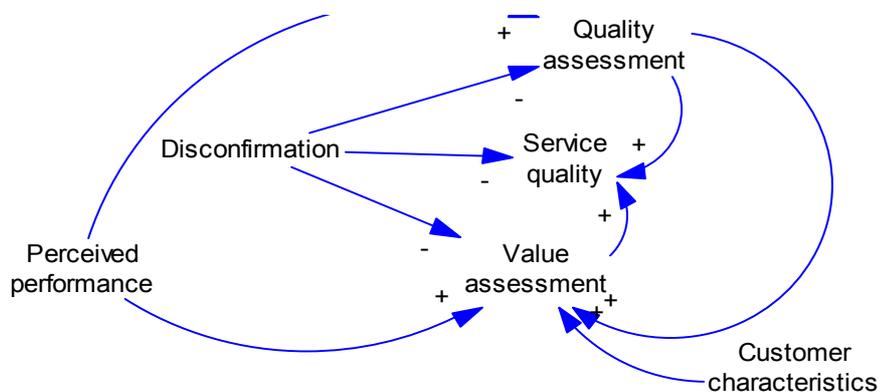
This model is used extensively in the customer satisfaction/service quality literature. This linear modelling approach is replicated in most of the customer satisfaction / service quality studies. For example, investigating both antecedents and consequences of customer satisfaction, Anderson and Sullivan (1993) concluded that satisfaction, at the firm level, is best specified as a function of perceived quality and disconfirmation, and that expectations do not directly affect satisfaction. Their research also showed that ease of evaluating quality influenced the degree of disconfirmation, and that negative disconfirmation affected satisfaction more strongly than positive disconfirmation. Linking satisfaction to repurchase intentions, they found that the elasticity of repurchase with respect to satisfaction was lower for firms that provide high satisfaction. An influence diagram for the Anderson and Sullivan model is shown in Figure 3:

**Figure 3**  
**Influence diagram for the Anderson and Sullivan model**



Similarly, Bolton and Drew developed a multistage model of customers' assessments of their telephone service, comprising development of customer perceptions of service performance, service quality and value. (Bolton and Drew 1991). They found that customers' assessment of quality and value were primarily a function of disconfirmation. Also, disconfirmation was found to affect value directly as well as indirectly through quality, thus was a more important construct in assessing value than quality. Perceived performance also had an important direct effect on both quality and value. Figure 4 depicts their conclusions in influence diagram form:

**Figure 4**  
**Influence diagram for the Bolton and Drew model**



## DISCUSSION

Examination of the influence diagrams above reveal one clear point of commonality: they are all open-loop; that is, no feedback paths exist among the constructs. This may explain some of the anomalies existing in the research literature. While some studies have found a direct or inferred relationship between customer satisfaction and firm profitability (LaBarabera and Mazursky 1983; Reichheld and Sasser 1990; Anderson et al. 1993; Rust et al. 1993), other results have indicated that satisfaction beyond a certain threshold is not necessary (Fornell 1992; Anderson et al. 1994). The relationship among these constructs is also confounded by other factors (Storbacka et al. 1994). Thus, it is possible for the quality of service provided to be high, customer satisfaction to be low yet the customer is retained. Similarly, it is possible for the quality of service to be low resulting in low customer satisfaction, yet the customer may be retained, perhaps due to geographical constraints or lack of competitors. Storbacka et al (1994) discuss some of these counter-intuitive examples, introducing the concept of ‘bonds’ that retain customers in spite of unsatisfactory service.

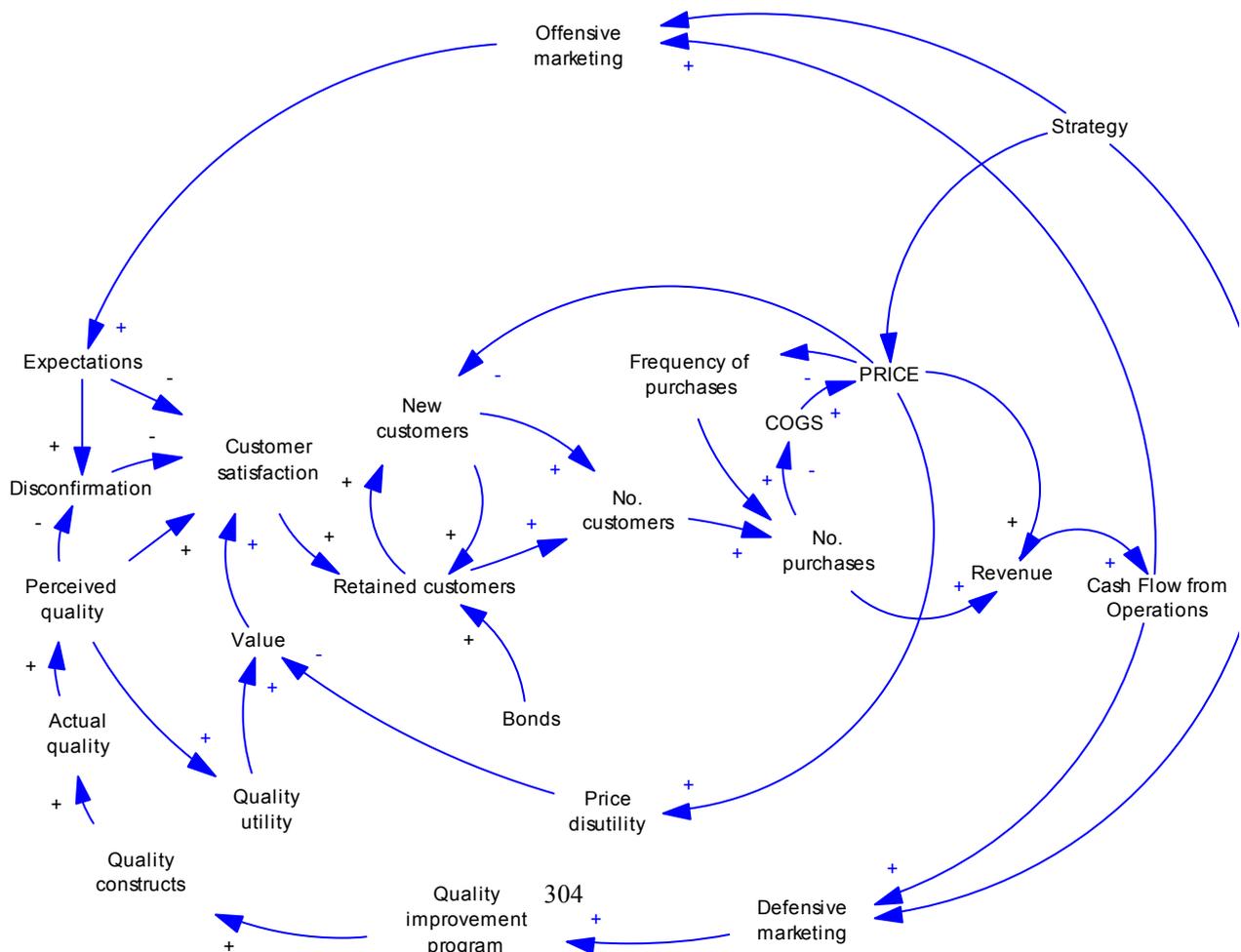
In addition to the binding factors, value – separate from satisfaction - is an important construct in determining whether a customer is retained (Bolton et al. 1991). Clearly, in the face of a price rise, customer will reconsider their allegiance to a particular firm in spite of their previous satisfaction with the firm’s offering. When assessing retention, therefore, value must be considered an influencing factor.

Finally, a customer may be retained by the firm yet provide little or no contribution to profit. For example, Storbacka (1994) quotes earlier research that concluded that as few as 10% of the customer base may be contributing up to 100% of the firm’s profits. In a study of retail banking, customer satisfaction was higher among the most unprofitable customers (Storbacka and Luukinen 1994).

A causal loop diagramming approach will allow these and other confounding issues to be examined. By developing the complete system structure, this approach will reveal the existence of competing strategies for profit improvement. It is unlikely that a generic systems dynamic model could be developed, rather each industry, or even each company, will need to develop a model for their purpose. The influence diagram in Figure 5 presents one suggested approach.

Figure 5

Influence diagram for a conceptual model of the customer satisfaction-firm profitability relationship



The above influence diagram emphasises the complexity, through the existence of feedback loops, of the customer satisfaction – profitability system. Revenue influences the amount of cash flow from operations - the major source of possible funds for quality improvements and actual quality (both product and the service quality), and, hence, customer satisfaction. Although not shown, service quality will include the service environment – including employee satisfaction/dissatisfaction - and service delivery. Both actual quality and price influence, in a non-linear manner, value and, in turn, customer satisfaction. Revenue also supplies the funds for offensive marketing directed at attracting new customers, rather than retaining present customers. Thus, while profitability is clearly influenced by revenue and, in turn, customer retention and customer satisfaction, these latter variables are also influenced by revenue and the manner in which revenue is allocated among various conflicting strategies. The link from customer satisfaction to profitability is not linear and may be investigated in a more thorough way by the application of systems thinking.

To advance this research, it may be useful to discuss the development of a similar model with a number of organisations. This, by itself, will permit each organisation to develop greater insights into the drivers of customer satisfaction in their market. It should also be possible to construct a system dynamics model that will permit investigation of various customer satisfaction strategies. Through simulation, each organisation will be able to develop policies for meeting their objectives, be they customer oriented or simply profit

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