Perceived service quality and customer satisfaction: A fuzzy set QCA approach in the railway sector☆

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A R T I C L E   I N F O

A B S T R A C T

This study investigates whether different combinations of service quality dimensions affect customer satisfaction. The study uses an extension of SERVQUAL with dimensions specific to the railway industry: comfort, connection, and convenience. We use a fsQCA to examine the responses from an online survey of 352 railway customers. The results show that three different combinations of the service quality dimensions lead to overall customer satisfaction. These combinations contain at least two of the three dimensions specific to the railway industry: comfort, connection, and convenience. Furthermore, the combination of comfort and connection alone captures higher customer satisfaction.

1. Introduction

Service quality is linked to several customer outcomes: customer satisfaction, attitudinal loyalty, and purchase intentions. However, no consensus exists on the statistical significance, direction, or magnitude of the effects of service quality on such outcomes (Carrillat, Jaramillo, & Mulki, 2009). Specifically, when studies assess the relation between service quality and satisfaction, their results are inconsistent. While some studies report a strong effect (e.g. Gotlieb, Grewal, & Brown, 1994), others find a much weaker effect (e.g. Zhou, 2004). Carrillat et al. (2009) summarizes 161 effects in 86 studies by using a meta-analysis that they combine with structural equation modelling. The authors find that service quality has a large effect on satisfaction.

Two models dominate the research on the quality of service. The first model, SERVQUAL (Parasuraman, Zeithaml, & Berry, 1985, 1988), is based on the theory of disconfirmation of expectations and relies on the gap between the customer's expectations about a given service and the evaluation of the perception about the service. The SERVQUAL is a multidimensional approach that uses the dimensions of assurance, empathy, reliability, responsiveness, and tangibles. The second model, the SERVPERF approach (Cronin & Taylor, 1992), assumes that the quality of service only needs to be measured by using the customers' perception of quality. The latter is a one-dimensional approach. Both models attest to the existence of a relation between the quality of service and customer satisfaction.

Several authors have compared the two models in order to identify the superiority of one over the other. There are favorable arguments for each of these positions, and Parasuraman, Zeithaml, and Berry (1994) show that both have similar predictive power.

Cavana, Corbett, and Lo (2007) highlight the need to further explore the application of the SERVQUAL instrument on the railway transport industry. While a number of studies exist on the quality of rail passenger service (Drea & Hanna, 2000; Hanna & Drea, 1998; Tripp & Drea, 2002), there is still room for more research that applies SERVQUAL. Cavana et al. (2007) develop and empirically test an adaptation of the SERVQUAL scale to the context of the rail service industry that has three new dimensions (comfort, connection, and convenience). Several authors have emphasized that modifying the SERVQUAL scale to improve its usefulness in different contexts and research settings is beneficial (Carrillat et al., 2009).

Hence, the objectives of this study are twofold: (1) to further investigate the relation between the perception of service quality and overall satisfaction in the railway industry by using the model developed by Cavana et al. (2007); (2) to evaluate the relation between perceived service quality and overall satisfaction with a fuzzy-set Qualitative Comparative Analysis (fsQCA) (Ragin, 2006, 2008, 2014). The fsQCA is an adequate approach to unravel complex causal structures (Wu, Yeh, Huan, & Woodside, 2014) through the assumptions of equifinality, multifinality, conjunctural causation, and asymmetric causality (Basedau & Richter, 2014). This study examines whether different combinations of service quality dimensions can result in high customer satisfaction in the quality of passenger rail service.

The study uses a mixed-methods approach with a multiple regression analysis (MRA) and the fsQCA (Ragin, 2008). The findings of the MRA indicate that assurance, reliability, comfort, and connection explain high overall customer satisfaction. The regression analysis shows only symmetric relations between the dependent and independent variables that indicate that high values of the independent variables are both necessary and sufficient for high values of the dependent variable to occur, and vice-versa (Woodside, 2013). This symmetric approach cannot account for asymmetric relations, one of the fsQCA's advantages. An asymmetric relation indicates that "high values of X are sufficient for high values of Y to occur but high values of X are not necessary for high values of Y to occur; high values of Y occur when values of X are low, indicating that additional 'causal recipes' (i.e., simple and complex X statements) associate with high values of Y" (Woodside, 2013, p. 464). This study extends the research by investigating how railway services can achieve high overall customer satisfaction through quality service by testing different configurations of its dimensions. Further, it builds on the literature on the fsQCA and shows the advantages of this method in understanding causal relationships by highlighting information that is unique when compared with information from conventional correlational methods (Fiss, 2011; Woodside, 2013; Woodside & Zhang, 2013). This study also shows how this technique can complement correlational techniques by providing a more holistic, combinatorial perspective of the inter-relations between the dimensions of service quality and customer satisfaction.

2. Literature review

2.1. Customer satisfaction

While some authors associate the concept of satisfaction with a game between expectations and the performance of a company, others consider it related to the attitudes and behaviors of customers (Oliver, 1980). "Satisfaction with the actors is regarded as an attitudinal construct that reflects positive evaluation and perceptions of the quality and skill of the acting" (Garbarino & Johnson, 1999, p. 72), where actors are perceived as collaborators. Here, for clients with strong relationships with the company and those with weak relationships, all of the components of a service (characteristics of employees, familiarity with stakeholders, physical environment, among others) will influence the degree of customer satisfaction. According to Anderson, Fornell, & Lehmann (1994, p. 54), overall satisfaction is, therefore, "an overall evaluation based on the total purchase and consumption experience with a good or service over time."

San Martín Gutiérrez (2006) claims that the construct of satisfaction has evolved from a cognitive-based consideration to a cognitive-emotional consideration. The construct of overall satisfaction is still widely used to assess an overall evaluation based on the total accumulated experiences with the company, service, or product in a sustainable way, which means an expanded time frame (Anderson et al., 1994).

2.2. Perceived service quality

The research shows that perceived service quality is an antecedent of customer satisfaction (Caruana, 2002; Cronin & Taylor, 1992; Parasuraman et al., 1988). For Parasuraman et al. (1985), the quality of service is the difference between the expectations of the customers and their perceptions of the performance of the service. In line with this, Parasuraman et al. (1988) developed SERVQUAL that is a scale with five dimensions to assess service quality: tangibles, reliability, responsiveness, assurance, and empathy (for a concise definition of each of the five dimensions see Table 1).

Table 1
SERVQUAL dimensions definition.

Dimensions	Definition
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence
Empathy	Caring, individualized attention the firm provides to its customers
Reliability	Ability to perform the promised service dependably and accurately
Responsiveness	Willingness to help customers and provide prompt service
Tangibles	Physical facilities, equipment, and appearance of personnel

Source: Parasuraman et al. (1988).

This method use these dimensions to measure the gap between the expectations and the perceptions of customers. Parasuraman et al. (1988) claim that SERVQUAL leads to an understanding of the priorities for improving service quality because it captures the relative importance of the five dimensions in influencing customers' overall perceptions of service. On the other hand, Cronin and Taylor (1992) assert it is enough to evaluate the perceptions of the customers about the performance of the service. The authors developed the SERVPERF scale. In SERVPERF, the focus is only on the true performance of the service through the perceptions of the customers, thus discarding any attempt to use the expectations of the customers in the measurement of service quality. Cavana et al. (2007) consider SERVQUAL as the appropriate measuring instrument to assess service quality in the public transport industry, since they consider it "more humanistic, or customer oriented" (Cavana et al., 2007, p. 11). The authors extend the SERVQUAL instrument to make it more suitable for evaluating rail passenger service by adding three more dimensions: comfort, connection, and convenience. These three dimensions combine two different features of measuring service quality in the rail industry:

> The traditional measures in public transportation industry lack information about the underlying perception of customers, while the SERVQUAL model is too service-oriented and lacks information about the service offering. Therefore the combination of the dimensions from these two different aspects of measuring service quality could increase the understanding of the quality construct for the railway service sector (Cavana et al., 2007, p. 11).

Based on the literature review this study proposes:

Proposition 1. Distinct configurations of causal conditions (assurance, empathy, reliability, responsiveness, tangibles, comfort, connection, and convenience) are equifinal in achieving high overall customer satisfaction.

Proposition 2. The comfort, convenience, and connection dimensions in different combinations are sufficient to predict high overall customer satisfaction in the rail industry, but each one alone is not sufficient because customer satisfaction is influenced by different quality dimensions of the service.

3. Methods

3.1. Data collection

The target population of this study are customers of the Portuguese railway company that travel by train at least once a year. The study uses an online and face-to-face self-administered questionnaire. The