RESEARCH ARTICLE

The Link between Customer Satisfaction and Loyalty: The Moderating Role of Customer Characteristics

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This research examines whether trust and commitment mediate the extent to which satisfaction influences loyalty, and whether such mediation is conditional on certain demographic or situational customer characteristics. The findings suggest that assuming homogeneity supports the general notion that trust and commitment partially mediate the extent to which satisfaction influences loyalty. FIMIX-PLS and PLS-MGA analyses substantiate that this mediation differs between two distinct customer segments. The two segments reveal heterogeneity in how trust and commitment partially mediate the link between satisfaction and loyalty. That is, the effect of satisfaction on loyalty is fully mediated by trust and commitment in the segment of customers with high education, whereas satisfaction is partially mediated by trust, but not by commitment, in the other segment of customers with less education.

Keywords: loyalty, satisfaction, trust, commitment, PLS-SEM, moderation

1. Introduction

Customer loyalty remains an important strategic objective for managers. In the substantial research devoted to establish how to improve customer loyalty, a variety of factors show up as possible drivers of loyalty, but customer satisfaction remains the predominant one (e.g., Anderson & Sullivan, 1993; Chandrashekaran, Rotte, Tax, & Grewal, 2007; Szymanski & Henard, 2001). This view is mirrored in marketing practice: Marketers far and wide put approaches in place to segment customer markets with an ensuing targeting strategy and tailored marketing investments to boost customer satisfaction. Marketers expect these strategic marketing initiatives to strengthen customer loyalty so that revenues and profitability increase (Kumar, Pozza, & Ganesh, 2013; O'Sullivan & McCallig, 2012), future net cash flow grows (Fornell, Mithas, Morgeson, & Krishnan, 2006), and overall market performance improves (Anderson, Fornell, & Lehmann, 1994; Anderson, Fornell, & Mazvancheryl, 2004; Raithel,

Sarstedt, Scharf, & Schwaiger, 2012)).

However, Kumar et al. (2013) argue that the link between customer satisfaction and customer loyalty is not as strong as commonly presumed. Several studies suggest that customer characteristics, such as gender, age, and education, condition the relationship between satisfaction and behavioral outcomes such as loyalty (Cooil, Keiningham, Aksoy, & Hsu, 2007; Homburg & Giering, 2001; Mägi, 2003; Mittal & Kamakura, 2001). Findings are inconsistent, however: For instance, while Lee and Kyle (2014) argue that age and education explain differences, Cooil et al. (2007) imply that these two characteristics do not matter. Thus, whether such customer characteristics condition the relationship between customer satisfaction and loyalty remains unclear.

Although satisfaction is presumed to affect customer loyalty, it is important to consider other factors that possibly also play a role in explaining differences in customer loyalty. Despite some diversity in the studies that have explored additional constructs, it is widely accepted that commitment and trust matter. Authors such as Garbarino and Johnson (1999), Moorman, Deshpandé, and Zaltman (1993), and Morgan and Hunt (1994) specifically emphasize that the effect of satisfaction on loyalty is probably not just direct, but also indirect through the mediating constructs customer commitment and trust. An assessment of whether certain customer characteristics condition the relationship of customer satisfaction with loyalty should therefore not disregard the mediating roles of commitment and trust.

This study seeks to understand whether the extent to which satisfaction, commitment or trust explain differences in customer loyalty can be attributed to identifiable customer characteristics. This is important for the following two reasons: First, marketers cannot tailor their marketing initiatives to customer segments unless the latter can be clearly identified. Second, to invest marketing resources effectively and

thus ensure the best possible return, it is crucial to understand how satisfaction, commitment, or trust is of consequence in a targeted segment.

The approach employed to establish possible segments that may differ in how satisfaction, commitment, or trust explain variations in customer loyalty draws on finite mixture partial least squares structural equation modeling (FIMIX-PLS; Hahn, Johnson, Herrmann, & Huber, 2002). FIMIX-PLS is an almost standard approach when dealing with unobserved heterogeneity. Initially developed by Hahn et al. (2002) and later improved by Sarstedt, Becker, Ringle and Schwaiger (2011), this approach applies the mixture regression concept to simultaneously assign observations to segments and estimate segment-specific parameters. This is followed by an ex post analysis to assess whether the set of customer characteristics considered in the study includes a suitable explanatory factor that describes the partitioning solution. The identification of an explanatory factor that transforms unobservable heterogeneity into observable heterogeneity is necessary to distinguish identifiable segments, which are subsequently examined employing PLS multigroup analysis (PLS-MGA; Sarstedt, Henseler, & Ringle, 2011).

The next section describes the conceptual arguments and elaborates on the possible role that customer characteristics may play in the direct and indirect effects of satisfaction, commitment, and trust on customer loyalty. The third section outlines the empirical setting and testing procedure, while the fourth one reports the results. The paper concludes with a discussion and conclusions.

2. Conceptual background

Customer loyalty comprises attitudinal and behavioral aspects (Han, Kwortnik, & Wang, 2008; Jacoby & Chestnut, 1978) that are influenced by evaluative and relational factors (e.g., Hennig-Thurau, Gwinner, & Gremler, 2002; Oliver, 1999). The main

evaluative factor is satisfaction, which is presumed to best explain customer loyalty (e.g., Fornell, Johnson, Anderson, Cha, & Bryant, 1996). Relational factors, which explain customer loyalty, include commitment (Fullerton, 2003; Moorman et al., 1993; Morgan & Hunt, 1994; Pritchard, Havitz, & Howard, 1999) and trust (Dwyer, Schurr, & Oh, 1987; Garbarino & Johnson, 1999; Moorman et al., 1993; Morgan & Hunt, 1994). Satisfaction, trust, and commitment are therefore expected to directly affect customer loyalty (see Figure 1). Trust and commitment are assumed to partially mediate the relationship between satisfaction and loyalty, and trust is also an antecedent to commitment. Although these relationships have been substantiated in prior studies, in the following we elaborate on them and advance hypotheses before outlining whether customer characteristics condition these relationships.

Figure 1 here

2.1. The roles of satisfaction, trust and commitment

2.1.1. Satisfaction

A common conceptualization of satisfaction concerns 'an overall evaluation based on the total purchase and consumption experience with a good or service over time' (Anderson et al., 1994, p. 54; Oliver, 1980). Many studies provide evidence of the strong and direct link of satisfaction with loyalty; which is consistent with the notion that overall evaluations (i.e., satisfaction) influence customer behavior (Anderson & Mittal, 2000; Fornell et al., 1996).

Satisfaction is multidimensional (Yi, 1990) and reflects the overall evaluation of satisfaction by means of all the components that customers experience in a customer

relationship (Mittal, Ross Jr, & Baldasare, 1998). Since satisfaction develops over time, it usually mediates customer experiences with product quality, service quality, and price, as well as their effect on loyalty (Bolton & Lemon, 1999; Fornell et al., 1996). The product, its price, and the experienced service are the sources of customer satisfaction and, thus, comprise the latent construct of staisfaction.

2.1.2. Trust

Trust captures customers' confidence in the quality and reliability of products and services that a company offers (Garbarino & Johnson, 1999). Past experiences and prior interactions with a company and its products allow trust to develop (Rempel, Holmes, & Zanna, 1985; Delgado-Ballester & Munuera-Alemán, 2001). Customers' trust in a company and its offerings is based on positive experiences that manifest themselves in satisfaction evaluations (Moorman et al., 1993). Overall satisfaction leads to trust, because it is indicative of a company's consistency in fulfilling its promises (Delgado-Ballester & Munuera-Alemán, 2001; Ganesan, 1994; Selnes, 1993). Studies also show that trust produces loyalty (Anderson & Weitz, 1989; Doney & Cannon, 1997; Morgan & Hunt, 1994). Although there are inconsistent findings (e.g., trust influencing satisfaction, e.g., Hennig-Thurau et al. (2002)), in line with Chaudhuri and Holbrook (2001) and Harris and Goode (2004), we posit that trust partially mediates the relationship between satisfaction and loyalty.

2.1.3. Commitment

Commitment, which denotes an enduring desire to maintain a valued relationship (Moorman et al., 1993), is a consequence of trust. This relates to the potential vulnerability and sacrifice resulting from commitment and which is based on the assumption that customers are unlikely to be committed if trust has not been established

(Garbarino & Johnson, 1999). Commitment is thus an outcome of trust, but also of satisfaction. Satisfaction reflects positive experiences with a company as well as its products and services, which will eventually create commitment-inducing emotional bonds (Hennig-Thurau et al., 2002).

Commitment and loyalty are closely related, but distinct, constructs. Commitment captures the relationship strength or stickiness (Gustafsson, Johnson, & Roos, 2005), whereas loyalty reflects the attitudes and behaviors that commitment evokes (Han et al., 2008). An emotional and calculative attachment, that is commitment to a company, should result in behavioral loyalty (Han et al., 2008). Empirical research in the services context supports the notion that commitment influences loyalty directly (Hennig-Thurau et al., 2002; Pritchard et al., 1999).

Commitment is, however, hierarchical by nature with affective and calculative dimensions (Fullerton, 2003; Gundlach, Achrol, & Mentzer, 1995). Affective commitment refers to an emotional bond based on the extent of reciprocity, or of a customer's personal involvement with a company (Garbarino & Johnson, 1999; Gustafsson et al., 2005; Morgan & Hunt, 1994). Calculative commitment relates to the rational bond between a customer and a company due to the product or service benefits based on economic dependence, such as switching costs (Anderson & Weitz, 1992; Dwyer et al., 1987; Gustafsson et al., 2005). To date, only a few studies (e.g., Davis-Sramek, Droge, Mentzer, & Myers, 2009; Han et al., 2008) distinguish between the two commitment dimensions. However, many studies model commitment as a global construct, which usually only comprises affective factors. Moreover, those studies that distinguish between the two dimensions (e.g., Bansal, Irving, & Taylor, 2004) model the two latent variables as independent endogenous variables. Nevertheless, it is advantageous to consider both affective and calculative commitment as the

determinants of overall commitment: If the overall construct is comprised of these two dimensions, this represents a hierarchical component construct with affective and calculative commitment as first-order constructs.

In line with the above and prior research, the following four hypotheses outline how satisfaction, trust, and commitment should directly and/or indirectly relate to customer loyalty.

H1: Customer satisfaction is positively associated with customer loyalty.

H2: Trust mediates the relationship of customer satisfaction with loyalty.

H3: Trust is positively associated with customer commitment.

H4: Commitment mediates the relationship of customer satisfaction with loyalty.

2.2. The role of customer characteristics

Noteworthy research suggests that customer characteristics moderate the relationship between satisfaction and behavioral outcomes (Baumann, Burton, & Elliott, 2005; Cooil et al., 2007; Henrique & de Matos, 2015; Homburg & Giering, 2001; Homburg, Giering, & Menon, 2003; Keiningham, Perkins-Munn, & Vavra, 2005; Lee & Kyle, 2014; Mägi, 2003; Mittal & Kamakura, 2001). Characteristics that have been studied in this context include both demographic factors (e.g., age, education, income, and gender (Cooil et al., 2007; Henrique & de Matos, 2015)) and various situational characteristics (e.g., lengths of relationship (Homburg et al., 2003), involvement (Bloemer & Kasper, 1995; Bloemer & Odekerken-Schröder, 2002; Homburg & Giering, 2001) and purchase volume (Mägi, 2003)). Prior studies, however, provide inconsistent findings. For instance, while Mägi (2003) finds that age does not moderate the relationship between satisfaction and loyalty, Baumann et al. (2005) suggest a positive impact. Lee and Kyle (2014) subsequently find differences explained by age and education, but not by gender and income. Potential reasons for such inconsistent findings can possibly be attributed

to mediating factors (i.e., commitment and trust) not being taken into account and the limited number of possible relevant customer characteristics included in these studies.

To deal with the latter, we consider a somewhat comprehensive set of factors that may possibly explain customer heterogeneity in this study's gasoline retailing empirical setting. We investigate several demographic characteristics (gender, age, income, education, family size, and marital status) and some situational ones (purchase frequency, branded versus no-frills, purchase reason, driving behaviors, and driver attitudes, such as those towards the environment and brands). Owing to the previously mentioned inconsistent findings regarding the extent to which such characteristics influence the relationship of customer satisfaction with loyalty, and to the lack of coherent theoretical explanations to explicate the potential roles of such a set of demographic and situational characteristics, we refrain from articulating detailed hypotheses that capture the roles of certain individual characteristics. Instead, we present a generic hypothesis:

H5: Demographic or situational customer characteristics condition the relationships of satisfaction, trust and commitment with customer loyalty.

3. Empirical setting and testing procedure

As already mentioned, this study focuses on the gasoline retailing setting to empirically assess the hypotheses posited in this paper. This is appropriate for two reasons: First, not only is it relevant for gasoline retailing firms to understand why customers differ in the loyalty they display, but this setting also allows an examination of the manifold demographic and situational customer characteristics that may explain differences in the relationships that satisfaction, trust, and commitment have with loyalty. Second, this setting is unique, because it concerns a somewhat homogeneous goods context - gasoline. Yet, there is very limited research concerning homogeneous products; a

setting, which because of very low switching costs, is of particular interest when studying customer retention.

3.1. Sample and data description

The research design draws on a random sample of 2,653 individuals in a major European country. The data collection procedure is based on face-to-face interviews. Owing to an initial screening, the study includes only those individuals who specified that they had purchased gasoline within the previous three months and who frequently purchased gasoline at branded gasoline outlets, and excludes business customers. This yields a valid dataset of 749 respondents. A comparison of these respondents' demographic characteristics with those of the country's adult population (in 2013) confirms similarities (with only minor differences). A total of 51.0% of the respondents are female, compared to 48.9% in the real population. With regard to age, 35.2% of the respondents are between 18 and 39 years old (29.7% in the population), 37.4% are between 40 and 59 years (38.1%), and 27.4% are older than 60 (32.2%).

3.2. Measures

We adapt established measures to gauge customers' perceptions of satisfaction, commitment, trust, and loyalty towards gasoline retailers. To avoid response bias, some items are measured on different scales; all are rescaled to a 1-100 rating scale. Table 1 depicts all the constructs and their respective measurement items. General model specification rules for structural equation modeling require the use of reflective measures for endogenous latent variables, if the model contains formative exogenous variables to ensure model identification (Diamantopoulos, 2006). As a result, we use a reflective measurement scale to capture the endogenous variable loyalty.

Table 1 here

We instructed all the interviewees that, when responding to each of the questions, they should only keep the gasoline outlet they last visited in mind. To encompass the attitudinal and the behavioral aspects of loyalty (Chaudhuri & Holbrook, 2001), we include the proportion of purchases at the respective site and the respective brand as behavioral aspects (Pritchard et al., 1999). We assess the intention to recommend (Zeithaml, Berry, & Parasuraman, 1996), the likelihood of a repeat purchase, and the intention to remain loyal to measure the attitudinal elements (Sirdeshmukh, Singh, & Sabol, 2002). Trust is also measured reflectively using three items (trustworthiness, caring for customers, and high-quality products), which draw on those suggested by Doney and Cannon (1997) and Garbarino and Johnson (1999). We adapt items from Gustafsson et al. (2005) and Davis-Sramek et al. (2009) for the two formative commitment dimensions. The items for affective and calculative commitment are tailored to fit the gasoline-retailing context (e.g., Shin, Kalinowski, & Kim, 2010). Overall customer satisfaction is operationalized by drawing on satisfaction judgments with certain attributes. Since this study focuses on the gasoline-retailing context, the items relate to attributes that concern the product (gasoline), price, as well as the customer service and self-service options available at the site. Based on factor analysis, two items are selected for product satisfaction, two for price satisfaction, eight for customer service satisfaction, and seven for satisfaction with the services at the site (see Table 1 for individual items). Satisfaction and commitment are hierarchical component PLS models, because each of these higher-order constructs has multiple latent variables as lower-order subcomponents (Jarvis, MacKenzie, & Podsakoff, 2003; Lohmöller, 1989; Ringle, Sarstedt, & Straub, 2012). We use formative-formative hierarchical-order

models and a two-stage approach for the constructs and their lower-order components (Becker, Klein, & Wetzels, 2012; Ringle et al., 2012; Wetzels, Odekerken-Schroder, & Van Oppen, 2009). This specification relates to Jarvis et al.'s (2003) Type IV model, which uses formative first-order factors to measure dimensions and formative second-order factors to measure the respective constructs.

3.3. Testing procedure

This study applies partial least squares structural equation modeling (PLS-SEM), using the software SmartPLS 3 (Ringle et al., 2015) to assess the hypotheses. Given the essentially exploratory nature of Hypothesis 5[1], we face a type of unobserved heterogeneity, which refers to unknown groups of data (Rigdon, Ringle, Sarstedt, & Gudergan, 2011). Unobserved heterogeneity arises when there is no well-established knowledge of the effects that certain customer characteristics condition (Rigdon et al., 2011).

The procedure for assessing the hypotheses draws on three steps. The first one seeks to capture and identify unobserved heterogeneity—identifying unknown customer segments that certain customer characteristics can possibly describe—by employing finite mixture PLS (FIMIX-PLS; Hahn et al., 2002; Sarstedt, Becker, et al., 2011; Sarstedt & Ringle, 2010). As a result of this step, possible segments, if any, are identified in which some, or all, of the relationships posited in the first four hypotheses differ. A difference in the strength and/or directionality of these relationships implies that they are not homogenous, but possibly conditional on some context factors, such as

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1 Owing to the lack of coherent theoretical explanations to explicate the potential roles of certain demographic and situational characteristics, we do not specify in detail how these characteristics could potentially condition the relationships mentioned in the first four hypotheses. We therefore refer to an essentially exploratory nature.

the customer characteristics. The second steps seeks to explain whether the discovered latent customer segments can be described using one or more of the observable customer characteristics. This enables identification of whether any of the measured demographic or situational customer characteristics possibly conditions one or more of the relationships posited in the first four hypotheses. PLS-SEM multigroup analysis serves in a third step to examine whether a single or several of the identified customer characteristic condition the structural relationships (PLS-MGA; Henseler, Ringle, & Sinkovics, 2009; Sarstedt, Henseler, et al., 2011). This method allows comparing the uncovered segments and deducing separate inferences concerning the links between satisfaction and loyalty.

4. Results

The structural equation model shown in Figure 2 serves to evaluate the hypotheses empirically. This model focuses on the role of the latent constructs commitment and trust, as mediating effects on the relationship between the latent constructs satisfaction and loyalty. Figure 2 displays the structural model results. In the subsequent sections, the reflective and formative measures are assessed first, followed by examining the structural model results. The role of commitment and trust as mediators of the satisfaction-loyalty relationship is examined too. An examination of heterogeneity concludes the results section.

Figure 2 here

4.1. Measurement Model Evaluation

The assessment of the reflective measures includes an examination of the loadings, the average variance extracted (AVE), the composite reliability, and Cronbach's alpha.

Table 1 shows the results of the reflective measures. Accordingly, the empirically established constructs, loyalty and satisfaction, are reliable and valid. The use of the heterotrait-monotrait ratio of correlations (HTMT; Henseler, Ringle, and Sarstedt (2014)) serves to assess the discriminant validity. The HTMT statistic of the reflective constructs, i.e. loyalty and trust, is .435, is below the critical values (i.e., .85 or .90). By applying the HTMT inference criterion, discriminant validity between these two reflective constructs is established (i.e., the HTMT statistic is significantly below 1.00). Confirmatory tetrad analysis for PLS (CTA-PLS) also supports these measures' reflective mode (Gudergan, Ringle, Wende, & Will, 2008).

The assessment of formative measures uses a different set of criteria, namely the significance of the outer weights and the collinearity of the indicators (Hair, Hult, Ringle, & Sarstedt, 2014). The results presented in Table 1 show that the indicators of the formative measures, i.e. commitment and satisfaction, are significant and that the collinearity, determined by the variance inflation factor (VIF), is below the critical value of five. The same findings hold for the formative lower-order constructs, commitment (i.e., affective commitment and calculative commitment) and satisfaction (i.e., product satisfaction, service satisfaction, price satisfaction, and site satisfaction), as well as the formative relationships between the lower and the higher-order constructs. It is important to note that the non-significant formative indicators remain in the model, since they belong to the formative construct's domain (Hair et al., 2014).

4.2. Structural Model Evaluation

All estimations in the structural model relationships are significant (Table 2), thus validating the hypotheses. Satisfaction has the strongest relationship with loyalty (.335), followed by trust (.196) and commitment (.150). All three constructs explain more than 30% of loyalty ($R^2 = .322$). In addition, the evaluation of the structural model results

includes the predictive relevance Q^2 statistic and the effect sizes f^2 and q^2 (Hair et al., 2014). Finally, the constructs' discriminant validity (Henseler, Ringle, et al., 2014) and model fit are examined by means of the standardized root mean square residual (SRMR; Henseler, Dijkstra, et al., 2014).

The blindfolding procedure with a pre-specified distance of eight serves to obtain the cross-validated redundancy in order to determine the Q^2 statistic (Hair et al., 2014). The Q^2 statistic of loyalty (.188) is above zero; thus, the model has predictive relevance. Table 2 shows the results of the f^2 and the q^2 effect sizes. These results are all positive and show a similar rank order as the PLS path coefficients (i.e., the relationship of satisfaction with loyalty has the highest path coefficient, but also the highest outcomes of the f^2 effect size and the q^2 effect size).

Table 2 here

The SRMR is the basis to determine the model fit (Henseler, Dijkstra, et al., 2014). While an SRMR value of zero indicates a perfect model fit, a value of less than .08 reflects a good fit (Hu & Bentler, 1998). The SRMR value of .069 implies that the model has a good fit.

4.3. Mediator Analysis

Klarner, Sarstedt, Höck, and Ringle's (2013) procedure serves to analyze the two mediators (i.e., commitment and trust). First, Model 1 is estimated without the mediators (Figure 3). The remaining direct relationship between satisfaction and loyalty (.566) is strong and significant. Then, the mediator commitment is included to estimate Model 2a (Figure 3). Satisfaction's indirect effect via commitment on loyalty (.148) is significant (Table 3), while its direct effect on loyalty (.386) remains significant.

Consequently, with 27.7% of the variance accounted for (VAF), commitment partially mediates the satisfaction-loyalty relationship.

Figure 3 here

Model 2b (Figure 3) allows examining the hypothesized mediator trust. Satisfaction's indirect effect via trust on loyalty (.076) is very weak, but significant, while its direct effect on loyalty (.474) remains significant (Table 3). Even though the indirect effect is significant, the effect size of trust's partial mediation is very small, as the VAF is only 13.8%. Since this value is below the critical value of 20% (Hair et al., 2014), trust is not a mediator.

Table 3 here

Finally, the simultaneous inclusion of both constructs (i.e., commitment and trust) in the model (Model 3 in Figure 3) suggests that satisfaction's direct effect on loyalty (.335) remains significant. Furthermore, the indirect effect via commitment and trust (.189) is significant and translates into a VAF of 36.1% (Table 3). A joint consideration of commitment and trust therefore partially mediates the relationship between satisfaction and loyalty. However, since trust's mediating role is not apparent given prior analysis, commitment is the key construct that accounts for the joint mediation.

4.4. FIMIX-PLS and Multigroup Analysis

Generalization of the results to an entire population requires the absence of heterogeneity to avoid invalid interpretations (Becker, Rai, Ringle, & Völckner, 2013;

Jedidi, Jagpal, & DeSarbo, 1997). Consequently, and also because of Hypothesis 5, we examine unobserved heterogeneity. If heterogeneity is detected, the underlying groups need to be determined and group-specific solutions provided.

There are several ways of uncovering unobserved heterogeneity with PLS-SEM. While PLS prediction-oriented segmentation (PLS-POS; Becker et al., 2013) and PLS-GAS (Ringle, Sarstedt, & Schlittgen, 2014; Ringle, Sarstedt, Schlittgen, & Taylor, 2013) are examples of two new developments, FIMIX-PLS (Hahn et al., 2002; Sarstedt, Becker, et al., 2011; Sarstedt & Ringle, 2010) is still the most established approach (Hair et al., 2014; Hair, Sarstedt, Ringle, & Mena, 2012). As Ringle, Sarstedt, and Mooi (2010) recommend and following the majority of prior marketing studies (e.g., Money, Hillenbrand, Henseler, & Da Camara, 2012; Navarro, Acedo, Losada, & Ruzo, 2011; Ringle et al., 2010; Sarstedt, Schwaiger, & Ringle, 2009; Wilden & Gudergan, 2014), FIMIX-PLS is employed in this study.

With six and more segments, FIMIX-PLS only extracts micro-segments with relative segment sizes smaller than five percent. Thus, a focus on two to five pre-specified segments is more appropriate to run FIMIX-PLS. The left part of Table 4 shows the results of the relative segments' sizes.

Table 4 here

The assessment of the most suitable segmentation solution draws on applicable segment retention criteria (Table 4; right part), which, in turn, build on 20 runs per pre-specified number of segments to avoid local optimum solutions (Sarstedt, Becker, et al., 2011). The decision is not straightforward, since the different criteria values suggest non-uniform numbers of segments. While AIC and AIC3 have a clear over-

segmentation tendency, BIC and CAIC show strong under-segmentation characteristics (Sarstedt, Becker, et al., 2011). Since AIC and AIC3 point to five segments and BIC and CAIC to three segments (Table 4), a four-segment solution appears feasible. However, the relative difference between the retention criteria values of the different numbers of segments is relatively small. The only exception is the normed entropy (EN) criterion, which clearly shows the best outcome with two segments (.81), and decreases considerably with higher segment numbers. The higher EN criterion values—with a maximum value of one—indicate the segments with better separability. This characteristic is important for FIMIX-PLS' ex post analysis (Ringle et al., 2010; Sarstedt & Ringle, 2010). In comparison with the other solutions—specifically for the two-segment solution—we obtain segment-specific distinct and significantly different PLS-SEM results (Table 5). This two-segment solution is suitable in terms of substantiality, differentiability, plausibility, and accessibility (Becker et al., 2013).

Table 5 shows the FIMIX-PLS results of the two-segment solution. That one reveals one large segment with a relative segment size of .74. This segment has similar outcomes to those of the PLS-SEM analysis when the aggregate data set is used. Furthermore, a smaller segment emerges with a relative segment size of .26, but which shows significantly different PLS-SEM results. The construct trust plays an important role in the small segment, Segment 2, because it has particularly strong effects on commitment (.962) and on loyalty (.338). In addition, the relationship between satisfaction and trust (.909) is much stronger than that in Segment 1 (.281). In contrast, the relationship between satisfaction and commitment is not significant in Segment 2.

Further, the total effects reveal that commitment has no relevance in Segment 1 when compared with Segment 2 (.462). Satisfaction (.339) has the greatest, but relatively low, absolute impact on loyalty in this segment (Table 5). However,

satisfaction (.901), in combination with trust (.783), strongly determines loyalty in Segment 2. Segment 2's different PLS-SEM results translate into considerably higher R^2 values for commitment, loyalty, and trust. The underlying model is therefore particularly useful for explaining loyalty in Segment 2 (see Table 5).

Table 5 here

In a final step, descriptions of the two segments are derived. This is based on assigning each of the observations, based on the maximum membership probability, to one of the two groups. Thereafter, cross-table analysis regarding the demographic and situational customer characteristics serves to identify applicable descriptors (Ringle et al., 2010). Of all the characteristics, only education shows a suitable and good fit with the FIMIX-PLS segmentation results. Consequently, the data set is split into two groups. Group 1 represents individuals with a low education (LE) and Group 2 those with a high education (HE). Table 6 shows the group-specific PLS-SEM results and their differences. A double bootstrap routine determines the significance of the differences by running a PLS multigroup analysis (PLS-MGA; Sarstedt, Henseler, et al., 2011).

Table 6 here

The results show that the two segments are distinct. Satisfaction primarily determines loyalty in the LE segment (.433), whereas there is no significant direct effect in the HE segment. In the latter group, satisfaction has strong indirect effects on loyalty through commitment (.795) and trust (.445). Conversely, commitment plays no

significant role in the LE segment, while it has a strong direct effect on loyalty (.343) in the HE segment. The four satisfaction dimensions reveal further differences. In the LE segment, the most important ones are site (.439) and product satisfaction (.360), whereas satisfaction in the HE segment comprises only two significant ones, site (.683) and services (.247), but neglects product and price satisfaction.

The total effects substantiate the results of the path relationships. In the LE segment, satisfaction contributes the most to loyalty, with site (.214) and product satisfaction (.175) constituting the greatest influence. Thus, tangible aspects mainly determine loyalty in this segment; that is, those aspects that customers can observe and trace. Impalpable constructs have either a moderate impact on loyalty, such as trust (.171), or no relevance (commitment). Nevertheless, the relationship factors, i.e. affective commitment (.286) and trust (.292), largely drive loyalty in the HE segment. Customers in this segment emphasize a reliable and trusting relationship with their gasoline outlet. However, they still consider satisfaction—especially with the site (.275) and experienced services (.099)—highly relevant.

5. Discussion and conclusions

This research examines the relationship between customer satisfaction and loyalty. In doing so, it accounts for two aspects that contribute to clarifying this link. First, it explores whether trust and commitment partially mediate the extent to which satisfaction influences loyalty, and whether such mediation is homogenous across customers or not. Second, and importantly, it clarifies whether demographic or situational customer characteristics condition the relationships between satisfaction, trust and commitment with customer loyalty. Furthermore, the empirical setting is located in the context of homogeneous goods in a service environment (i.e., gasoline retailing), which is suitable but rarely considered in customer loyalty studies.

Although considering homogeneity supports the general notion that trust and commitment partially mediate the extent to which satisfaction influences loyalty, the FIMIX-PLS and PLS-MGA analyses substantiate that two distinct customer segments describe the empirical context on which this study draws. In respect of these two segments, there is heterogeneity in how trust and commitment partially mediate the link between satisfaction and loyalty. That is, the effect of satisfaction on loyalty is fully mediated by trust and commitment for one segment of customers, whereas satisfaction is partially mediated by trust, but not by commitment, for the other segment. Importantly, the analyses also reveal that, as a customer characteristic, the level of education distinguishes between these two customer segments. The impact of satisfaction on loyalty is fully mediated by trust and commitment for individuals with a high education, whereas for those with a low educations it is partially mediated by trust. The general finding that education moderates the link between satisfaction and loyalty is consistent with others studies that have examined the extent to which education influences loyalty formation (e.g., Chance & French, 1972; Keaveney & Parthasarathy, 2001; Lee & Kyle, 2014; Mittal & Kamakura, 2001; Murphy, 1978).

These insights are also of value to gasoline retailers, because their marketing managers can benefit from approaching these two customer groups with appropriate marketing activities tailored for each. For instance, they can target customers with a low education differently from the way they do those with a high education. As highly educated customers are known to have the highest defection rate (Caruana, 2002), it is important to have detailed insights into how this customer group is best tied to a particular company. A key role can be assigned to intangible relational factors, like commitment and trust, in respect of highly educated customers. They find a personal relationship important, which establishes an emotional bond based on trust and value

appreciation with the particular outlet. This bond is sufficient to maintain these customers as loyal patrons. However, rational benefits only affect this bond to a small degree, while affective brand preference matters more. Specific marketing actions should therefore enhance this emotional connection. For some customers, satisfaction only affects loyalty indirectly. Satisfaction with services offered on the site (primarily the site atmosphere) and customer service, generally, are important; but the latter to a lesser extent.

This study has some limitations which can serve as starting points for further research. Despite our best effort to include the most important factors that could possibly condition the link between satisfaction and loyalty, there might be other moderating or mediating variables that could shed light on loyalty formation. The relatively low levels of explained variance in our models indicate that there might be other factors that influence the loyalty formation process, such as customer delight (Barnes, Ponder, & Dugar, 2011). Moreover, while this research analyzed the satisfaction-loyalty relationship in respect of branded gasoline retailers, it opens up an opportunity to examine, in a comparative study, whether these relationships between branded and non-branded retailers differ in strength.

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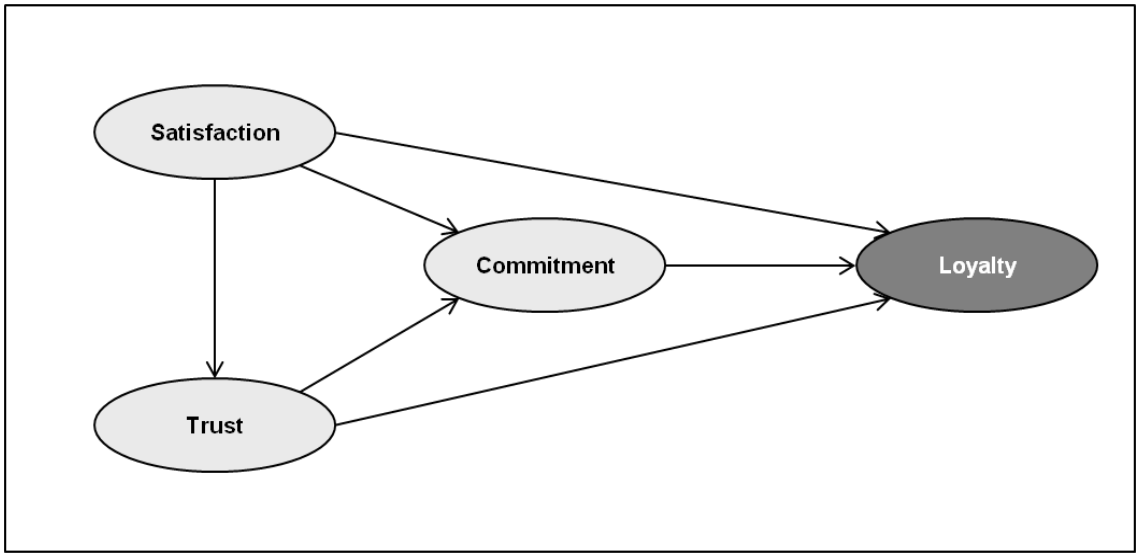

Figure 1. Overview of conceptual framework

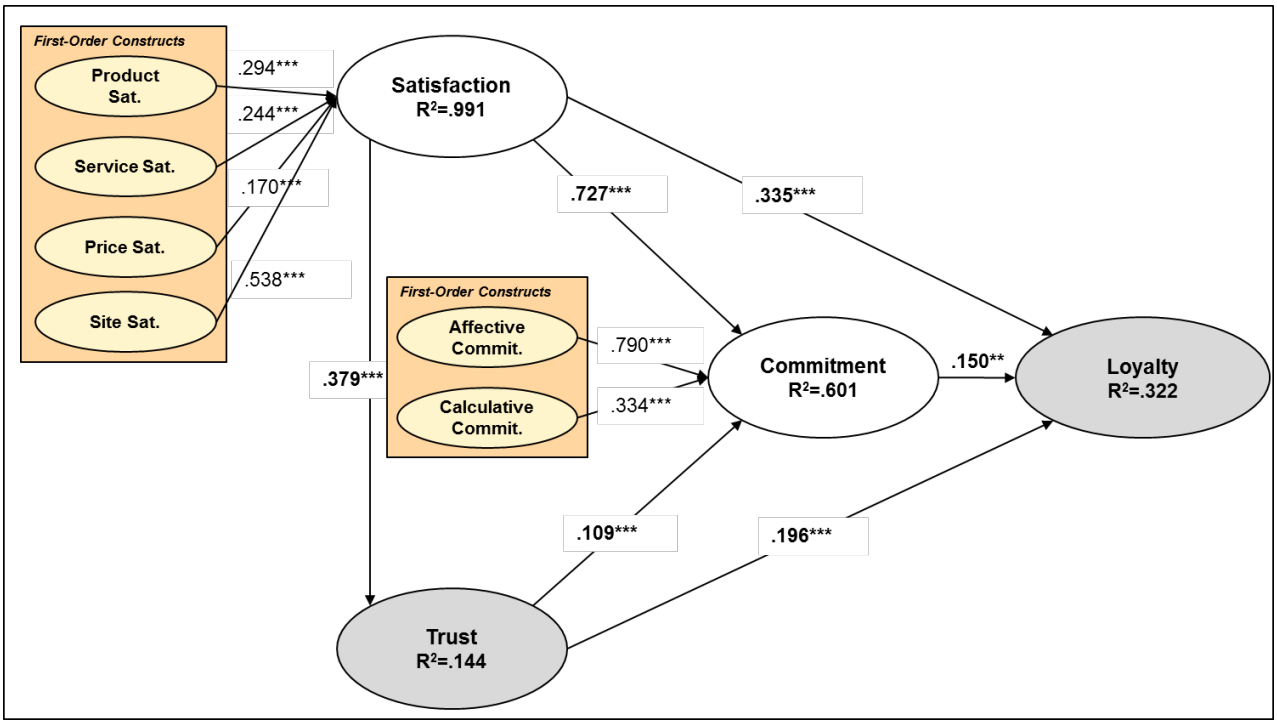

Figure 2. PLS path model and results

Note: We used a bootstrapping routine (Hair et al., 2014) with 5,000 subsamples, 749 observations per subsample, and a no sign change option to determine the significance of the path coefficients; a hierarchical component model with satisfaction and commitment as second-order constructs was used; $^{***}p < .01$, $^{**}p < .05$, $^{*}p < .10$.

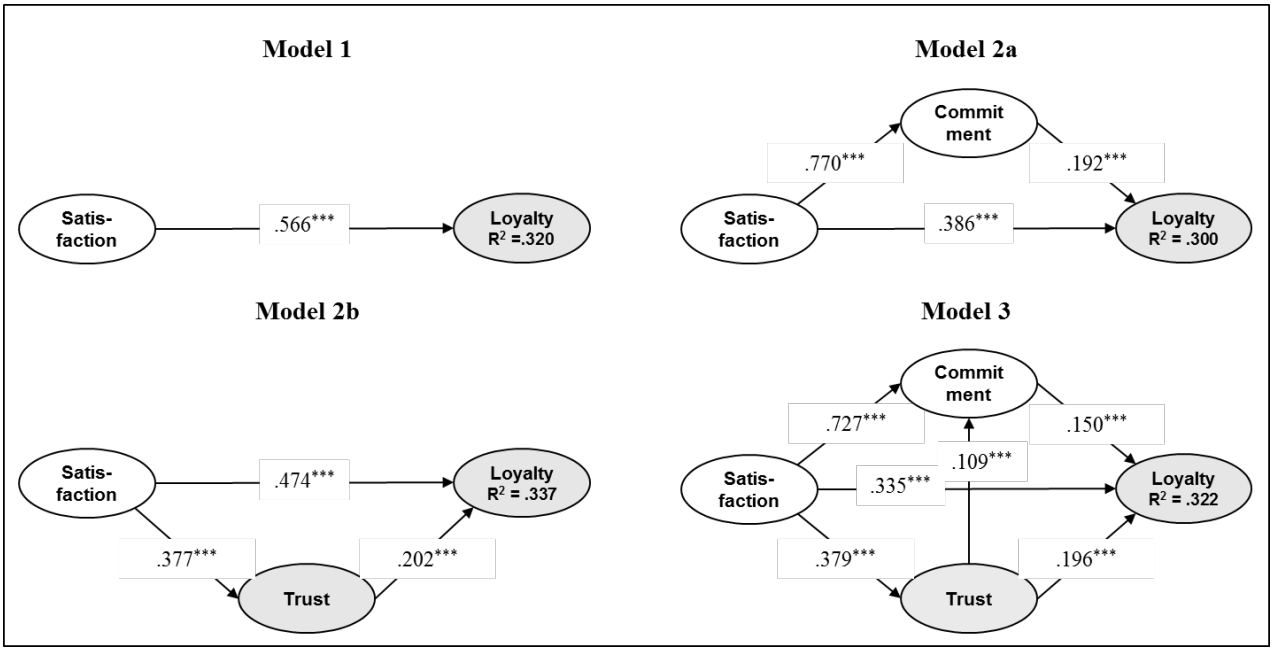

Figure 3. Mediator analysis models

Note: ***p < .01, **p < .05, *p < .10

Table 1. Measurement model results

Construct	**Item**						
Reflective Measures		Loading	Composite Reliability	AVE	Cronbach's α	Mean	Standard Deviation
Loyalty	Intention to recommend	.636***	.891	.624	.845	89.32	20.83
	Repeat purchase	.764***				72.20	23.09
	Remain loyal	.792***				88.70	15.25
	Purchase frequency site	.868***				84.28	25.13
	Purchase frequency brand	.867***				83.91	25.36
Trust	Trustworthiness	.940***	.936	.831	.898	81.59	31.22
	Customer care	.912***				85.05	29.31
	High quality products	.881***				78.88	32.64
Formative Measures		Outer Weight	VIF				
Satisfaction	Product satisfaction	.294***	1.527				
	Price satisfaction	.170***	1.182				
	Services satisfaction	.244***	1.846				
	Site satisfaction	.538***	2.038				
Commitment	Affective commitment	.790***	1.335				
	Calculative commitment	.334***	1.335				
Lower-Order (Formative) Measures		Outer Weight				Mean	Standard Deviation
Product Sat.	Gas and engine oil	.906***				60.53	33.17
	Car wash/repair shop	.158**				41.78	34.97
Price Sat.	Gas price	.019				49.87	33.37
	Value for money	.991***				59.02	22.21
Services Sat.	Overall customer friendliness	.685***				73.43	17.20
	Waiting time gas	.067				83.21	16.38
	Waiting time cash register	.031				82.19	16.07
	Friendliness of personnel	.214***				86.43	15.61
	Helpfulness of personnel	-.026				84.44	16.34
	Appearance of personnel	.100				83.66	16.43
	Availability of personnel	-.024				81.98	17.12
	Hospitableness of personnel	.214***				85.92	15.83
Site Sat.	Functionality of gas pump	.099*				86.13	16.11
	Availability of supplies	.081*				80.04	17.88
	Availability of restrooms	.058				67.74	20.43
	Availability/functionality tire gauge	.115*				80.34	16.96
	Availability of supplies at tire gauge	.107				80.03	17.42
	Shelter from weather	.097*				73.05	25.09
	Atmosphere	.749***				79.83	24.87
Affective Commitment	Feel good being a customer	.627***				76.44	30.41
	Brand is first choice	.639***				96.03	9.34
Calculative Commitment	Long opening hours	.246***				65.05	35.51
	Convenient location	.052				93.26	18.41
	Cheaper gas	-.156**				17.89	31.14
	Faster processes	.596***				63.28	36.20
	Attractive loyalty program	.617***				67.09	44.35

Notes: We used a bootstrapping routine (Hair et al., 2014) with 5,000 subsample, 749 observations per subsample, and a no sign change option to determine the significance of the path coefficients; ***p < .01, **p < .05, *p < .10.

Table 2. Measurement model results

Relationships	Path Coefficient	Bias Corrected 95%Confidence Interval	f^2	q^2
Satisfaction → Loyalty	.335***	[.225;.434]	.078	.033
Satisfaction → Commitment	.727***	[.689;.760]	1.118	.554
Satisfaction → Trust	.379***	[.325;.445]	not defined	not defined
Commitment → Loyalty	.150**	[.042;.269]	.022	.021
Trust → Commitment	.109***	[.054;.169]	.020	.012
Trust → Loyalty	.196***	[.132;.268]	.032	.026

Note: We used a bootstrapping routine (Hair et al., 2014) with 5,000 subsample, 749 observations per subsample, and the no sign change option to determine the significance of the path coefficients;. ***p < .01, **p < .05, *p < .10.

Table 3. Mediation analysis results

	Direct Effect	Indirect Effect	Total Effect	VAF	Mediation?
Model 1	.566***				
Model 2a	.386***	.148***	.534***	27.7%	Partial
Model 2b	.474***	.076***	.550***	13.8%	No/Partial
Model 3	.335***	.189***	.524***	36.1%	Partial

Notes: The hypotheses regarding the mediating effects concern the two path relationships a and b, whereby the product of path a and b represents the mediating effect (i.e., indirect effect); the total effect is the sum of the direct and indirect effects; we used a bootstrapping routine (Hair et al., 2014) with 5,000 subsamples, 749 observations per subsample, and the no sign change option to determine the significance of the path coefficients; *** $p < .01$, ** $p < .05$, * $p < .10$ (two-sided test) ; VAF = variance accounted for.

Model 1: PLS path model without a mediator
Model 2a: Model 1 with the additional mediator construct commitment
Model 2b: Model 1 with the additional mediator construct trust
Model 3: Model 1 with both the mediators commitment and trust

Table 4. Relative segment sizes and segment retention criteria for alternative FIMIX-PLS solutions

	Relative Segment Sizes						Number of Pre-Specified Segments			
	s_1	s_2	s_3	s_4	s_5	Quality Criteria	S = 2	S = 3	S = 4	S = 5
S = 2	74%	26%				lnL	**-2,411.59**	-2,354.41	-2,329.28	-2.292.91
S = 3	37%	37%	26%			AIC	4,861.18	4,766.82	4,736.57	**4,683.82**
S = 4	35%	28%	25%	12%		AIC_3	4,880.18	4,795.82	4,775.57	**4,732.82**
S = 5	37%	19%	19%	15%	11%	BIC	4,948.93	**4,900.76**	4,916.70	4,910.14
						CAIC	4,967.93	**4,929.76**	4,955.70	4,959.14
						EN	**.81**	.59	.60	.60

Table 5. FIMIX-PLS results of the two-segment solution

		Segment 1	Segment 2	$\|\Delta_{12}\|$	t-value [mga]
Relative Segment Size		.74	.26		
Path Coefficient	Satisfaction → Loyalty	.287***	.189***	.098	.483
	Satisfaction → Commitment	.713***	.015	.698	14.945***
	Satisfaction → Trust	.281***	.909***	.628	2.716***
	Commitment → Loyalty	.118	.462***	.344	2.695***
	Trust → Commitment	.095***	.962***	.867	7.535***
	Trust → Loyalty	.184***	.338*	.154	2.041***
R^2	Trust	.079	.826		
	Commitment	.555	.952		
	Loyalty	.222	.941		
Total Effects	Trust → Loyalty	.184	.783	.599	2.267**
	Commitment → Loyalty	.000	.462	.462	5.375***
	Satisfaction → Loyalty	.339	.901	.562	7.455***

Notes: The t-value [mga] uses the FIMIX-PLS membership probabilities to split the data set; the significance test of segment-specific PLS-SEM results uses a double-bootstrap routine for PLS multigroup analysis (PLS-MGA), as described by Sarstedt, Henseler, et al. (2011); ***p < .01, **p < .05, *p < .10 (reported for path coefficients only).

Table 6. PLS results of multigroup analysis based on education level

	Paths	**Low Education**	**High Education**	**|Δ|**
N		239	132	
Path Relationship	Satisfaction → Loyalty	.433***	.064	.369***
	Satisfaction → Commitment	.761***	.795***	.034
	Satisfaction → Trust	.312***	.445***	.133
	Commitment → Loyalty	.056	.343**	.287**
	Trust → Commitment	.063	.025	.038
	Trust → Loyalty	.171***	.292***	.121
	Affective Commit. → Commitment	.754***	.834***	.080
	Calculative Commit. → Commitment	.379***	.302***	.077
	Product → Satisfaction	.360***	.153	.207**
	Price → Satisfaction	.142***	.094	.048
	Services → Satisfaction	.294***	.247*	.047
	Site → Satisfaction	.439***	.683***	.244**
R^2	Satisfaction	.990	.980	.010
	Commitment	.613	.645	.032
	Trust	.097	.192	.095
	Loyalty	.310	.319	.009
AVE | Composite Reliability	Trust	.83 | .94	.80 | .92	
	Loyalty	.63 | .89	.54 | .85	
Total Effects	Trust → Loyalty	.171	.292	.121
	Commitment → Loyalty	.000	.343	.343
	Affective Commitment → Loyalty	.000	.286	.286
	Calculative Commitment → Loyalty	.000	.104	.104
	Satisfaction → Loyalty	.487	.403	.084
	Product Satisfaction → Loyalty	.175	.000	.175
	Price Satisfaction → Loyalty	.069	.000	.069
	Services Satisfaction→ Loyalty	.143	.099	.044
	Site Satisfaction → Loyalty	.214	.275	.061

*Note: ***p < .01; **p < .05; *p< .10*