

THE MEDIATION EFFECT OF INERTIA ON SERVICE DURATION

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ABSTRACT

Firms devote large amounts of resources toward customer retention practices since relationship duration is a key driver in enhancing customer lifetime value. We posit that customer inertia plays an important role in determining service duration. In analysing service duration, we incorporate inertia into existing models that feature customer satisfaction, loyalty, and switching costs. A structural equation model is used to show the effect of latent mediation effect of inertia. We find that the mediating role of inertia is significant and the latent interaction effect of loyalty and inertia on service duration is also significant.

INTRODUCTION

Firms derive revenue from the creation and sustenance of long-term relationships with their customers and marketing serves the purpose of maximizing customer lifetime value (CLV), which refers to the net present value of future profit from a customer. CLV is a forward-looking metric that takes into account the variable nature of customer behavior and enables firms to treat individual customers differentially from each other depending on their marketing preferences and their contributions to the company. One of the key drivers of CLV is the customer's relationship duration (Castéran et al., 2017; Gupta et al., 2006). Therefore, to maximize customer lifetime value, firms devote large amounts of resources toward customer retention practices (see Kumar and Reinartz (2016) for a comprehensive review of CLV and retention research). The importance of customer retention derives from a simple cost-benefit equation (Hill and Alexander, 2017; Ennew et al., 2015). The costs of customer acquisition are generally higher than the costs of retention, and this phenomenon is especially prevalent in the service sector. Small reductions in customer defection rates can thus produce significant improvements in both profitability and market share (Kumar and Reinartz, 2018; Kumar, 2008; Reichheld and Sasser 1990). To gain a better understanding of customer retention, studies have focused on developing models of relationship duration to predict retention rates (Fader et al., 2018; Fader and Hardie, 2009), identifying factors that explain the variation in profitable lifetime duration (Reinartz and Kumar 2003), and modeling customer retention that accounts for duration dependence, customer heterogeneity, and cohort effects (Schweidel et al., 2008). From a statistical viewpoint, modeling service duration typically uses some form of hazard

functions (Schweidel et al., 2008; Meyer-Waarden, 2007; Bolton, 1998) or uses distributional assumptions regarding retention rates (Fader et al., 2018; Fader and Hardie, 2007; Reinartz and Kumar, 2003).

Other important drivers in extending service duration or lifetime duration are customer satisfaction and loyalty (Yang and Peterson, 2004; Lee et al., 2001, Bolton, 1998) and the moderating role of switching costs (Nagengast et al., 2014; Barroso and Picón, 2011; Chebat et al., 2010). Previous research has shown that customer loyalty and retention depend on customer satisfaction (Wang et al., 2019; Oliver, 1997) and empirical evidence suggests a link between service performance and satisfaction (Kumar and Reinartz, 2018) and between satisfaction and loyalty (Schirmer et al., 2018; Lee et al., 2001). Bolton (1998) argues that service duration is related to customer satisfaction and the length of customers' prior experience with the organization. Considerable research has also examined the moderating effect of switching costs (see Pick and Eisend, 2013 for meta-analysis). In general, prior research finds an inverted U-shaped moderating effect of switching costs on the satisfaction and repurchase link (Nagengast et al., 2014), and lifetime duration is positively associated with the switching costs derived from (i) a loss of benefits, (ii) a loss of relationship, and (iii) economic risk costs related to uncertainty (Barroso and Picón, 2011). Pick and Eisend (2013) report that the effect of perceived switching costs on actual switching behavior is smaller than expected, suggesting that there is another driver of switching behavior.

Table 1. Summary of Select Service Duration Studies

Literature	Study Focus	Model Type	Industry
Fader et al. (2018)	Examine increasing cohort-level retention rates which is due to cross-sectional heterogeneity	Beta-discrete-Weibull	Contract-based business
Kumar, Bhagwat, and Zhang (2015)	Show how lost customers' first-lifetime experiences are related to their second-lifetime duration	Censored Tobit	Telecommunications service
Fader and Hardie (2009)	Develop a model of relationship duration to predict retention rates beyond the observed retention rates	Shifted beta geometric	Any industry
Schweidel, Fader, and Bradlow (2008)	Model customer retention that accounts for duration dependence, subscriber heterogeneity, cohort effects	Proportional hazard	Telecommunications service
Donkers, Verhoef, and De Jong (2007)	Predict CLV in multiservice industry	Probit	Insurance services
Fader and Hardie (2007)	Provide an alternative approach to survivor analysis for estimating customer tenure	Shifted beta geometric	Contract-based business
Meyer-Waarden (2007)	Examine the impact of loyalty programs on customer lifetime duration	Proportional hazard	Supermarket
Buckinx and Van den Poel (2005)	Identify which of the currently behaviorally loyal customers are likely to (partially) churn in the future	Logit	CPG retailer
Thomas, Blattberg, and Fox (2004)	Study the probability of customer reacquisition and the duration of the second lifetime	Split hazard	Newspaper industry
Reinartz and Kumar (2003)	Develop a CLV framework and identify factors that explain the variation in profitable lifetime duration	NBD/Pareto	Catalog retailer, high-tech services
Reinartz and Kumar (2000)	Test whether long-life customers are always profitable	NBD/Pareto	Catalog retailer
Bolton (1998)	Develop a model of the duration of provider-customer relationship and the role of customer satisfaction	Proportional hazard	Cellular service

Table 1 provides an overview of the select studies that analyzed service duration or lifetime duration in different types of industry. Considering that a large amount of literature has studied lifetime duration, we find only a few studies that explicitly model service duration with customer inertia (Wang et al., 2018; Amoroso et al., 2017) and its relationship to switching costs (Gray et al., 2017; Lee and Neale, 2012). Inertia is defined as a propensity to remain at the status quo when there is no external motive to change (Gal, 2006). While switching costs constitute a higher-order construct related to external quality (Barroso and Picón, 2011) from the perspective of the customer, the level of inertia is an internal characteristic of the customer. From a decision-making perspective, Samuelson and Zeckhauser (1988) present the status quo bias to explain why individuals disproportionately make decisions to stay with the status quo rather than switch to an alternate course of action. The purpose of our study is to add to our understanding of existing customers' service duration by incorporating customer inertia into an existing framework that features satisfaction, loyalty, and switching costs, and examine the role of inertia as one of the drivers of service duration. We test the direct and indirect effects of inertia on service duration, which mediates the relationship between (i) loyalty and service duration, and (ii) switching costs and service duration based on a structural equations model.

CONCEPTUAL FRAMEWORK

Effects of Customer Satisfaction and Loyalty on Service Duration

Figure 1 presents the proposed structural model of the latent constructs. An essential component of CRM, customer satisfaction results from delighting customers and providing positive surprise that exceeds their expectations (Gee et al., 2008; Mithas et al., 2005). Prior research provides ample evidence supporting a positive correlation between satisfaction and attitudinal loyalty. However, the direct effect between customer satisfaction and service duration is tenuous, since customer satisfaction does not guarantee behavioral loyalty. In other words, satisfied customers can and do defect to other competitors (Lee et al., 2001; Jones and Sasser, 1995). Therefore, we expect that there is an indirect relationship between satisfaction and service duration through loyalty.

A substantial portion of marketing research suggests that in order to retain customers, a business must foster loyalty and develop long-term relationships with customers. By nurturing a bond with their customers and enhancing customer value, firms build customer loyalty, which is widely considered in marketing as a prerequisite for customer retention and profitability (Reichheld et al., 2000). Using extensive – and often expensive – loyalty programs, firms try to measure, enhance, and manage customer profitability based on the assumption that loyal customers cost less to serve, are willing to pay higher prices, and spread positive word of mouth, which may reduce marketing expenditures (Faed, 2013; Gee et al., 2008; Meyer-Waarden, 2007). However, there is also empirical evidence that not all loyal customers are profitable, and not all profitable customers are loyal (e.g., Kumar and Reinartz, 2018; Kumar, 2008). Loyal customers expect to be rewarded for their loyalty with costly perks such as price discounts (Wieseke et al., 2014) and exclusive promotions (Barone and Roy 2010). In other words, customer retention or duration may not necessarily guarantee to profitability. In our context of service duration, the above findings suggest that the relationships between loyalty and other variables have limitations, and we expect that the direct effect of attitudinal loyalty on service duration may be weak. As such, we will examine the indirect effect of loyalty on service duration mediated by perceived switching costs and inertia.

Direct and Indirect Effects of Switching Costs on Service Duration

Research modeling service duration, as shown in Table 1, rarely operationalized switching costs as predictors. Indeed, only a few studies (Nagengast et al., 2014; Barroso and Picón 2012) explicitly examined the relationship between switching costs and service duration. This relationship is referred to as the lock-in effect (Nagengast et al. 2014), and proposes a strong positive association between switching costs and duration. In general, the longer the duration of the relationship, the lower the likelihood of switching due to the effective loss of the advantages associated with the social and financial bonds (Chiu et al., 2005; Reinartz and Kumar, 2003). Barroso and Picón (2012) postulate that the duration of the relationship is positively associated with the costs derived from: (i) a loss of benefits; (ii) a loss of personal relationships; and (iii) economic risk costs related to uncertainty. Consistent with prior findings, we expect that perceived switching costs are positively associated with service duration.

Though it is common to relate switching costs to customer loyalty and portray them as effective switching deterrents, Lee and Neale (2012) relate switching costs to consumer inertia and show that while switching costs may result in customer retention, they can engender positive or negative word-of-mouth, depending upon whether the inertia stems from satisfaction or indifference, respectively. Furthermore, Polites and Karahanna (2012) argue that inertia can be formed as the result of switching costs, specifically as the result of the time and effort required to adapt to a new course of action. Therefore, perceived switching costs can strengthen individuals' inertia, and thus make the individuals' switches from a status quo less likely to happen. We expect perceived switching costs to increase inertia, which increases service duration.

Effects of Inertia on Service Duration

Inertia is an attitudinal tendency to maintain the status quo, regardless of the existence of alternatives, and thus hinders the switching behaviors of consumers (Gray et al., 2017; Li, 2015; Lee and Neale, 2012; Gal, 2006). This implies that individuals' inertia positively influences their intention to stay with the status quo. Regarding the causal path, we expect that higher levels of customers' attitudinal loyalty will lead them to perceive the time and effort needed to learn another alternative as high. In turn, this leads to a high level of inertia and thus longer service duration. To summarize, we expect the causal relationships from attitudinal loyalty to perceptions of switching costs to inertia to service duration to be positive.

In the context of mobile service industry, Kim and Kang (2016) argue that when consumers of a mobile service are familiar with their service content, they are comfortable staying with the service to avoid spending any extra time and effort learning about a new provider, and develop an emotional attachment to the current service. Consequently, inertia combined with attitudinal loyalty represents users' intrinsic motivation to continue to use the service and thus has the significant impact on service duration.

On a separate note regarding construct measurement, while there are similarities between brand loyalty and customer inertia, there are notable differences. Though committed behavioral brand loyalty and inertia are recognized as two distinct psychological mechanisms with different marketing implications, both manifest as consumers' staying behavior. Inert repurchase reflects a non-conscious process (Huang and Yu 1999), typical of low involvement. Inertia, however, is distinguished from committed brand loyalty in that the latter involves a conscious decision to repurchase from the same provider (Huang and Yu 1999). Repeat purchase or staying behavior due to inertia is unstable, with little or no brand commitment (Wu, 2011), driven simply by the convenience inherent in repetitive behavior (Paul et al., 2008; Ehrenberg, 1988). Consumers will stay with the brand as long as this relationship provides

consumers with a certain minimum level of satisfaction (Wang et al., 2019; Assael 1998). Despite leading to the same behavior, the psychological mechanisms and marketing implications of inertia and committed brand loyalty are different (Yanamandram and White 2004). Repeat purchase due to inertia is much more responsive to marketing activities because consumers with low involvement are more sensitive to marketing variables (Huang and Yu 1999). Measures of inertia in marketing research are similar to behavioral measures of brand loyalty, posing an ongoing challenge to differentiate these two constructs from one another. Lee and Neale (2012) proposed indifference, defined as the extent to which individuals perceived competing options as similar and were happy to use any brands (Sharma and Patterson, 2000), as a supplement to distinguish consumers' staying behavior from loyalty. We present the discriminant validity of the latent constructs later.

Based on the discussions above, we examine the causal relationship between inertia and service duration and test whether: (i) customer satisfaction indirectly increase service duration through loyalty, (ii) loyalty indirectly increases service duration through perceived switching costs and inertia, (iii) loyalty and inertia interact to influence service duration, and (iv) perceived switching costs positively impact service duration directly and indirectly through inertia.

DATA AND ANALYSIS

We collected the data for this study via a web-based survey on mobile service experience. Amazon's Mechanical Turk (MTurk) was used for recruiting participants for the data. It integrates participant compensation system, a large participant pool, and a streamlined process of study design. Buhrmester et al. (2011) report that (a) MTurk participants are slightly more demographically diverse than are standard Internet samples and are significantly more diverse than typical American college student samples, (b) participation is affected by compensation rate and task length, but participants can be recruited rapidly and inexpensively, (c) realistic compensation rates do not affect data quality, and (d) the data obtained are at least as reliable as those obtained via traditional methods. We received 461 responses, and we discarded 115 problematic responses because the respondents failed to pass the examination of reverse questions we included in the questionnaire. In total, we obtained 346 valid responses for the data analysis procedure. Among our survey respondents, the average service duration was 21 months, with about 25% (86 respondents) having switched mobile service providers in the last three years. 57% of the respondents were males, and 42% of them were between 25 and 34 years old. The distribution of service providers in our sample is consistent with industry market shares, with 62% of the participants paying less than \$200 a month. Regarding data usage, the plurality of them (46%) had a data plan of 10GB or more.

The instruments used to measure latent constructs in our study were adapted from prior studies and revised to fit with the specific context of the current study. To measure customer loyalty, we use a subset of the original measures used in Mols (1998) and Yang and Peterson (2004), which capture attitudinal loyalty (Uncles and Laurent 1997; Reichheld and Sasser 1990), willingness to recommend the current provider to friends and associates (Lee et al., 2001), and future behavioral intent (Barroso and Picón 2012; Dick and Basu 1994). For our customer satisfaction measurement, we used Lee et al. (2001), which evaluates the relevant attributes of service, which enables marketing managers to target specific features to be improved compared to a broad, overall satisfaction measurement. For perceived switching cost, we adapted the scale from Jones et al. (2000) to operationalize switching costs as the time, efforts, and monetary costs involved in switching mobile service provider. Lastly, the three items from Lee and Neale (2012) were used to measure inertia, which is the extent that customers actively thought about switching or customers' propensity to remain at the status quo. The scales from relevant

previous studies were adapted, and all items used a 7-point Likert scale anchored on strongly disagree and strongly agree.

For the structural equations modeling, we used the R-package lavaan for the test of discriminant validity and the CFA model fit indices, and all models with the interaction terms were run in Mplus (Muthén and Muthén 1998-2017) with Full Information Maximum Likelihood (FIML) estimation procedures using a numerical integration algorithm that permits estimation of interactive effects. In the following section, we report the results of a measurement model that specifies relationships between the latent constructs and their indicator variables including the reliability and validity of the measures and a structural model that specifies causal relationships between the latent constructs themselves.

The Measurement Model

Confirmatory factor analysis is used to describe the nature of the relationship between the latent variables, or factors, and the manifest indicator variables that measure those latent variables. The model presented in this study consisted of one observed outcome variable, duration times, and four latent variables: customer satisfaction, loyalty, perceived switching costs, and inertia.

Table 2: Reliability and Convergent Validity of the Measurement Model

Measurement	Mean (Std dev)	Factor loading	Cronbach's alpha	CR	AVE
Satisfaction (Lee et al., 2001)			0.87	0.88	0.60
Network coverage	5.09 (1.62)	0.75			
Call clarity	5.45 (1.47)	0.72			
Billing accuracy	5.42 (1.58)	0.80			
Easy access to provider	5.31 (1.60)	0.84			
Customer service quality	4.95 (1.66)	0.79			
Perceived Switching Cost (Jones et al., 2000)			0.79	0.80	0.60
It takes me a great deal of time and effort to get used to a new service provider.	3.66 (1.91)	0.76			
It costs me too much to switch to another service provider.	4.02 (1.99)	0.85			
In general, it would be a hassle switching to another service provider.	4.97 (1.98)	0.82			
Loyalty (Mols, 1998)			0.95	0.96	0.85
I say positive things about my provider to other people.	4.74 (1.64)	0.93			
I would recommend my provider to those who seek my advice.	4.84 (1.64)	0.95			
I would encourage friends and relatives to use my provider.	4.80 (1.74)	0.95			
I intend to continue to do business with my provider.	5.34 (1.59)	0.82			
Inertia (Lee and Neale 2012)			0.72	0.75	0.52
I never think about switching to another provider.	4.38 (2.04)	0.86			
I constantly look out for attractive deals from the other providers.	4.54 (1.98)	0.67			
I cannot be bothered to think about switching to another provider.	4.28 (1.91)	0.78			

Table 2 reports the means, standard deviations, and standardized factor loadings for the indicator variables. The maximum likelihood procedure provides approximate standard errors for these coefficients and allows large-sample tests of the null hypothesis that the coefficients are equal to zero in the population. All factor loadings were significant, which provides evidence supporting the convergent validity of the indicators (Anderson and Gerbing 1988). The reliability of the indicators of the constructs is presented in Table 2. All Cronbach's alpha coefficients exceed the acceptable threshold level of 0.7 (Nunnally and Bernstein, 1994). The alpha value for inertia is higher than the 0.67 value reported in Lee and Neale (2012). We conclude that the coefficients generally support the reliability of the constructs and their indicators.

Then, the convergent and discriminant validity of the measurement model were examined (Henseler et al., 2015; Hair et al., 2010; Fornell and Larcker, 1981). First, the convergent validity was evaluated by examining the factor loadings of the indicators and the composite reliability (CR) statistics and the average variance extracted (AVE) estimates of the first-order latent constructs. As shown in Table 2, all factor loadings were greater than the restrictive criterion of 0.6 and were statistically significant. Additionally, all CR values and all the AVE values were greater than their recommended level, which are 0.6 and 0.5, respectively. We thus determined that the measurement model had adequate convergent validity.

To assess discriminant validity, we first checked the Fornell-Larcker criterion by comparing the square root of the average variance extracted (AVE) with the correlation of latent constructs. A latent construct should explain the variance of its own indicator better than the variance of other latent constructs. Therefore, the square root of each construct's AVE should have a greater value than the correlations with other latent constructs. We confirm that all squared correlations between the factors were smaller than the corresponding AVE estimates, which indicates that the constructs were more strongly related to their respective indicators than to the other constructs in the model (Fornell and Larcker, 1981). Table 3 reports the results of Heterotrait-Monotrait (HTMT) analysis. Henseler et al. (2015) propose an alternative approach using a simulation study since the Fornell-Larcker criterion does not reliably detect the lack of discriminant validity in common research situations. It assesses the average correlation among indicators across constructs relative to the average correlation among indicators within the same construct (see Henseler et al. (2015) for detailed explanations of the HTMT criterion for discriminant validity assessment in variance-based structural equations modeling). The HTMT values in Table 3 are interpreted as estimates of inter-construct correlations. We used the `htmt` function in `semTools/R` to calculate the HTMT matrix and correlations are estimated using the `lavCor` function in the `lavaan` package.

Table 3: Heterotrait-Monotrait (HTMT) Matrix

	Satisfaction	Loyalty	Switching Costs	Inertia
Satisfaction				
Loyalty	0.685			
Switching Costs	0.107	0.076		
Inertia	0.339	0.584	0.283	

If the off-diagonal values in Table 3 are below 0.9, discriminant validity has been established between two latent constructs. As reported in Table 3, the correlations between the latent constructs are acceptable, which indicates no collinearity problems among them. We conclude that the measurement model exhibits adequate discriminant validity.

The Structural Model

The structural model tested in this study is presented in Figure 1. Consistent with previous research, we find that (i) customer satisfaction positively influences loyalty to the service provider and (ii) perceived switching costs have a direct positive effect on how long customers stay with their providers (Barroso and Picón 2012). Those results are consistent with previous findings regarding the associations between satisfaction, loyalty, and perceived switching cost (Nagengast et al. 2014; Lee and Neale 2012; Barroso and Picón 2012; Yang and Peterson 2004; Lee et al. 2001). Regarding managerial implications, they share the same goal, (i) building customer satisfaction and loyalty, and (ii) managing switching costs through service aspects of the marketing mix. Some of our new findings, however, reveal the role of inertia when the outcome variable is service duration.

Though the satisfaction-loyalty link is significant, we find that there is no significant direct effect between loyalty and service duration. Our findings present a classic case of mediation, in which loyalty influences duration times through inertia. The result is similar to the findings in Li (2015) regarding the moderating effect of inertia on the relationship between recovery satisfaction and repurchase intentions. As customers become more loyal to the current provider, it strengthens customers' propensity to remain at the status quo. It can also be interpreted as the endowment effect that randomly assigned owners of an object value their possession more than randomly assigned non-owners (Kahneman et al. 1990). Gal (2006) notes that, because the status-quo bias and endowment effect are such similar phenomena, the logic regarding inertia as an explanation of the status-quo bias extends trivially to the endowment effect. We also find a significant effect of the interaction between loyalty and inertia on service duration. The path coefficient from loyalty to service duration is negative, though insignificant, so the product term has a negative sign. Intuitively, the negative sign results from the type of interaction showing that the duration times are higher for low-loyalty/high-inertia customers than high-loyalty/low-inertia customers.

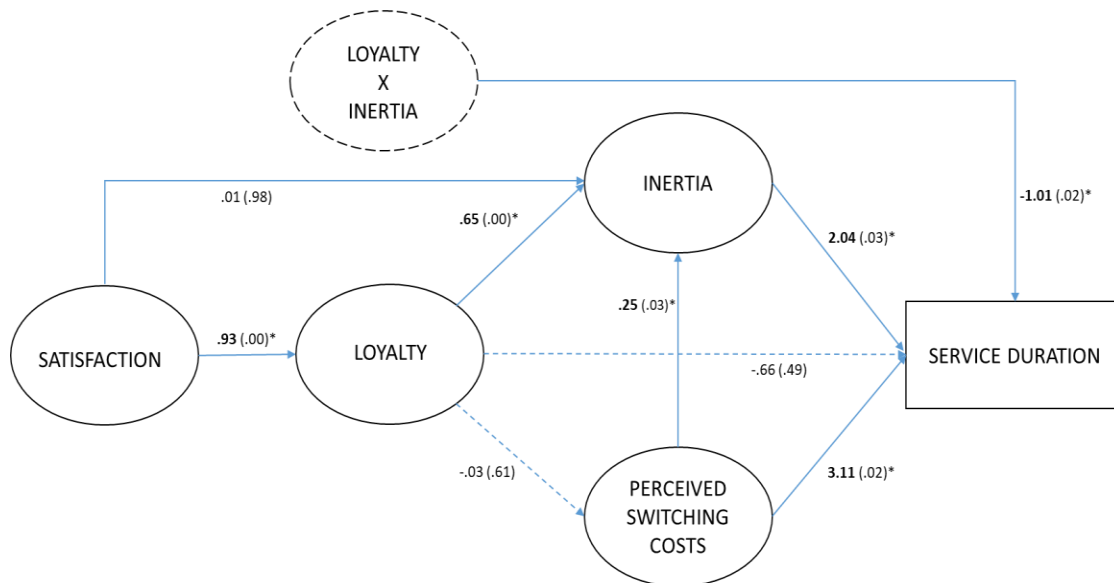


Figure 1: Conceptual Model and Structural Equation Model Estimates

() p-value of path coefficients

The mediating role of inertia is also found to be significant between perceived switching cost and duration times. The significant path coefficients show not only a direct effect from perceived switching cost onto service duration (Barroso and Picón 2012), but also the indirect effect of switching costs on service duration through inertia. In other words, higher perceived switching costs induce inertia, which in turn results in increasing service duration. It may shed some light on the current situation of the mobile service industry. In recent years, U.S. wireless operators have sought to reduce the switching costs with promotional offers that cover early termination fees and lease buyouts and decrease the price of monthly plans. According to Consumer Reports (2017), satisfaction with the value and customer service provided by three of the four largest U.S. wireless carriers is low. In this situation, conventional wisdom among academics and practitioners indicates that dissatisfied consumers whose financial switching costs have been reduced or eliminated are likely to switch to a different carrier. The latest data, however, do not support this notion, as churn in the wireless telecom sector is approximately 1.9% across the top four wireless carriers that control over 90% of the market. Despite low levels of satisfaction and a considerable reduction in monetary switching costs, very few consumers switch providers. Our results provide empirical evidence that marketers' understanding of consumer switching behavior will be heightened by incorporating consumer inertia into existing models that feature customer satisfaction, loyalty, and switching costs.

Assessing Model Fit

When the structural model includes the latent moderated interaction terms, model fit indices generally used to interpret the fit of structural equation models are not easily obtained. We use a two-step method for assessing the overall fit of the proposed model (Maslowsky et al., 2015; Klein & Moosbrugger, 2000). First, we obtain CFI, TLI, RMSEA, and χ^2 values from the null model where the interaction is assumed to be zero. The latent interaction term does not have a mean, variance, or covariance with other parameters and therefore should not affect the fit of the measurement model (Muthén, 2012). Second, using a log-likelihood ratio test, the relative fit of the null model and the proposed model, where the interaction is estimated, is compared. In the case of modeling one latent interaction, there would be one additional parameter estimated in the proposed model, so the difference in free parameters is one. The test statistic for a log-likelihood ratio test is calculated using the following equation:

$$D = -2 [(\log\text{-likelihood for the null model}) - (\log\text{-likelihood for the proposed model})]$$

Which is approximately distributed as χ^2 and D can be tested with $df = 1$. If the log-likelihood ratio test is significant, we can conclude that the null model results in a significant loss of fit relative to the proposed model. The null model fits the data well: $\chi^2 (97) = 314.7$ (p -value = .00), RMSEA = .08 (95% CI = .071–.091), CFI = .924, and TLI = .906. The proposed model was then estimated. The relative fit was determined via a log-likelihood ratio test, yielding a log-likelihood difference value of $D = 6.16$. Using a chi-square distribution, this log-likelihood ratio test proved significant ($p < .05$), indicating that the null model without the interaction effect represents a significant loss in fit relative to the proposed model. As discussed above, the loyalty \times inertia interaction effect on service duration was significant, and the mediating role of inertia is also found to be significant.

Two alternative model specifications were tested against the proposed model: M1 with a direct path from customer satisfaction to perceived switching cost and duration times and M2 with a reversed path from inertia to perceived switching cost that indirectly affects duration times. We find that all path coefficients of M1 or M2 were not significant at the 5% significance level and the log-likelihood ratio test was not significant. That is, there was no significant loss of fit of the proposed model relative to the alternative models. It may seem that the results of the comparison with M1 do not agree with the findings of Bolton (1998). However, Bolton (1998)

examined the relationship between satisfaction and service duration based on a dynamic model using proportional hazards regression while ours is a factor-based structural equations model using cross-sectional data. In a proportional hazards regression, the predictor used is a scaled logarithm of the number of months that the customer has subscribed to the service, which is the outcome variable in this study.

DISCUSSION

For the continued success of a firm, it is critical to retain current customers and develop long-term relationships. As Kumar (2008) noted, if customers' relationship duration is increased by 15%, CLV goes up by 12%, which underscores the importance of the length of service duration. By understanding the role of inertia as one of the key determinants of service duration, a firm can develop marketing programs that are designed for a long-term effect that can induce inertia to increase service duration or to prevent customers from switching. Nevertheless, ensuring superior service quality is a prerequisite, and it must be accompanied by well-designed loyalty programs that reward customers with longer duration times.

Despite some managerially relevant findings, it is important to point out the limitations of this study. First, it is related to the direction of the causal effects of the constructs on service duration. It is plausible to argue that the length of relationship may have a significant direct or indirect positive influence on either customer satisfaction or inertia. Consequently, future research that focuses on the bi-directional influences using a longitudinal research design is encouraged. Second, though our study investigates previously unexplored issues in lifetime duration, it is solely based on the attitudinal measurements of the constructs, and it limits the generalizability of the findings in a different industry setting. One way to enhance the generalizability is to include transactional data so we can test how attitudes such as satisfaction and inertia might interact with the observed behavioral constructs. Finally, given that we find a significant interaction effect of loyalty and inertia on service duration, the logical next step is to explore a three-way interaction involving satisfaction or perceived switching costs. The current approach to accommodate latent interactions is to obtain product indicators of observed variables for interacting latent variables, but it is not practical to implement it in a higher-order interaction case. We may need to adopt the component-based approach which does not require the construction of additional indicators for latent interactions and can easily accommodate both exogenous and endogenous latent interactions.

REFERENCES

- Amoroso, D. L., Ackaradejruangsri, P., & Lim, R. A. (2017). The Impact of Inertia as Mediator and Antecedent on Consumer Loyalty and Continuance Intention. *Mobile Commerce* (Vol. 8). <https://doi.org/10.4018/978-1-5225-2599-8.ch045>
- C. Anderson, J., & Gerbing, D. (1988). Structural equation modeling in practice: A review of recommended two-step approach. *Psychological Bulletin - PSYCHOL BULL*, 103, 411–423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Assael, H. (1998). *Consumer behavior and marketing action*. South-Western College Publishing.
- Barone, M. J., & Roy, T. (2010). Does Exclusivity Always Pay Off? Exclusive Price Promotions and Consumer Response. *Journal of Marketing*, 74(2), 121–132.
- Barroso, C., & Picón, A. (2012). Multi-dimensional analysis of perceived switching costs. *Industrial Marketing Management*, 41(3), 531–543. <https://doi.org/10.1016/j.indmarman.2011.06.020>

- Bolton, R. N. (1998). A dynamic model of the duration of the customer's relationship with a continuous service provider: The role of satisfaction. *Marketing Science* (Vol. 17). <https://doi.org/10.1287/mksc.17.1.45>
- Buckinx, W., & den Poel, D. Van. (2005). Customer base analysis: partial defection of behaviourally loyal clients in a non-contractual FMCG retail setting. *European Journal of Operational Research*, 164(1), 252–268. <https://doi.org/https://doi.org/10.1016/j.ejor.2003.12.010>
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's mechanical turk: a new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6(1), 3–5. <https://doi.org/10.1177/1745691610393980>
- Castéran, H., Meyer-Waarden, L., & Reinartz, W. (2017). Modeling customer lifetime value, retention, and churn - Handbook of Market Research. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.) (pp. 1–33). *Springer International Publishing*. https://doi.org/10.1007/978-3-319-05542-8_21-1
- Chebat, J-C., Davidow, M., & Borges, A. (2011). More on the role of switching costs in service markets: A research note. *Journal of Business Research*, 64(8), 823–829. <https://doi.org/https://doi.org/10.1016/j.jbusres.2010.10.003>
- Chiu, H. C., Hsieh, Y. C., Li, Y. C., & Lee, M. (2005). Relationship marketing and consumer switching behavior. *Journal of Business Research*, 58(12), 1681–1689. <https://doi.org/10.1016/j.jbusres.2004.11.005>
- Dick, A. S. & Basu, K. (1994). Customer loyalty: Towards an integrated conceptual framework. *Journal of the Academy of Marketing Science*, 22 (2), 99–113.
- Donkers, B., Verhoef, P. C., & de Jong, M. G. (2007). Modeling CLV: A test of competing models in the insurance industry. *Quantitative Marketing and Economics*, 5(2), 163–190. <https://doi.org/10.1007/s11129-006-9016-y>
- Ehrenberg, A. S. C. (1988). Repeat-buying: facts, theory, and applications. London; New York: Griffin; Oxford University Press.
- Ennew, C., Binks, M., & Chiplin, B. (2015). Customer satisfaction and customer retention: An examination of small businesses and their banks in the UK. In E. J. Wilson & W. C. Black (Eds.), Proceedings of the 1994 Academy of Marketing Science (AMS) Annual Conference (pp. 188–192). Cham: *Springer International Publishing*. https://doi.org/10.1007/978-3-319-13162-7_49
- Fader, P. S., & Hardie, B. G. S. (2007). How to project customer retention. *Journal of Interactive Marketing* (Vol. 21). <https://doi.org/10.1002/dir.20074>
- Fader, P. S., Hardie, B. G. S., Liu, Y., Davin, J., & Steenburgh, T. (2018). “How to project customer retention” revisited: the role of duration dependence. *Journal of Interactive Marketing* (Vol. 43). <https://doi.org/10.1016/j.intmar.2018.01.002>
- Fader, P. S., & Hardie, B. G. S. (2009). Customer-base valuation in a contractual setting: the perils of ignoring heterogeneity. *Marketing Science*, 29(1), 85–93. <https://doi.org/10.1287/mksc.1080.0482>
- Faed, A. (2013). An Intelligent Customer Complaint Management System with Application to the Transport and Logistics Industry. *Springer Science*. <https://doi.org/10.1007/978-3-319-00324-5>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Gal, D. (2006). A psychological law of inertia and the illusion of loss aversion. *Judgment and Decision Making*, 1, 23–32.
- Gee, R., Coates, G., & Nicholson, M. (2008). Understanding and profitably managing customer loyalty. *Marketing Intelligence and Planning*. <https://doi.org/10.1108/02634500810879278>

- Gray, D. M., D'Alessandro, S., Johnson, L. W., & Carter, L. (2017). Inertia in services: causes and consequences for switching. *Journal of Services Marketing* (Vol. 31). <https://doi.org/10.1108/JSM-12-2014-0408>
- Gupta, S., Hanssens, D., Hardie, B., Kahn, W., Kumar, V., Lin, N., Ravishanker, N., Sriram, S. (2006). Modeling customer lifetime value. *Journal of Service Research* (Vol. 9). <https://doi.org/10.1177/1094670506293810>
- Hair, J. F., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate Data Analysis: A Global Perspective*. Upper Saddle River, N.J.; London: Pearson Education.
- Henseler, J., Ringle, C., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science* (Vol. 43). <https://doi.org/10.1007/s11747-014-0403-8>
- Hill, N., Alexander, J., & Alexander, J. (2017). *The Handbook of Customer Satisfaction and Loyalty Measurement*. Routledge. <https://doi.org/10.4324/9781315239279>
- Huang, M.-H., & Yu, S. (1999). Are consumers inherently or situationally brand loyal? - A set intercorrelation account for conscious brand loyalty and nonconscious inertia. *Psychology and Marketing*, 16, 523–544. [https://doi.org/10.1002/\(SICI\)1520-6793\(199909\)16:6<523::AID-MAR5>3.0.CO;2-B](https://doi.org/10.1002/(SICI)1520-6793(199909)16:6<523::AID-MAR5>3.0.CO;2-B)
- Jones, M. A., Mothersbaugh, D. L., & Beatty, S. E. (2000). Switching barriers and repurchase intentions in services. *Journal of Retailing*, 76(2), 259–274. [https://doi.org/https://doi.org/10.1016/S0022-4359\(00\)00024-5](https://doi.org/https://doi.org/10.1016/S0022-4359(00)00024-5)
- Jones, T. O., & Sasser, W. E. (1995). Why satisfied customers defect. *Harvard business review* (Vol. 73). <https://doi.org/10.1515/9783110872965.88>
- Kahneman, D., Knetsch, J. L. & Thaler, R. H. (1990). "Experimental Tests of the Endowment Effect and the Coase Theorem". *Journal of Political Economy*. 98(6): 1325–1348.
- Kim, B., & Kang, M. (2016). How user loyalty and nonconscious inertia influence the continued use of mobile communications platforms. *Int. J. Mob. Commun.*, 14(4), 387–410. <https://doi.org/10.1504/IJMC.2016.077337>
- Klein, A., & Moosbrugger, H. (2000). Maximum likelihood estimation of latent interaction effects with the LMS Method. *Psychometrika*, 65, 457–474. <https://doi.org/10.1007/BF02296338>
- Kumar, V. (2008). *Managing customers for profit: strategies to increase profits and build loyalty*. Wharton School Publishing.
- Kumar, V., Bhagwat, Y., & Zhang, X. (Alan). (2015). Regaining “lost” customers: the predictive power of first-lifetime behavior, the reason for defection, and the nature of the win-back offer. *Journal of Marketing* (Vol. 79). <https://doi.org/10.1509/jm.14.0107>
- Kumar, V., & Reinartz, W. (2016). Creating enduring customer value. *Journal of Marketing*, 80(6), 36–68. <https://doi.org/10.1509/jm.15.0414>
- Kumar, V., & Reinartz, W. (2018). *Customer Relationship Management: Concept, Strategy, and Tools*. Springer International Publishing.
- Lee, J., Lee, J., & Feick, L. (2001). The impact of switching costs on the customer satisfaction-loyalty link: mobile phone service in France. *Journal of Services Marketing*, 15(1), 35–48. <https://doi.org/10.1108/08876040110381463>
- Lee, R., & Neale, L. (2012). Interactions and consequences of inertia and switching costs. *Journal of Services Marketing*, 26(5), 365–374. <https://doi.org/10.1108/08876041211245281>
- Li, C. Y. (2015). Switching barriers and customer retention: Why customers dissatisfied with online service recovery remain loyal. *Journal of Service Theory and Practice*, 25(4), 370–393. <https://doi.org/10.1108/JSTP-10-2013-0220>
- Maslowsky, J., Jager, J., & Hemken, D. (2015). Estimating and interpreting latent variable interactions: A tutorial for applying the latent moderated structural equations method. *International Journal of Behavioral Development*, 39(1), 87–96. <https://doi.org/10.1177/0165025414552301>

- Meyer-Waarden, L. (2007). The effects of loyalty programs on customer lifetime duration and share of wallet. *Journal of Retailing* (Vol. 83). <https://doi.org/10.1016/j.jretai.2007.01.002>
- Mithas, S., Krishnan, M., & Fornell, C. (2006). Why do customer relationship management applications affect customer satisfaction? *Information Systems & Economics eJournal*, 69. <https://doi.org/10.1509/jmkg.2005.69.4.201>
- Mols, Niels Peter. (1998). The behavioral consequences of PC banking. *International Journal of Bank Marketing*, 16 (5), 195-201.
- Muthén, B. (2012). Latent variable interactions. Retrieved from <http://www.statmodel.com/download/LV%20Interaction.pdf>
- Nagengast, L., Evanschitzky, H., Blut, M., & Rudolph, T. (2014). New Insights in the Moderating Effect of Switching Costs on the Satisfaction–Repurchase Behavior Link. *Journal of Retailing*, 90(3), 408–427. <https://doi.org/https://doi.org/10.1016/j.jretai.2014.04.001>
- Nunnally, J. C., & Bernstein, I. (1994). Psychometric Theory. *American Educational Research Journal - AMER EDUC RES J* (Vol. 5). <https://doi.org/10.2307/1161962>
- Oliver, R. L. (1997). Satisfaction: a behavioral perspective on the consumer. Boston, Mass.: Irwin/McGraw-Hill.
- Paul, M., Hennig-Thurau, T., Gremler, D., P. Gwinner, K., & Wiertz, C. (2008). Toward a theory of repeat purchase drivers for consumer services. *Journal of the Academy of Marketing Science*, 37, 215–237. <https://doi.org/10.1007/s11747-008-0118-9>
- Pick, D., & Eisend, M. (2014). Buyers' perceived switching costs and switching: A meta-analytic assessment of their antecedents. *Journal of the Academy of Marketing Science*, 42(2), 186–204. <https://doi.org/10.1007/s11747-013-0349-2>
- Polites, G. L., & Karahanna, E. (2012). Shackled to the status quo: the inhibiting effects of incumbent system habit, switching costs, and inertia on new system acceptance. *MIS Quarterly*, 36, 21–42.
- Reichheld, F. F., Markey Jr, R. G., & Hopton, C. (2000). The loyalty effect - the relationship between loyalty and profits. *European Business Journal*, 12, 134–139.
- Reichheld, F.F., & Sasser, W. E. (1990). Zero defections: quality comes to services. *Harvard business review* (Vol. 68).
- Reinartz, W. J., & Kumar, V. (2003). The impact of customer relationship characteristics on profitable lifetime duration. *Journal of Marketing* (Vol. 67). <https://doi.org/10.1509/jmkg.67.1.77.18589>
- Reinartz, W. J., & Kumar, V. (2000). On the profitability of long-life customers in a noncontractual setting: an empirical investigation and implications for marketing. *Journal of Marketing* (Vol. 64). <https://doi.org/10.1509/jmkg.64.4.17.18077>
- Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty*, 1(1), 7–59. <https://doi.org/10.1007/BF00055564>
- Schirmer, N., Ringle, C. M., Gudergan, S. P., & Feistel, M. S. G. (2018). The link between customer satisfaction and loyalty: the moderating role of customer characteristics. *Journal of Strategic Marketing*, 26(4), 298–317. <https://doi.org/10.1080/0965254X.2016.1240214>
- Schweidel, D. A., Fader, P. S., & Bradlow, E. T. (2008). Understanding service retention within and across cohorts using limited information. *Journal of Marketing* (Vol. 72). <https://doi.org/10.1509/jmkg.72.1.82>
- Sharma, N., & Patterson, P. (2000). Switching costs, alternative attractiveness and experience as moderators of relationship commitment in professional, consumer services. *International Journal of Service Industry Management*, 11, 470–490. <https://doi.org/10.1108/09564230010360182>
- Thomas, J. S., Blattberg, R. C., & Fox, E. J. (2004). Recapturing lost customers. *Journal of Marketing Research* (Vol. 41). <https://doi.org/10.1509/jmkr.41.1.31.25086>

- Uncles, M. and Laurent, G. (1997). Editorial, *International Journal of Research in Marketing*, Vol. 14, pp. 399-404.
- Wang, W. T., Ou, W. M., & Chen, W. Y. (2019). The impact of inertia and user satisfaction on the continuance intentions to use mobile communication applications: A mobile service quality perspective. *International Journal of Information Management*, 44, 178-193. <https://doi.org/10.1016/j.ijinfomgt.2018.10.011>
- Wieseke, J., Alavi, S., & Habel, J. (2014). Willing to Pay More, Eager to Pay Less: The Role of Customer Loyalty in Price Negotiations. *Journal of Marketing*, 78(6), 17-37.
- Wu, L.-W. (2011). Inertia: spurious loyalty or action loyalty? *Asia Pacific Management Review*, 16, 31-50.
- Yanamandram, V., & White, L. (2004). Why customers stay? reasons and consequences of inertia in financial services. *Faculty of Commerce - Papers*, 14. <https://doi.org/10.1108/09604520410528608>
- Yang, Z. & Peterson, R. T. (2014). Customer perceived value, satisfaction, and loyalty: the role of switching costs. *Psychology & Marketing*, 21(10), 799-822.