

December 2001

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Recommended Citation

Khalifa, Mohamed; Limayem, Moez; and Liu, Vanessa, "Online Consumer Stickiness: A Longitudinal Study" (2001). *PACIS 2001 Proceedings*. 60.
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Online Consumer Stickiness: A longitudinal study

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Abstract

The growth in e-commerce has been mainly in B2B, while B2C is still facing major hurdles associated with consumer acquisition and retention. In the evaluation of B2C businesses, the focus is shifting from measures of visitor attraction such as pageviews and click-through ratios to measures of consumer retention such as stickiness. Most prior research focused on explaining/ predicting the intention to adopt and the usage of online shopping rather than repeated behavior such as repurchase. In this study, we develop and empirically validate a model explaining online consumer stickiness as measured by repurchase. The results provide strong support for the importance of satisfaction in explaining repurchase and for the moderating effect of online shopping habit on the relationship between satisfaction and repurchase. The implications of these findings for theory and practice are discussed.

Keywords: Customer stickiness, customer satisfaction, online shopping habit, PLS

Introduction

Customer retention, or stickiness, is an intangible ability to keep visitors coming back over a long period of time (Maciag, 2000). It is one of the main factors that help create and maintain the competitiveness and sustainability of an organization. IWon.com, for example, strives hard to retain customers by offering the chance to win \$1 million US dollars to its visitors every month (Crockett, 2000). From an economic perspective, it is a marketing strategy to increase the opportunity costs to prevent customers from switching to other counterparts. Short term stickiness can be achieved through a number of factors like brand equity and customer relationship management which can be easily imitated by competitors. Long term stickiness needs to grow continuously over time to create a financial hurdle that deters consumers from switching (Nemzow, 1999). With high customer stickiness, marketing costs can be substantially reduced as it is always cheaper to retain a customer than to acquire a new one. It is reported that attracting new customers takes up 75% of the budgets of e-tailers while retention takes up 25% only (Crockett, 2000). With the proliferation of B2C electronic commerce, stickiness has become even more important to Internet merchants who sell online where customers are provided with a wide variety of choices and competition is globally severe. Selling in cyberspace is very different from selling in physical markets, and requires a critical

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understanding of consumer behavior and how new technologies challenge the traditional assumptions underlying conventional theories and models. A critical understanding of repurchase behavior in cyberspace, as in the physical world, cannot be achieved without a good appreciation of the factors that drive consumers to return. If cybermarketers understand online consumer behavior, they can adjust their marketing strategies to fit this new way of selling in order to convert their potential customers to real ones and retain them. Similarly, Web site designers, who are faced with the difficult question of how to design pages to make them not only popular but also effective in increasing sales, can benefit from such an understanding. It is not, however, clear what keeps customers returning. Stickiness is one of the key factors affecting the competitiveness of organizations that has become a primary concern for B2C businesses. As opposed to pageviews and click through ratios, stickiness provides a more revealing metric of the effectiveness of websites. It is therefore important to explain and identify the determinants of online customer stickiness.

Previous IS research on online shopping mainly focused on adoption and usage issues. Very few studies, however, examined whether customers made repurchases after they were attracted to and satisfied with the buying experience and product. Most prior research studied the cognitive aspects of behavior with emphasis on the relationship between intention and behavior. These studies focused on the application of behavioral theories, e.g. the Theory of Planned Behavior (Ajzen, 1991), to examine the determinants of the intention and behavior of online shopping. However, to our knowledge, no study examined repeated behavior, i.e. repurchase. The purpose of this study is to propose a theoretical model to address this void. More specifically, we develop and empirically test a conceptual model that identifies important determinants of online consumer stickiness, as measured by repurchase.

Our research presents important theoretical and practical contributions. On the theoretical side, we operationalize and empirically test a stickiness model that explains online consumer stickiness as measured by repurchase. On the practical side, this research highlights and identifies specific factors that influence stickiness. Such specific drivers can help practitioners in formulating the appropriate marketing strategies.

This paper is organized as follows. Section 2 presents the theoretical foundations of our research model. Section 3 outlines the research methodology and describes the data analysis. Section 4 presents and discusses the empirical results and their implications for researchers and practitioners. Finally, section 5 concludes this paper by describing the limitations of the current study and by providing several suggestions for future research in this area.

Research Model

As illustrated in Appendix A, our model postulates that stickiness is mainly determined by overall satisfaction and that this relationship is moderated by online shopping habit. In other words, online consumers who are satisfied with all the aspects of their shopping experience

from a particular retailer are more likely to repurchase from that retailer if they have already acquired the habit of online shopping. Although satisfied, consumers may not shop again from an online retailer if online shopping is not yet part of their shopping habit. Consistent with Homburg and Giering (2001), our model also postulates that overall satisfaction is a function of product satisfaction, sale process satisfaction and after-sale service satisfaction. Each of the constructs and their interrelationships are discussed in more detail next.

Stickiness

Customer stickiness has long been in the research agenda of the marketing discipline. It is typically defined as “an intangible ability to keep visitors returning again and again and for longer and longer periods” (Maciag, 2000) and as “a form of repeat purchasing of a particular product or service over time” (see Copeland, 1923). Stickiness reveals and is part of loyalty. In the current study, Stickiness is measured as the number of repurchases. Unlike other measures, repurchase can better represent the “process of retaining prior customers with repeat business” (Nemzow, 1999). Other metrics like average length of time spent on browsing or click through ratios reflect site retention rather than customer stickiness as they merely measure whether the site is being visited instead of whether orders are being placed (Nemzow, 1999). From an organizational perspective, repurchase is also an important measure for evaluating operational performance given its direct impact on organizational profitability and competitiveness.

Satisfaction

Satisfaction has been widely defined as a post-evaluative judgment over a particular purchase (Bearden and Teel, 1983; Churchill and Suprenant, 1982; Oliver, 1979&80; Oliver and DeSarbo, 1988). Yi (1990) further specified that satisfaction is affected by three categories of satisfaction, namely, product satisfaction, sale process satisfaction and after-sale service satisfaction. Satisfaction can occur with the product/service itself, the sales process and during the post-sales stage. Product satisfaction is the most popular one adopted by researchers. It relates to the evaluation of product performance with regard to attributes such as value-for-money, ease of use and design sophistication (LaBarbera and Mazursky, 1983; Marr and Crosby, 1992). Sales process satisfaction occurs through the personal interaction with the sales personnel and the capability of the selling parties in meeting the individual needs of customers (Homburg and Giering, 2001). The context of online shopping, however, is rather the interaction with the website that largely determines the process satisfaction. During the post-sale stage, satisfaction with after-sale service is based on the quality of the service itself and the interpersonal experience with the after-sale service personnel (Crosby, Evans and Cowles, 1990).

Satisfaction and Stickiness

We hypothesize that satisfaction has a direct effect on stickiness. A customer is more likely to come back if he/she is satisfied with the purchase. Unpleasant buying experience or poor product performance easily leads to customer dissatisfaction and discourages him/her from coming back. There is ample empirical evidence from the marketing discipline that customer satisfaction is positively linked to stickiness (e.g. see Rust and Zahorik, 1993; Rust, Zahorik and Keiningham, 1995; Hallowell, 1996).

Online Shopping Habit

Habit is conceptualized as “situation-behavior sequences that are or have become automatic...the individual is usually not conscious of these sequences” (Triandis, 1980, p. 204). It is a behavior tendency developed from historical situations that an individual experienced in the past. Such tendency will then elicit behavioral response from the individual automatically upon a stimulus which most likely is a situation similar to that in the past. The individual may act accordingly without being aware of it or having instructed him/herself to do it. Habit is distinguished from reflexes as it is developed based on the learning ability of an individual. Reflexes occur both naturally and automatically without having to go through historical experience in the first place. On the other hand, habit is developed partly based on the learning ability of an individual to convert/absorb the behavior into a cognitive schemata (Limayem, Hirt and Chin, 2001).

Given its nature, habit is directly associated with behavior. A strong habit is more likely to induce a similar behavior. In addition, habit also has an interactive effect on behavior (Triandis, 1980, p. 228). As a certain behavior turns more routinized, habit also becomes more supreme. In the context of customer behavior, online shopping habit may lead to Internet purchasing behavior while if such behavior occurs frequently and regularly, online shopping habit may in turn further be strengthened.

Moderating Effect of Online Shopping Habit over the Relationship between Satisfaction and Stickiness

Habit has been investigated by some researchers for its impact on the intention to adopt and the subsequent usage of information systems (e.g. see Bergeron et. al., 1995; Limayem, Khalifa and Chin, 1999). Very few studies, however, examined the moderating role of habit in the context of online customer behavior. Furthermore, to our knowledge, no study investigating the combined effects role of habit and satisfaction on repeated behavior (repurchase). The effect of satisfaction on repurchase may be further strengthened if the customer habitually buys online. The effect of satisfaction on repurchase may, on the other hand, be weaker if the online shopping habit level is low. A customer who rarely purchases on the Internet may not repurchase from an online retailer despite that he/she is satisfied. Therefore we hypothesize

that online shopping habit moderates the direct link between satisfaction and stickiness.

Methodology

The methodology consisted of three phases: 1) belief elicitation, 2) survey of online shopping habit and satisfaction, and 3) repurchase tracking.

To identify specific satisfaction factors, we relied on belief elicitation to develop a formative measurement model for each of the satisfaction dimensions, i.e. product satisfaction, sale process satisfaction and after-sale service satisfaction. For the remaining constructs, i.e. overall satisfaction and online shopping habit, we developed reflective measurement models. The dependent variable, stickiness, was operationalized as the number of repurchases made within a specific period of time (one month) since the first purchase.

Belief Elicitation- To develop formative items for the constructs, “product satisfaction”, “sale process satisfaction” and “after-sale service satisfaction”, we examined the literature and conducted a belief elicitation procedure. Sixty online shoppers were selected randomly from the customer base of a North American supermarket. The selected online consumers were invited to participate in focused group discussion. They were divided into six groups of 10 individuals each. In the focused group discussion, the participants were asked to identify important satisfaction factors and to categorize them under product satisfaction, sale process satisfaction and after-sale service satisfaction. Based on the literature review and the results of the belief elicitation process, we ended up with a list of formative satisfaction items represented in Appendix B.

Survey of Online Shopping Habit and Satisfaction – A survey instrument was constructed based on reflective items for the “overall satisfaction” and “online shopping habit” constructs and the formative items developed in the belief elicitation stage for the constructs “product satisfaction”, “sale process satisfaction” and “after-sale service satisfaction”. The reflective items were validated using the card sorting procedure (Moore and Benbasat, 1991). The resulting survey was then administered to first-time online buyers of a major grocery retailer in North America that also operates an Internet store. For a period of six months, every new online shopper was invited to answer an online survey after the delivery of the grocery (within 24 hours from the online order). Once the respondent has completed the questionnaire, the responses were automatically sent to a database. Pitkow and Recker (1995) present all the advantages of this surveying method. A total of 391 new online shoppers completed the survey. The demographics of these respondents are shown in Appendix C.

Repurchase Tracking- The number of repurchases that every respondent of the survey made over a period of 30 days was automatically recorded. We assumed that one month would be sufficient for customers to repurchase from the store given the perishable nature of grocery products. This assumption is supported by the findings of the tenth survey conducted by the Graphics, Visualization and Usability (GVU) Center at Georgia Tech in October 1998. It

showed that the frequency of online shopping ranges from once a month to few times a week (GVU, 1998). The entire data collection process lasted for six months.

Data analysis- The analysis of the data was done in a holistic manner using Partial Least Squares (PLS). The PLS procedure (Wold, 1989) has been gaining interest and use among researchers in recent years because of its ability to model latent constructs under conditions of non-normality and small to medium sample sizes (Chin, 1998; Compeau & Higgins, 1995; Chin & Gopal, 1995). It allows the researcher to both specify the relationships among the conceptual factors of interest and the measures underlying each construct. The result of such a procedure is a simultaneous analysis of 1) how well the measures relate to each construct and 2) whether the hypothesized relationships at the theoretical level are empirically confirmed. This ability to include multiple measures for each construct also provides more accurate estimates of the paths among constructs which are typically biased downward by measurement error when using techniques such as multiple regression. Furthermore, due to the formative nature of some of the measures and non-normality of the data, LISREL analysis was not appropriate (Chin & Gopal, 1995). Thus, PLS-Graph version 2.91.02 (Chin, 1994) was used to perform the analysis. Tests of significance for all paths were conducted using the bootstrap resampling procedure (Cotterman & Senn, 1992). For reflective measures, all items are viewed as parallel measures capturing the same construct of interests. Thus, the standard approach for evaluation, where all path loadings from construct to measures are expected to be strong (i.e., 0.70 or higher), is used. In the case of formative measures, all item measures can be independent of one another since they are viewed as items that create the “emergent factor.” Under this situation, Chin (1998) suggests that the weights of each item be used to assess how much it contributes to the overall factor. For the reflective measures, rather than using Cronbach's alpha, which represents a lower bound estimate of internal consistency due to its assumption of equal weightings of items, a better estimate can be gained using the composite reliability formula (Chin, 1998).

In formulating and testing the moderating effect of “online shopping habit” on the relationship between “overall satisfaction” and “repurchase/stickiness” with PLS, we followed a hierarchical process similar to multiple regression where we compare the results of two models (i.e., one with and one without the interaction construct: online shopping habit x satisfaction). We applied the procedure described by Chin et al. (1996). The standardized path estimate from the product construct (online shopping habit x overall satisfaction) to repurchase/stickiness indicates how a change in the level of the moderator construct (online shopping habit) would change the influence of satisfaction on the dependent construct (repurchase). Thus, if satisfaction has an estimated beta effect of B on repurchase, a beta of M for the interaction path can be interpreted as a beta change of B+M for the estimated path from satisfaction to repurchase when habit increases by one standard deviation from the baseline of zero.

By comparing the R-square for the interaction model with the R-square for the main effects

model (which excludes the interaction construct), we can assess the strength of the moderating effect. The difference in R-squares is used to estimate the overall effect size (f^2) for the interaction where .02, 0.15, and 0.35 suggest small, moderate, and large effects respectively (Cohen 1988).¹ It is important to understand that a small f^2 does not necessarily imply an unimportant effect. If there is a likelihood of occurrence for the extreme moderating conditions and the resulting beta changes are meaningful, then it is important to take these situations into account.

Results and Discussion

Figures 2 and 3 in Appendix D provide the results of testing the structural links of the proposed research model using PLS analysis for the main effect model and the interaction model respectively. The estimated path effects (standardized) are given along with the associated t-value. All path coefficients are significant at the 99% significance level providing strong support for all the hypothesized relationships.

The main effects model explains 29% for the variance of repurchase. The inclusion of the interaction construct (see Figure 3) increases the R-square for repurchase to 33%. The path coefficient between the interaction construct and repurchase is 0.215 and is also significant at the 1% level. Thus, these results imply that one standard deviation increase in online shopping habit will not only impact repurchase directly by 0.192, but would also increase the impact of satisfaction from 0.416 to 0.521. The interaction effect, therefore, has an effect size f^2 of 0.047², which represents a solid small effect, confirming our hypothesis that online shopping habit moderates the relationship between overall satisfaction and repurchase. In other words, as online shopping becomes more habitual, the effect of satisfaction with an online store on repurchase also becomes stronger. Although small, the moderating effects of online shopping habit are significant at the 1% level. These findings imply that companies should focus on consumers who have acquired the habit of shopping online in allocating their marketing efforts, as these consumers are more likely to repurchase when satisfied. That is, the effects of satisfaction on stickiness could be strengthened or weakened by the online shopping habits of the consumers.

Our findings prove that overall satisfaction is an important factor leading to repurchase. Moreover, sale-process satisfaction (.303) and after-sale service satisfaction (.351), as indicated by the strength of their path coefficients, seem to be more important than product satisfaction (.161). A possible explanation is that grocery retailers usually carry products with similar attributes but differ in their support for the online shopping process and their after-sale

¹ $f^2 = [R\text{-square}(\text{interaction model}) - R\text{-square}(\text{main effects model})] / [1 - R\text{-square}(\text{main effects model})]$

² $f^2 = (.332 - .298) / (1 - .298) = 0.05$

services. This result is consistent with the common belief that with e-commerce the competition is mainly on the digital value (i.e. information content, online services), rather than on the physical attributes of the product.

The table in Appendix B highlights the important items constituting each of the three types of satisfaction variables. For product satisfaction, all variables including quality of products, prices of products, product choices and product description are found to be significant except for packaging of product. This is probably because packaging is no longer a concern for grocery products. Prices, as indicated by the relatively higher weight, are the key driver of product satisfaction as most customers shop online for cheaper products.

For process satisfaction, only privacy measures and convenience of shopping were found to be insignificant while the rest (transaction efficiency, navigation efficiency, comparative shopping, site accessibility, web page loading speed, security measures and user-friendliness) were all proved to be important. Privacy may not be a major concern for online consumers since buying grocery products is not really much revealing. Convenience of shopping may be taken for granted by online customers as this attribute is offered by all Internet retailers. On the other hand, transaction efficiency and comparative shopping are regarded by customers as the most important factor that lead to online repurchase as indicated by the relatively higher weight. Transaction efficiency refers to the ability of the customers to complete the shopping cycle in a short period of time. Customers want to be able to compare a wide variety of products easily and efficiently on the Internet in order to make more informed decisions in product selection. For after-sale service satisfaction, customer service and delivery care (unlike delivery time and handling returns), were found to be insignificant. This could be explained by the fact that customer service and delivery care are not important issues for grocery products. On the other hand, delivery time is the key driver of after-sale service satisfaction given the perishable nature of grocery products.

Conclusion and Implications for Future Research

The purpose of this study was to investigate the factors affecting customer stickiness. A model was developed and tested empirically in a longitudinal study. Coupling belief elicitation with prior research allowed us to obtain a salient set of formative measures that resulted in interesting practical implications for managers and cybermarketers about the critical drivers of customer stickiness. The results also show strong support for the importance of considering the online shopping habit construct in the online shopping context. The use of a longitudinal approach towards data acquisition provided a stronger causal understanding of the factors affecting stickiness. Nonetheless, approximately 67% of the variance in this behavior remains unexplained. Future research should use more elaborate models incorporating additional antecedent factors beyond satisfaction and online shopping habit. Another limitation is that this research was conducted in the context of grocery products. Future research should attempt to

investigate other types of products and industries and incorporate other possible factors such as personal characteristics in models that explain customer stickiness.

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Appendix A – Research Model

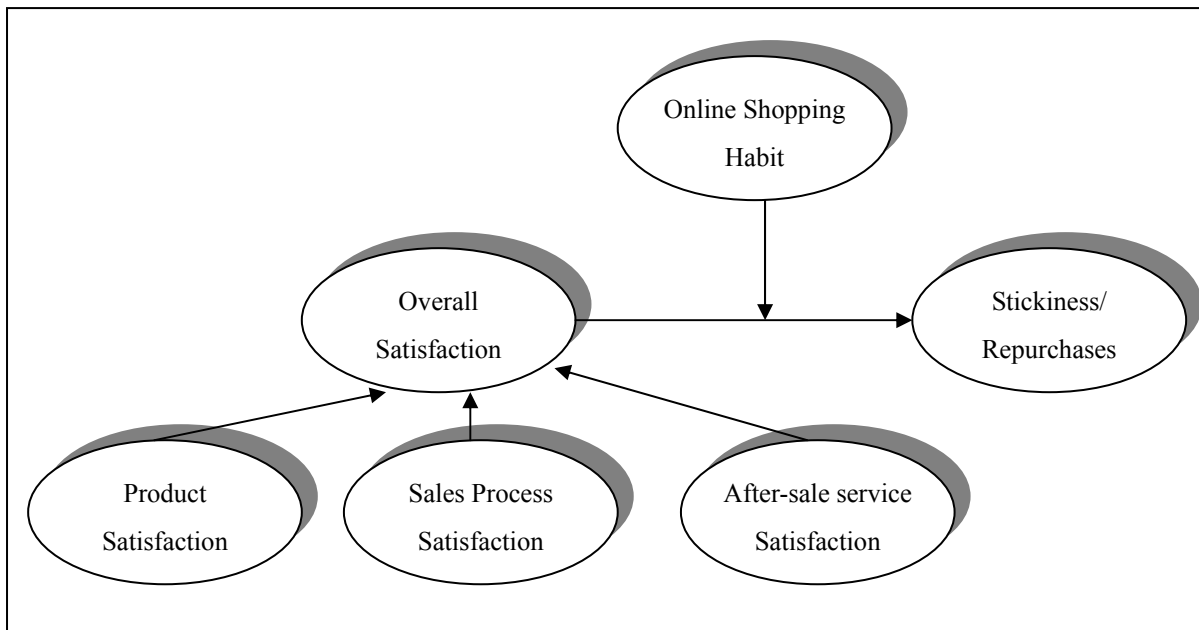


Fig. 1: The research model

Appendix B – Weights and Loadings for Formative and Reflective Measures

Factors	Variables	Weights	Loadings	Std. Error	T - statistics
Overall satisfaction	Satisfaction 1		0.94	0.01	90.49
	Satisfaction 2		0.93	0.02	60.10
	Satisfaction 3		0.96	0.00	199.19
Online shopping habit	Online shopping habit 1		0.81	0.02	32.57
	Online shopping habit 2		0.85	0.03	30.96
	Online shopping habit 3		0.81	0.03	28.80
Repurchase	No. of repurchase in the last month		1.00	0.00	0.00
Product satisfaction	Quality of products	0.32		0.15	2.09
	Prices of products	0.60		0.15	4.07
	Packaging of products	0.06		0.14	0.45ns
	Product choices	0.29		0.14	2.10
	Product description	0.21		0.11	1.90
Process satisfaction	Transaction efficiency	0.40		0.09	4.51
	Privacy measures	0.13		0.08	1.60 ns
	Navigation efficiency	0.20		0.09	2.19
	Comparative shopping	0.36		0.08	4.52
	Convenience of shopping	0.08		0.10	0.75 ns
	Site accessibility	0.28		0.09	3.18
	Web page loading speed	0.27		0.14	1.98
	Security measures	0.19		0.11	1.72
	User-friendliness	0.19		0.07	2.58
After-sale service satisfaction	Delivery time	0.79		0.06	13.05
	Handling returns	0.29		0.09	3.08
	Customer service	0.02		0.08	0.21 ns
	Delivery care	0.05		0.06	0.71 ns

Appendix C – Demographics of Respondents

Demographics		%
Age	Less than 20	18
	20-30	37
	30-40	28
	40-50	16
	Greater than 50	1
Gender	Male	28
	Female	72
Household family income	Less than US\$ 20,000	16
	US\$20,000-35,000	28
	US\$35,000-50,000	31
	Greater than US\$50,000	25

Appendix D – Results of PLS Analysis

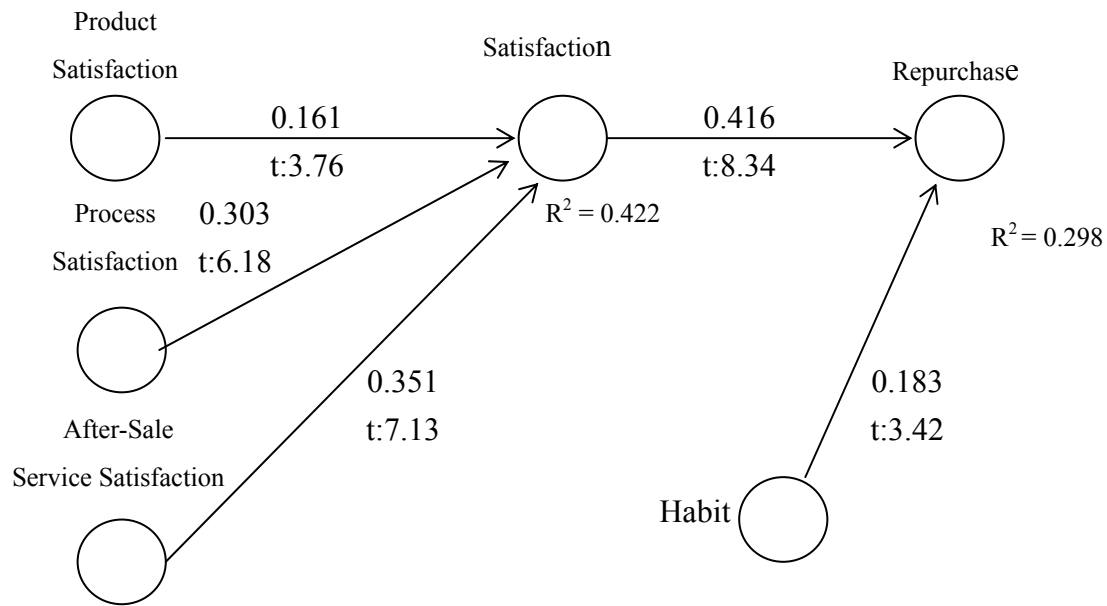


Fig. 2 – Main Effects Model

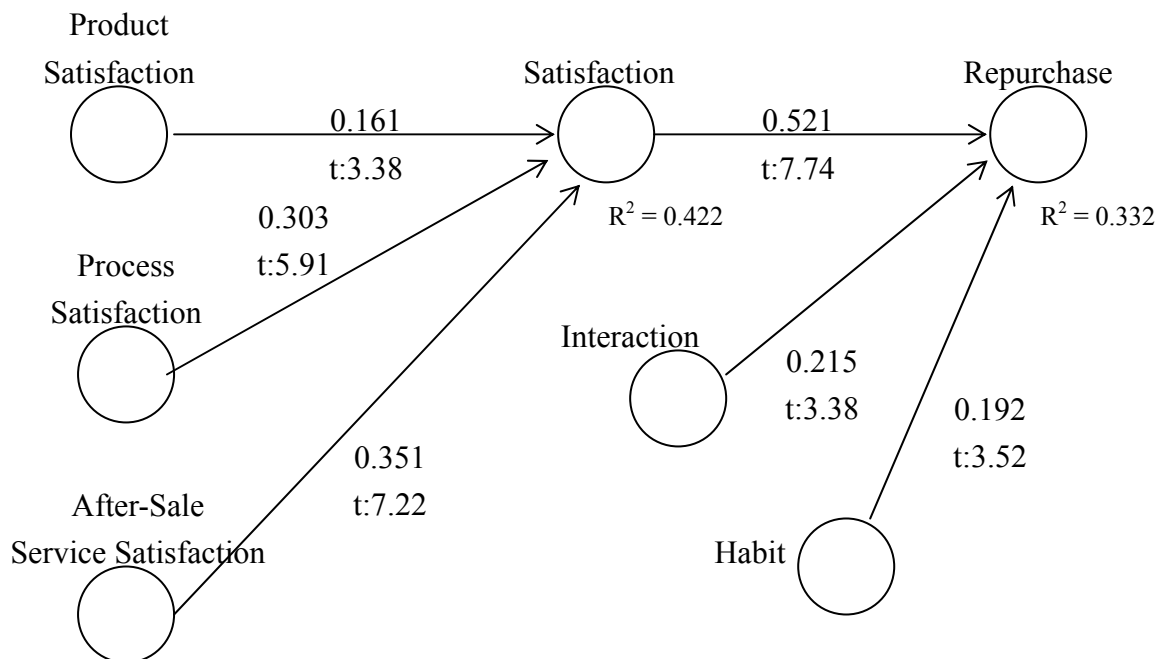


Fig. 3 - Interaction Model