

Behavioral Impacts of Promotion-induced Cross-buying: The Moderating Roles of Age and Gender

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This study investigates the effect of cross-buying induced by price promotion on purchase amount and frequency, and how the effect varies among customers of different ages and genders. The impact of the behavior is empirically examined by using data from an online fashion retail company. The results reveal that customers who frequently cross-buy during promotion appear to spend less but purchase more frequently. However, for male customers, purchase frequency is negatively affected. Further, the negative impact on purchase amount is greater for men and younger customers. We discuss the theoretical and managerial implications of this research.

INTRODUCTION

The size of the online market is continuously growing. In the U.S., as reported by the Census Bureau, the total sales of e-commerce retailers reached approximately 105 billion U.S. dollars in the second quarter of 2017, increasing by 6.9 percent of the total sales in the first quarter. In Japan, according to the report by the Ministry of Economy, Trade, and Industry, the size of the apparel e-retail market in the same year was estimated to be around 13.87 billion U.S. dollars. Simultaneously, the last decade has witnessed a rapid growth of online shopping mall giants such as Amazon, Rakuten, and Alibaba. One of the important features of online shopping malls is that the mall owners can benefit from enticing their customers to buy additional products or services (i.e., to cross-buy) from their tenant shops (Hendershott, Hendershott, and Hendershott, 2001).

Numerous studies have provided evidence that cross-buying is positively associated with purchase frequency and purchase amount. Venkatesan and Kumar (2004) pointed out that customers who purchase multiple product categories from the same seller purchase more frequently than other customers do. Further, Kumar, George, and Pancras (2008) found that cross-buying is positively associated with customer profitability. However, a recent study by Shah et al. (2012) has revealed that cross-buying does not always lead to favorable outcomes. Rather, the authors suggested that cross-buying that is induced by

price promotion may give rise to negative impacts on purchase amount and frequency. The result is intriguing because it alerts marketers that the long-term sales can decline if they frequently cross-sell products by using price promotions. Yet, how the negative impacts of promotion-induced cross-buying vary among different customers has not been addressed adequately. Specifically, how promotion-induced cross-buying would lead to different consequences for customers with different demographic characteristics (e.g., age and gender) remains unexplored. This question is important to address, provided the ample research suggesting heterogeneous buying behavior of customers of different ages and genders (Sorace, Perotti and Widrick, 2005; Valentine and Powers, 2013). Moreover, it is also crucial from a managerial perspective because a better understanding of the consequences of cross-buying can help marketers improve the targeting of cross-selling efforts (Li, Sun, and Montgomery, 2011).

In this study, we aim to fill this research gap by examining whether and how the effect of promotion-induced cross-buying behavior depends on customer age and gender in the online fashion market. Specifically, the main purpose of this study is to investigate the moderating effects of the demographic variables on the relationship among promotion-induced cross-buying, purchase frequency, and purchase amount. Further, as suggested by Reinartz, Thomas and Bascoul (2008), cross-buying is closely related to customer loyalty, and we also account for the potential interaction between these variables. However, because the transactions in online shopping malls involve customer attitude toward the mall owner and individual stores, we distinguish between mall loyalty and store loyalty. Additionally, we control for the effect of device type used by customers to access the mall's website.

The main contributions of the current research are threefold. First, this research is the first to investigate the moderating effects of demographic characteristics on the relationship between promotion-induced cross-buying and the resulting behavioral outcomes. Second, this study adds new insights into how promotion-induced cross-buying and loyalty interplay in influencing purchase frequency and purchase amount. Third, this analysis may provide a better understanding of cross-buying behavior in the online fashion retail market that can be useful for mall owners to enhance customer relationship management.

We organize the remainder of this paper as follows. In the next section, we review related studies on the consequences of cross-buying and the effect of demographic factors on purchase behavior in the online market. Subsequently, we discuss the theoretical underpinnings of our research framework and state our hypotheses. Following this section, we describe the data used in the empirical analysis and report the estimation results. We subsequently discuss the results of the hypotheses testing along with some implications. Finally, we conclude the paper with limitations and a direction for future research.

LITERATURE REVIEW

Cross-buying Consequences

Cross-buying is defined as the purchasing behavior of a number of products or services from the same seller (Verhoef, Franses, and Hoekstra, 2001). Previous studies have investigated the effects that cross-buying has on various aspects of consumer behavior. For example, Venkatesan and Kumar (2004) found that cross-buying positively influences purchase frequency. Reinartz, Thomas, and Bascoul (2008) empirically showed the same result, which was subsequently echoed by Lemon and Wangenheim (2009). In addition to purchase frequency, cross-buying has been shown to affect customer profitability. Kumar, George, and Pancras (2008) provided support for the positive relation between cross-buying intensity and profitability. Furthermore, Hallowell (1996) discovered that bank customers who purchase multiple services from the same division tend to be more profitable than those who only purchase a single financial product. The positive effect of cross-buying on customer profitability was also found in a study by Kumar, Shah and Venkatesan (2006).

Given the favorable impacts of cross-buying, many believe that firms should encourage their customers to buy additional products from them. Indeed, such a practice has been implemented by many

online sellers like Amazon through their automatic recommendation system. However, according to Shah et al. (2012), cross-buying behavior that is undertaken by customers who have small budgets, frequently return products, or purchase mostly during price promotion periods can be harmful rather than beneficial to the firm's profitability. In particular, they suggested that cross-buying behavior that is induced by price promotion should directly decrease the amount spent by customers in each transaction. In the long run, promotion-induced cross-buying is projected to negatively affect purchase frequency because customers become more price-conscious and buy only when products are on promotion.

Demographic Characteristics

Considerable research has been undertaken to elucidate the role of demographic variables in influencing online shopping behavior. Sorce, Perotti and Widrick (2005) pointed out that purchase intention and search intention in online stores vary among customers of different ages. Further, there is indication that younger customers perceive greater hedonic and utilitarian benefits from online shopping than do older consumers (Dholakia and Uusitalo, 2002). Another study by Korgaonkar and Wolin (1999) suggested that men tend to purchase products or services from the Internet more frequently than women. Similarly, Van Slyke, Comunale and Belanger (2002) found that male customers are more likely than female customers to purchase products or services from online stores.

Despite the large body of research on the effects of demographic variables, empirical investigation that addresses how customer demographics influence cross-buying behavior is still sparse. Among a few studies, Li, Sun and Wilcox (2005) found that women and older customers are more sensitive to their overall satisfaction with a bank than are men and younger customers when deciding whether to purchase additional financial services. Further, Verhoef et al. (2001) examined the association between cross-buying and customer age, while Kamakura, Ramaswami and Srivastava (1991) explored how customer characteristics including income, age, and occupation affect financial maturity— one of the primary drivers of cross-buying.

RESEARCH FRAMEWORK AND HYPOTHESES

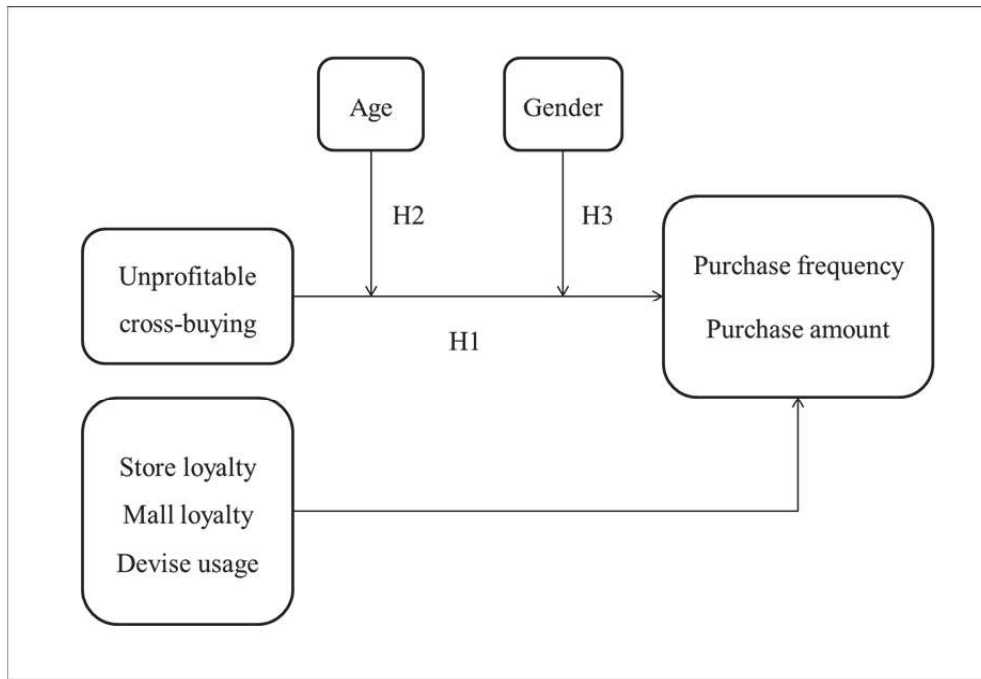
Research Framework

We show the research framework of this study in Figure 1. As previously outlined, our main objective is to investigate the moderating effect of age and gender on the relations among promotion-induced cross-buying, purchase amount, and purchase frequency. While previous studies have focused on the positive effects of cross-buying resulting from cross-selling activities (Kamakura, 2008), in this study we shed the light on cross-buying that is induced by price promotion. In contrast to previous research, we anticipate the negative effects, rather than positive effects, of promotion-induced cross-buying on purchase frequency and purchase amount. Further, we expect that the negative effects vary among customers of different ages and genders. These demographic variables signify heterogeneity in the psychological aspects of customers that potentially influence mental processing of promotion-induced cross-buying (Babakus and Yavas, 2008). In the context of online shopping, the response of younger customers to marketing stimuli can be different from that of the elderly (Bolton et al., 2013; Lian and Yen 2014). Thus, it is plausible to expect the impacts of promotion-induced cross-buying to be heterogeneous among customers with different demographic characteristics (Li et al., 2005; Verhoef et al., 2001).

Additionally, we control for the effects of customer loyalty and device usage. In online shopping malls, there are a number of independent tenant shops, some of which are unfamiliar to customers. When customers purchase additional products from unfamiliar stores, they would perceive greater risks (Stranahan and Kosiel, 2007). Thus, we anticipate that customers' loyalty to the stores from which they make purchases would influence purchase amount and purchase frequency. In addition to store loyalty, we argue that customer satisfaction and attitude toward a mall as a whole should also affect their buying behavior within the mall (Rabbanee et al., 2012). Accordingly, we include mall loyalty as a control

variable. Finally, we distinguish between customers who mainly use mobile devices and those who use fixed PCs when shopping at online stores. As suggested by Wang, Malthouse, and Krishnamurthi (2015), device usage differences may lead to different purchasing behavior of online customers.

**FIGURE 1
RESEARCH FRAMEWORK**



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Hypotheses

Promotion-induced Cross-buying

The main stream of research contends that cross-buying positively affects purchase frequency (Reinartz, Thomas, and Bascoul, 2008; Lemon and Wangenheim, 2009), and purchase amount (Kumar, George, and Pancras, 2008; Hallowell, 1996). However, it could not be the case for customers who frequently buy additional products during promotions (Shah et al., 2012). Instead, such a promotion-induced cross-buying behavior could damage firms' profit, especially in the long term, for several reasons. First, price promotions may lead to a decrease in customers' internal reference price (Grewal et al., 1998). This should eventually lower purchase frequency and amount of price-conscious customers because they would be reluctant to make a purchase unless the prices are below their reference prices. Second, frequent price promotions may reduce customer satisfaction toward the sale itself and perceived value of products (Compeau, Grewal, and Chandrashekar, 2002; Choi and Coulter, 2012). This would

imply that customers would perceive a promotion as attractive only if it is offered at high discount rates (Kuntner and Teichert, 2016). Otherwise, they would not respond to these offerings. Therefore, in the long term, customers who tend to cross-buy during price promotions are likely to have lower purchase frequency and purchase amount than average customers. Hence,

H1a: Promotion-induced cross-buying has a negative effect on purchase frequency.

H1b: Promotion-induced cross-buying has a negative effect on purchase amount.

Moderating Role of Age

Younger customers have different behavioral characteristics compared to older customers (Bakewell and Mitchell, 2003). They grew up with computers (Bolton et al., 2013) and perceive greater benefits from purchasing online (Dholakia and Uusitalo, 2002). It would not be uncomfortable for them to compare various products in multiple online shopping outlets, leading to a higher probability of switching between stores. As a result, the negative effect of promotion-induced cross-buying on purchase frequency should be larger for younger than for older customers. In contrast, price might not be the most important attribute for these customers. As pointed out by a previous study, a considerable portion of younger customers exhibit a great preference toward quality products and are less price-conscious (Bakewell and Mitchell, 2003). Thus, the negative effect of promotion-induced cross-buying on purchase amount should be lower for these customers. Hence,

H2a: The negative effect of promotion-induced cross-buying on purchase frequency is larger for younger than for older customers.

H2b: The negative effect of promotion-induced cross-buying on purchase amount is larger for older than for younger customers.

Moderating Role of Gender

Research studies have shown gender diversity in terms of satisfaction toward and evaluation of online shopping experiences (Rodgers and Harris, 2003; Zhou, Dai and Zhang, 2007). For example, women tend to emphasize the emotional and social experiential elements of online shopping compared to men (Zhou, Dai, and Zhang, 2007; Meyers-Levy and Loken, 2015). Because price sensitivity can be attenuated by both hedonic and social consumption experiences (Wakefield and Inman, 2003), female customers should be less price-sensitive than male customers. Moreover, women are not as good as men at searching for product information on the Internet (Ford, Miller and Moss, 2001); thus, they hardly make product comparisons across different e-commerce sites. As a result, the negative effect of promotion-induced cross-buying on both purchase frequency and purchase amount should be more salient for men than for women. Hence,

H3a: The negative effect of promotion-induced cross-buying on purchase frequency is larger for male than for female customers.

H3b: The negative effect of promotion-induced cross-buying on purchase amount is larger for male than for female customers.

MODEL

To test our hypotheses, we employ a seemingly unrelated regression (SUR) model (Zellner, 1962). The dependent variables are the logarithm of purchase amount and purchase frequency during a one-year observation period. We assume that these variables follow a bivariate normal distribution. The independent variables include promotion-induced cross-buying, device usage, store loyalty, and mall loyalty. Note that we also include the interaction terms between promotion-induced cross-buying and store loyalty, as well as mall loyalty. Let Y_{1i} and Y_{2i} denote the log of purchase amount and purchase

frequency of customer i , respectively. The system equation of the bivariate regression model can be expressed as follows.

$$Y_{1i} = \alpha_1 + \beta_{11}CB_i + \beta_{12}DEV_i + \beta_{13}SL_i + \beta_{14}ML_i + \beta_{15}CB_i * SL_i + \beta_{16}CB_i * ML_i + \varepsilon_{1i} \quad (1)$$

$$Y_{2i} = \alpha_2 + \beta_{21}CB_i + \beta_{22}DEV_i + \beta_{23}SL_i + \beta_{24}ML_i + \beta_{25}CB_i * SL_i + \beta_{26}CB_i * ML_i + \varepsilon_{2i} \quad (2)$$

Here, CB , DEV , SL , and ML refer to promotion-induced cross-buying, the type of device used, store loyalty, and mall loyalty of the respective customer, respectively. Further, $\varepsilon_i = (\varepsilon_{1i}, \varepsilon_{2i})'$ is a vector of error terms that follows a bivariate normal distribution with mean 0 and covariance matrix Σ . Thus, we account for the correlation between purchase frequency and purchase amount (Singh, Borle, and Jain, 2009). The parameters in this model are estimated by using feasible generalized least squares method. To test the moderating role of age and gender, we median-split the sample based on these variables which result in the estimation of four SUR models in total.

DATA

Sample

The data used in the analysis were provided by an online shopping mall company through the Joint Association Study Group of Management Science in Japan. It is one of the leading e-commerce firms selling fashion-related products such as apparel and accessories. More than 900 independent tenant shops sell their products on the mall's website. The mall owner actively engages in cross-selling their products by sending emails about new products or price discounts to the customers. The data contain a record of customers' purchases for one year, including more than one million purchases made by approximately ten thousand customers. The number of orders placed by each customer ranged from 1 to 1,717, some of which are conceivably made by businesses rather than individual customers. Because in this study we focus on individual customer behavior, we excluded those who are likely to be business customers from our sample by using the Smirnov–Grubbs outlier test and considered the outliers as belonging to business customers (Grubbs, 1950). The test resulted in the exclusion of customers who made 43 or more purchases.

Variable Operationalization

In this section, we describe the operationalization of the independent variables (i.e., promotion-induced cross-buying, device usage, store loyalty, and mall loyalty). Promotion-induced cross-buying was measured as the percentage of additional products purchased during promotion. For each customer, we observed the number of different products bought in the observation period, some of which are identified as promoted products. This could be immediately done since all purchased products were coded as whether they are on sale. Further, we used a dummy variable for device usage indicating whether a customer mainly uses mobile or other devices when accessing the mall's website. Specifically, mobile device users are coded as 1 and the others as 0. We operationalized store loyalty as a function of the ratio between the number of stores visited and the number of transactions made by each customer in a year. This variable takes a value between zero and one, with higher value associated with greater store loyalty. Finally, we measured mall loyalty as the number of years elapsed since customers signed up for membership until the first date of the observation period (membership duration).

The database recorded customer age categorically, that is, "teens," "early 20s," "late 20s," "early 30s," and so on. We follow Portolese Dias (2003) who categorized people who were born between 1962 and 1980 as "Generation X" and those who were born between 1981 and 2002 as "Generation Y". In this way, we classify young customers (i.e., "teens," "early 20s," "late 20s," and "early 30s") as Generation Y, and the remainders as Generation X in our analysis. The average purchase frequency of Generation Y customers is 10.5, and the average purchase amount in a year is 123,608 yen. For Generation X, the average purchase frequency is 11.9, and the average purchase amount is 138,725 yen. Further, the average

percentage of promotion-induced cross-buying is 55.9% for the former and 52.2% for the latter. Additionally, the average purchase frequency and purchase amount of male customers are 10.5 and 140,300 yen, respectively. For female customers, the average purchase frequency and purchase amount are 11.4 and 125,824 yen. Finally, the percentage of promotion-induced cross-buying is 51.5% for men and 55.0% for women. TABLE 1 shows the summary statistics of our sample.

TABLE 1
SUMMARY STATISTICS OF THE DEPENDENT AND INDEPENDENT VARIABLES

Variables	Number	Mean	Min	Max	SD
All Customers	32386(100%)				
Purchase Frequency		11.150	5	43	7.190
Purchase Amount (yen)		130,374	3,000	3,454,000	125555
Mobile Device Rate		0.690	0	1	0.408
Cross-buying		0.539	0	1	0.275
Store Loyalty		0.372	0	0.999	0.222
Mall Loyalty		2.972	0	15	2.610
Generation Y	17890(55.2%)				
Purchase Frequency		10.545	5	43	6.627
Purchase Amount (yen)		123,608	3,000	3,454,000	117702
Mobile Device Rate		0.777	0	1	0.355
Cross-buying		0.522	0	1	0.268
Store Loyalty		0.351	0	0.999	0.215
Mall Loyalty		2.681	0	15	2.463
Generation X	14496(44.8%)				
Purchase Frequency		11.897	5	43	7.766
Purchase Amount (yen)		138,725	4,000	2,561,000	134150
Mobile Device Rate		0.582	0	1	0.441
Cross-buying		0.559	0	1	0.282
Store Loyalty		0.397	0	0.994	0.228
Mall loyalty		3.331	0	15	2.739
Male	10180(31.4%)				
Purchase Frequency		10.518	5	43	6.636
Purchase Amount (yen)		1,403,00	3,000	3,454,000	141935
Mobile Device Rate		0.583	0	1	0.434
Cross-buying		0.515	0	1	0.284
Store Loyalty		0.371	0	0.993	0.218
Mall Loyalty		3.044	0	15	2.764
Female	22206(68.6%)				
Purchase Frequency		11.440	5	43	7.413
Purchase Amount (yen)		125,824	5,000	1,623,000	117005
Mobile Device Rate		0.739	0	1	0.385
Cross-buying		0.550	0	1	0.269
Store Loyalty		0.372	0	0.999	0.224
Mall Loyalty		2.938	0	15	2.536

RESULT

Hypotheses Testing

TABLE 2 and TABLE 3 show the estimation results of the SUR model. When all customers are included, the estimates of promotion-induced cross-buying behavior with respect to purchase amount and frequency are both significant. The sign of unprofitable cross-buying in the purchase amount model is negative, in support of H1b. However, the sign in purchase frequency model is positive, leading to the rejection of H1a.

Next, we report the results of the moderating effect of age. Given the effects of promotion-induced cross-buying on purchase frequency for both generations are positive, we rejected H2a. By contrast, the result in the purchase amount model reveals that the negative effect of promotion-induced cross-buying is greater for Generation X than for Generation Y, resulting in the acceptance of H2b. Thus, we confirmed that promotion-induced cross-buying leads to a significant decrease in purchase amount for older customers. For the moderating role of gender, while the purchase frequency of women is positively affected, that of men is negatively affected, in support of H3a. Finally, for the effect on purchase amount, the results reveal that the negative effect is greater for men than for women, providing a support for H3b. Thus, we concluded that the negative impact of promotion-induced cross-buying on purchase amount is more severe for male customers.

TABLE 2
PARAMETER ESTIMATES OF PURCHASE FREQUENCY MODEL

	All Customers	Generation Y	Generation X	Men	Women
<i>CONS</i>	5.073*** (0.199)	5.247*** (0.247)	4.692*** (0.333)	5.739*** (0.305)	4.833*** (0.257)
<i>CB</i>	0.660* (0.305)	0.018 (0.377)	1.465** (0.508)	-0.557 (0.487)	1.357*** (0.386)
<i>DEV</i>	0.714*** (0.092)	0.939*** (0.131)	0.941*** (0.137)	0.429** (0.142)	0.552*** (0.121)
<i>SL</i>	13.307*** (0.363)	12.517*** (0.463)	14.144*** (0.582)	10.400*** (0.554)	15.101*** (0.469)
<i>ML</i>	0.465*** (0.031)	0.369*** (0.041)	0.542*** (0.048)	0.252*** (0.046)	0.603*** (0.041)
<i>CB × SL</i>	-4.479*** (0.590)	-4.610*** (0.770)	-4.848*** (0.918)	1.032 (0.943)	-7.532*** (0.747)
<i>CB × ML</i>	-0.119* (0.052)	0.027 (0.071)	-0.273*** (0.078)	-0.005 (0.078)	-0.229*** (0.068)
Observations	32386	17890	14496	10180	22206
Adjusted R ²	0.135	0.131	0.132	0.137	0.141

*** p<0.001, ** p<0.01, * p<0.05. Standard errors are in parentheses.

TABLE 3
PARAMETER ESTIMATES OF PURCHASE FREQUENCY MODEL

	All Customers	Generation Y	Generation X	Men	Women
<i>CONS</i>	11.356 ^{***} (0.020)	11.365 ^{***} (0.027)	11.356 ^{***} (0.033)	11.467 ^{***} (0.034)	11.280 ^{***} (0.026)
<i>CB</i>	-0.607 ^{**} (0.031)	-0.639 ^{**} (0.041)	-0.571 ^{**} (0.050)	-0.720 ^{**} (0.055)	-0.542 ^{**} (0.038)
<i>DEV</i>	-0.053 ^{***} (0.009)	-0.074 ^{***} (0.014)	-0.018 (0.014)	-0.044 ^{**} (0.016)	-0.041 ^{***} (0.012)
<i>SL</i>	1.256 ^{***} (0.037)	1.318 ^{***} (0.050)	1.178 ^{***} (0.057)	1.104 ^{***} (0.063)	1.332 ^{***} (0.047)
<i>ML</i>	0.041 ^{***} (0.003)	0.037 ^{***} (0.004)	0.044 ^{***} (0.005)	0.030 (0.005)	0.049 ^{***} (0.004)
<i>CB × SL</i>	-0.576 ^{***} (0.061)	-0.628 ^{***} (0.083)	-0.530 ^{**} (0.091)	-0.175 (0.107)	-0.742 ^{***} (0.074)
<i>CB × ML</i>	0.006 (0.005)	0.011 (0.008)	0.000 (0.008)	0.001 (0.009)	0.005 ^{***} (0.007)
Observations	32386	17890	14496	10180	22206
Adjusted R ²	0.185	0.196	0.170	0.181	0.187

‘***’ p<0.001, ‘**’ p<0.01, ‘*’ p< 0.05. Standard errors are in parentheses.

Loyalty and Device Usage Effects

We next illustrate the estimation results for the effects of store loyalty, mall loyalty, and device usage. As can be seen from the tables, store loyalty positively affects purchase amount and purchase frequency, indicating that loyal customers of a store are likely to purchase more frequently and spend more money. Further, the variable’s effects on purchase frequency appear to be greater for female or younger customers than for male or older customers. This is in contrast with the variable’s effect on purchase amount, where the effect appears to be greater for men than for women. The positive effects on purchase frequency and purchase amount are also observed for the mall loyalty variable. Thus, long-tenure customers tend to buy more frequently and spend larger amounts in the mall. The effects on purchase frequency are particularly salient for female and younger customers, which is also the case in the purchase amount model. Finally, it is interesting to discover that mobile device usage has a positive effect on purchase frequency but a negative effect on purchase amount. The results indicate that mobile devices facilitate customers to buy online but lead to a decline in the amount spent in each transaction.

Interaction Effects

Finally, we examine the results for the interaction effects. The results in the purchase frequency model reveal that the interaction between promotion-induced cross-buying and store loyalty are negative. This is intriguing because promotion-induced cross-buying alone does not lead to a decrease in purchase frequency. However, the negative effect appears to be the case for store loyal customers. The negative interaction effects between promotion-induced cross-buying and store loyalty are also observed in the purchase amount model, except for women. This indicates that for most customers, the negative effect of unprofitable cross-buying on purchase amount increases as store loyalty increases. Similar results are also observed for the interaction effect between promotion-induced cross-buying and mall loyalty. That is, the negativity of the former tends to be more intense for customers with higher mall loyalty.

DISCUSSION AND IMPLICATIONS

Discussion

In this study, we investigated the moderating effect of age and gender on the relationship among promotion-induced cross-buying, purchase frequency, and purchase amount. Except for male customers, we found purchase frequency increase with promotion-induced cross-buying. Thus, even though they bought additional products mostly during price promotions, this behavior did not result in lower purchase frequency but was instead the other way around. This result contradicts our expectation in which promotion-induced cross-buying was presumed to lower purchase frequency. We conjecture that this might have been because customers were satisfied with price-promotion conducted by the firm, rendering them to repurchase in some stores within the mall. This could particularly be true for customers with higher price-consciousness or lower store loyalty. The interaction effects between promotion-induced cross-buying and loyalty variables signify that the positivity of promotion-induced cross-buying is lowered by store or mall loyalty. Therefore, firms could anticipate how cross-buying behavior would influence purchase frequency if they know the loyalty level of their customers.

In contrast to purchase frequency, the results revealed that promotion-induced cross-buying leads to lower purchase amount as expected. Thus, customers who frequently cross-buy during price promotions are likely to spend less money. Further, the negative impacts are even greater for older or male customers. As we have anticipated that older customers should be more sensitive to promotional deals, promotion-induced cross-buying could have led to lower amounts spent per transaction, eventually reducing the total amount during the observation period. With similar logic, promotion-induced cross-buying has a stronger negative effect on purchase amount for male customers, provided that male customers are more likely to be price-sensitive.

Additionally, we found that the negative effects of unprofitable cross-buying were enhanced by store and mall loyalty. When loyal customers engage in unprofitable cross-buying, it is likely that their purchase frequency and purchase amount decline. This is somewhat consistent with some findings by Umashankar, Bhagwat, and Kumar (2017) that being loyal to a firm does not imply that a customer purchases a higher amount than other customers. This is particularly true for loyal customers who frequently cross-buy during promotion periods.

Implications

This study has two theoretical implications. First, we extended the study by Shah et al. (2012) by incorporating the moderating effects of age and gender in an unprofitable cross-buying model. The results suggested that the influence of unprofitable cross-buying behavior on purchase frequency and amount varies depending on the demographic characteristics. Given that no research has been conducted to address this issue, this study added novel insights into the literature on unprofitable cross-buying. Second, this study also contributed to the development of customer relationship management by elucidating the complex roles of store loyalty as well as mall loyalty. Consistent with previous research, we found that loyal customers purchased more frequently and spent larger amounts in the shopping mall. However, loyal customers who frequently cross-buy due to price promotion are likely to become unprofitable customers in the future. Thus, firms should take any possible action to retain the customers and keep them loyal.

As for managerial implications, our study may be useful for marketers to alleviate the damage made by unprofitable cross-buying. In the context of online shopping malls, it is important for mall owners to identify how the effects of unprofitable cross-buying behavior vary depending on customer characteristics. This understanding should help them better target their marketing actions to the right customers. For example, they may need to engage older customers to increase brand-awareness and reduce price sensitivity so that they become less responsive to price promotion and cross-buy in regular prices.

CONCLUSION

In this study, we investigated the moderating effects of demographic characteristics on the relationship between unprofitable cross-buying and purchasing behavior. This study not only revealed how age and gender can alter the negative effect of promotion-induced cross-buying behavior but also provided new insights into the interaction between the behavior and customer loyalty. The results suggested that promotion-induced cross-buying led to lower purchase amount. The extent of the negative effect appeared to depend on age, gender, and customer loyalty. However, we also noted some limitations in this study. First, owing to data limitation, we restricted our investigation to the moderating effects of age and gender. However, other demographic characteristics such as income and family structure may alter the negative effects of promotion-induced cross-buying as well. Therefore, future research should address how these variables would affect unprofitable cross-buying. Further, as we only investigated the category of fashion products; further research using different product categories is needed to see whether our findings hold in general.

REFERENCES

- Babakus, E., & Yavas, U. (2008). Does customer sex influence the relationship between perceived quality and share of wallet?. *Journal of Business Research*, 61(9), 974-981.
- Bakewell, C., & Mitchell, V. W. (2003). Generation Y female consumer decision-making styles. *International Journal of Retail & Distribution Management*, 31(2), 95-106.
- Bolton, R. N., Parasuraman, A., Hoefnagels, A., Migchels, N., Kabadayi, S., Gruber, T., & Solnet, D. (2013). Understanding Generation Y and their use of social media: a review and research agenda. *Journal of Service Management*, 24(3), 245-267.
- Choi, P., & Coulter, K. S. (2012). It's not all relative: the effects of mental and physical positioning of comparative prices on absolute versus relative discount assessment. *Journal of Retailing*, 88(4), 512-527.
- Compeau, L. D., Grewal, D., & Chandrashekar, R. (2002). Comparative price advertising: Believe it or not. *Journal of Consumer Affairs*, 36(2), 284-294.
- Ford, N., Miller, D., & Moss, N. (2001). The role of individual differences in Internet searching: An empirical study. *Journal of the Association for Information Science and Technology*, 52(12), 1049-1066.
- Grewal, D., Krishnan, R., Baker, J., & Borin, N. (1998). The effect of store name, brand name and price discounts on consumers' evaluations and purchase intentions. *Journal of retailing*, 74(3), 331-352.
- Grubbs, F. E. (1950). Sample criteria for testing outlying observations. *The Annals of Mathematical Statistics*, 27-58.
- Hallowell, R. (1996). The relationships of customer satisfaction, customer loyalty, and profitability: an empirical study. *International journal of service industry management*, 7(4), 27-42.
- Hendershott, Patric H., Robert J. Hendershott, and Terrence J. Hendershott (2001). "The future of virtual malls," *Real Estate Finance*, 18 (1) 25-32.
- Kamakura, W. A. (2008). Cross-selling: Offering the right product to the right customer at the right time. *Journal of Relationship Marketing*, 6(3-4), 41-58.
- Kamakura, W. A., Ramaswami, S. N., & Srivastava, R. K. (1991). Applying latent trait analysis in the evaluation of prospects for cross-selling of financial services. *International Journal of Research in Marketing*, 8(4), 329-349.
- Korgaonkar, P. K., & Wolin, L. D. (1999). A multivariate analysis of web usage. *Journal of advertising research*, 39, 53-68.
- Kumar, V., George, M., & Pancras, J. (2008). Cross-buying in retailing: Drivers and consequences. *Journal of Retailing*, 84(1), 15-27.

- Kumar, V., Shah, D., & Venkatesan, R. (2006). Managing retailer profitability—one customer at a time!. *Journal of Retailing*, 82(4), 277-294.
- Kuntner, T., & Teichert, T. (2016). The scope of price promotion research: An informetric study. *Journal of Business Research*, 69(8), 2687-2696.
- Lemon, K. N., & Wangenheim, F. V. (2009). The reinforcing effects of loyalty program partnerships and core service usage: a longitudinal analysis. *Journal of Service Research*, 11(4), 357-370.
- Li, S., Sun, B., & Montgomery, A. L. (2011). Cross-selling the right product to the right customer at the right time. *Journal of Marketing Research*, 48(4), 683-700.
- Li, S., Sun, B., & Wilcox, R. T. (2005). Cross-selling sequentially ordered products: An application to consumer banking services. *Journal of Marketing Research*, 42(2), 233-239.
- Lian, J. W., & Yen, D. C. (2014). Online shopping drivers and barriers for older adults: Age and gender differences. *Computers in Human Behavior*, 37, 133-143.
- Meyers-Levy, J., & Loken, B. (2015). Revisiting gender differences: What we know and what lies ahead. *Journal of Consumer Psychology*, 25(1), 129-149.
- Portolese Dias, L. (2003). Generational buying motivations for fashion. *Journal of Fashion Marketing and Management: An International Journal*, 7(1), 78-86.
- Rabbane, Fazlul K., B. Ramaseshan, Chen Wu, and Amy Vinden (2012). "Effects of store loyalty on shopping mall loyalty," *Journal of Retailing and Consumer Services*, 19 (3) 271-278.
- Reinartz, W., Thomas, J. S., & Basco, G. (2008). Investigating cross-buying and customer loyalty. *Journal of Interactive Marketing*, 22(1), 5-20.
- Rodgers, S., & Harris, M. A. (2003). Gender and e-commerce: An exploratory study. *Journal of advertising research*, 43(3), 322-329.
- Dholakia, R., & Uusitalo, O. (2002). Switching to electronic stores: consumer characteristics and the perception of shopping benefits. *International Journal of Retail & Distribution Management*, 30(10), 459-469.
- Shah, D., Kumar, V., Qu, Y., & Chen, S. (2012). Unprofitable cross-buying: evidence from consumer and business markets. *Journal of Marketing*, 76(3), 78-95.
- Singh, Siddarth S., Sharad Borle and Dipak C. Jain (2009). "A generalized framework for estimating customer lifetime value when customer lifetimes are not observed," *Quantitative Marketing and Economics*, 7 (2) 181–205.
- Sorce, P., Perotti, V., & Widrick, S. (2005). Attitude and age differences in online buying. *International Journal of Retail & Distribution Management*, 33(2), 122-132.
- Stranahan, H., & Kosiel, D. (2007). E-tail spending patterns and the importance of online store familiarity. *Internet Research*, 17(4), 421-434.
- Umashankar, N., Bhagwat, Y., & Kumar, V. (2017). Do loyal customers really pay more for services?. *Journal of the Academy of Marketing Science*, 45(6), 807-826.
- Valentine, D. B., & Powers, T. L. (2013). Online product search and purchase behavior of Generation Y. *Atlantic Marketing Journal*, 2(1), 6.
- Van Slyke, C., Comunale, C. L., & Belanger, F. (2002). Gender differences in perceptions of web-based shopping. *Communications of the ACM*, 45(8), 82-86.
- Venkatesan, R., & Kumar, V. (2004). A customer lifetime value framework for customer selection and resource allocation strategy. *Journal of marketing*, 68(4), 106-125.
- Verhoef, P. C., Franses, P. H., & Hoekstra, J. C. (2001). The impact of satisfaction and payment equity on cross-buying: A dynamic model for a multi-service provider. *Journal of Retailing*, 77(3), 359-378.
- Wakefield, K. L., & Inman, J. J. (2003). Situational price sensitivity: the role of consumption occasion, social context and income. *Journal of Retailing*, 79(4), 199-212.
- Wang, R. J. H., Malthouse, E. C., & Krishnamurthi, L. (2015). On the go: How mobile shopping affects customer purchase behavior. *Journal of Retailing*, 91(2), 217-234.

- Zellner, A. (1962). An efficient method of estimating seemingly unrelated regressions and tests for aggregation bias. *Journal of the American statistical Association*, 57(298), 348-368.
- Zhou, L., Dai, L., & Zhang, D. (2007). Online shopping acceptance model-A critical survey of consumer factors in online shopping. *Journal of Electronic commerce research*, 8(1), 41.