What are Differences of Customer Characteristics between Multi and Single Channel Users? A Big Data Analysis of a Department Store in Korea

Seong-Soo Cha* and Cheol Park**

* Fist Author, Department of Food Science and Service, Eulji University, South Korea
Email: sscha@eulji.ac.kr
**Corresponding Author, College of Global Business, Korea University, South Korea
Email: cpark@korea.ac.kr

Abstract

The paper aims to clarify the specific characteristics of multi and single channel customers using the actual big data of a department store in Korea, and if there are any differences from customer characteristics and buying behaviors, we might suggest the effective customer management for retailers. This study focused mainly on the most fundamental paths, on- and offline, in the distribution industry. Data of 13 million multichannel customers were obtained from the Lotte Department Store, which has the biggest department store in Korea and logistic regression analysis was performed to verify research questions.

Keywords: Multichannel, Single channel, Big data, Customer characteristics, Logistics analysis

1. Introduction

The global consumer movement toward online and mobile shopping has intensified (Park, Kang, & Kim, 2012), and thus inter-channel competition in the now more diverse and complex retail world is becoming fierce. New distribution channels continue to emerge and evolve, while responding to existing channels. The multichannel environment, especially in regards to on- and offline channel conflicts and competition of the past, has not changed to a system of cooperation and coexistence.

In accordance with this changing environment, multichannel customers who use compound contribution channels have become very important customers for corporations (Konuş, Verhoef, Neslin, 2008; Stone et al., 2002; Mahajan et al., 2002; Pourabedin et al., 2016). Empirical evidence that multichannel consumers buy more and are more desirable than single channel users has now reached the generalization phase (Ansari et al., 2008; Thomas & Sullivan, 2005) and more and more businesses are utilizing two or more paths for their distribution channels(Cha & Park, 2017).

Wallace et al. (2004) insisted that customers' use of multi channels provides a positive effect on consumers' shopping behavior and increases customer loyalty due to the complementary roles of channel paths. Others have claimed that if corporations consider this, they would offer multichannel shopping to raise customer loyalty (Danaher, Wilson, & Davis, 2003; Hitt & Frei, 2002; Shankar et al., 2003; Wallace et al., 2004). On the other hand, some have stated that multichannel shopping reduces customer loyalty by increasing shopping competition (Brynjolfsson & Smith, 2000).

This study is differentiated from previous studies in the following ways. First, new variables which had not treated in prior research were introduced to broaden the study's horizons to include gender, age, customer ratings, customer loyalty, purchase location, purchase price, discount rate, promotional reaction, and product lines for transaction characteristics that indicate the difference between multi- and single channel customers. Second, in most previous studies, the researchers used specific survey data. However, in this study, we plan to examine the issues through actual corporate big data. Big data has recently emerged

as a major subject throughout the industry worldwide, especially as a basis for future growth in the retail industry.

The purpose of this study is to deal with specific characteristics of multi and single channel customers using the actual customer data of large companies, and if there are any differences from customer characteristics and buying behaviors, we might suggest the direction of new corporate strategies. This study focused mainly on the most fundamental paths, on- and offline, in the distribution industry.

2. Theoretical Backgrounds

2.1. The Characteristics of Multichannel

Multichannel refers to a retail strategy to sell goods and services to consumers through a distribution strategy of using one or more distribution channels, such as retail outlets and media, for example, the Internet or TV (Stone et al., 2002). Multichannel customer refers to a customer who shops on more than one path (Schoenbachler & Gordon, 2002; Stone et al., 2002), channel integration has strong and positive effects on service quality perceptions in both online and mobile environments, which further influence transaction-specific satisfaction and cumulative satisfaction (Yang et al.,2017). In their study on the effects of multichannel shopping, multichannel customers were shown to make more frequent purchases, pay higher prices, and evince more brand loyalty than single channel customers; therefore, retailers could create synergies through the integrated management of each path (Ansari et al., 2008; Kumar & Venkatesan, 2005; Neslin et al., 2006; Shanker, Smith, Rangaswamy, 2005; Cha & Park, 2017).

2.2. The Characteristics of Multichannel Buyers

Consumers using multichannels show more loyalty than single channel buyers as well as purchase more diverse products, thus spending more. As a result of analyzing the total revenue generated by consumers, academic research shows that multichannel customers are significantly more profitable than single channel ones (Kumar & Venkatesan, 2005; Thomas & Sullivan, 2005; Cha & Park, 2016). When shopping via multichannels, customers may be easily exposed to the service provided by the company and therefore make a deeper, more satisfied relationship with the corporation (Venkatesan et al., 2007). The result is that multichannel purchases promote loyalty and customer satisfaction (Wallace et al., 2004). In the study of Myers et al. (2004), multi-channel customers are presented as showing, on average, an amount spent 20-30% higher than single-channel customers.

3. Research Questions

3.1. The differences in characteristics between multi- and single channel customers

The demographic factors of consumer age, education level, income and employment status were demonstrated in prior studies to affect consumers' information seeking (Newman & Staelin, 1972). Studies on differences in demographic characteristics between multichannel and single channel consumers, consumers' income and level of education were considered important variables that affect multichannel shopping behaviors. Some studies show that differences in using multichannel shopping are in accordance with age and gender, but not marital status, average monthly household income, and occupation. In these studies, younger, higher income customers normally have a higher rate of multichannel shopping use (Mcgoldrick & Natalie, 2007; Schramm, Swoboda, & Morschett, 2007). Based on the theoretical background of these prior studies, we have set the following research issue.

Research Question 1.

Is there a difference between multi- and single channel customer characteristics?

It was found that multichannel customers purchase more items, purchase more frequently and spend more than single channel customers and that price is the most important value among the various shopping benefits which shopping channels provide (Kumar & Venkatesan, 2005)

When the same person uses online and offline shopping his or her purpose-oriented, conformity, and urge for convenience tendencies lead to Internet shopping, while his or her brand-oriented tendency is stronger for offline shopping. Which shopping routes are used and whether multichannel is in accordance with the type of consumer use will depend on the product category (Bhatnagar & Ghose, 2004). For example, consumers who purchase books often use a single channel path; on the other hand, consumers using electronic equipment use a different path such as the Internet, a catalog, or a retail store. Goods purchased and transaction amounts in Korea by multichannel in 2015 were three times greater than in 2010. The product lines affected were mainly travel reservation services, fashion-related goods, food, cosmetics, household and car accessories, consumer electronics, and computer supplies (Statistics Korea, 2016). Based on the theoretical background of these prior studies, we have suggested the following research issue.

Research Question 2.

Is there a difference between multi- and single channel customers purchasing characteristics?

4. Methodology

4.1.   Data

Data on 13 million multichannel customers were obtained from the Lotte Department Store, which has the biggest market share among department stores in Korea. This data can be classified into seven categories: (a) Gender and Age (b) Customer Purchase Grade (c) Customer Membership (d) Purchasing Area (e) Purchase Amount (f) Discount Rate and (g) Event Participation.

The data consisted of shopping mall customers divided into two groups; one is only offline shoppers as a single channel group and the other is on and offline members as a multichannel group.

4.2. Sample Characteristics

Out of 130,658 items in the data, excluding 410 items with system-missing values (0.3%), men comprised 43.2% (n = 56,577) and women 56.8% (n = 74,491). Regarding age, the 20~29 years old cohort comprised 2% (n = 2,910), 30~39 years 27% (n = 35,743), 40 to 49 years 37% (n = 48,643), 50 to 59 years 25% (n = 32,951), 60 to 69 years 4% (n = 5,533), and 70 years or older 4% (n = 4,878). The minimum age in the data is 25 years of age, and the maximum age is 86 years old; the average age was 46 years old.

4.3 Statistical Analysis

We evaluated the variables of multichannel customers' shopping behavior by logistical regression analysis. The simulations were based on data from 130,000 customers from which gender, customer purchase grade, membership, and purchase area are divided by two pairs and others are set to continuous data. The study was analyzed with SPSS 20.0.

5. Results

In order to verify the explanatory variables for on and offline multichannel and offline single channel customers, a logistics analysis was performed utilizing multichannel as the dependent variable and customer characteristics such as gender, age, customer grade, loyalty and buying characteristics such as purchase location, amount of purchase, discount rate, and reactions to promotions as the independent variables.

In the analysis results, all the variables show a statistically significant value. When interpreted as the estimated coefficient (B), multichannel customers use an overlap of on and offline shopping, as male gender compared to the customer of the single-channel to be used off-line only, age is as young, as members, buy in Seoul. However, promotions participation, discount rate, and customer evaluation were analyzed as lower compared to off-line single channel customers. The logistics regression analysis is as follows.

$$\hat{Y} = 5.188 + -.732 \, \chi \, 1 + -.088 \, \chi \, 2 + 1.260 \, \chi \, 3 + -.003 \, \chi \, 4 + .000 \, \chi \, 5 + -.006 \, \chi \, 6 + .479 \, \chi \, 7 + -1.969 \, \chi \, 8$$

Table 1 The results of logistical analysis for multichannel selection

Variables	B	S.E.	Wald	df	Sig. level	Exp (B)
Gender (Women 1, Men 0)	-.732	.015	2310.039	1	.000	.481
Age	-.088	.001	9094.203	1	.000	.916
Grade (VIP1, Normal 0)	-1.969	.028	5062.357	1	.000	.140
Membership (Member 1, Non-Member 0)	1.260	.016	6179.181	1	.000	3.526
Area (Seoul 1, Rural 0)	.479	.014	1133.092	1	.000	1.615
Purchase Amount	.001	.000	15.707	1	.000	1.000
Discount Rate	-.006	.001	18.909	1	.000	.994
Event Participation	-.003	.000	464.339	1	.000	.997
Constant	5.188	.053	9639.025	1	.000	179.192

When reviewing the data concerning single and multichannel shoppers by gender, (Women are coded 1; men are coded 0.) The multichannel selection shows a higher proportion of men. When examining members of the multichannel cohort, it can be seen that men's familiarity with IT equipment, such as mobile devices, produces a higher specific gravity than that of women. This is a result that matches the research of Lee and Johnson (2002). The regression coefficient of gender was -.732, and the Wald statistic was 2310.039 (d.f.=1, $p < .001$).

Comparing the ages of multi- and single channel customers shows that the ages of multichannel shoppers were lower. This is the same research result found by previous studies (McGoldrick & Collins, 2007; Schramm-klein et al., 2007). The regression coefficient of age was -.088, and the Wald statistic was 9094.203 (d.f.=1, $p < .001$).

For customer ratings, VIP members are 1, while the general membership is set to 0. Analysis demonstrates that the proportion of the general membership which is multichannel customers is higher than the proportion of multichannel VIP members. Due to the expansion of competition in the mobile and online industries, offline distribution retailers are working to create strategic fusions in their business structures. However, loyal customers have still proven to do more purchasing activities at offline stores, which is a result of analysis not existing in previous research. Existing studies on multichannel shopping loyalty claim that the strength of loyalty is reduced due to

increased customer competition (Brynjolfsson & Smith, 2000). On the other hand, there were conflicting claims since multichannels provide a variety of choices and conveniences to existing customers, thus increasing loyalty ("Another growth" 2008; McGoldrick & Collins, 2007; Schramm-klein et al., 2007; Wallace et al., 2004). The present study's results are consistent with research on how to increase customer loyalty. The regression coefficient of membership was 1.26, and the Wald statistic was 6179.181 (d.f.=1, p <.001).

For multichannel customers by purchasing area (Seoul and metropolitan areas are 1, local areas 0.), the Seoul and metropolitan areas show a higher percentage than local areas. This is also similar to previous studies, and the results demonstrate that higher income and higher education levels lead to multichannel usage (McGoldrick & Collins, 2007; Schramm-klein et al., 2007). The regression coefficient of purchasing region was .479, and the Wald statistic was 1133.092 (d.f.=1, p <.001).

In regards to purchase price, analysis of multi- and single channel customers showed similar results. This is contrary to previous findings of a high level of sales for multichannel consumers in comparison to single channel ones. The regression coefficient of purchase amount was 0.001, and the Wald statistic was 15.707 (d.f.=1, p <.001).

The customer's discount rate analysis shows that many single channel customers receive more discounts than multichannel customers. The regression coefficient of the discount rate was -.006, and the Wald statistic was 18.909 (d.f.=1, p <.001). Our analysis of participation in promotional events by multi-channel customers found that their participation rate is lower than that of single channel customers. As a result of the likelihood ratio test for verifying the suitability of the estimated model (likelihood ratio test), S = - was the 2 log (L0 / L m) = 126649.78. The degrees of freedom is 8, and the value of the chi-squared in the significance level α = 0.05 (χ2) is higher than 52613.51; the R-squared value also shows that the model has a suitable level.

Table 2 Goodness of fit for the logistical model for multichannel selection

-2 log likelihood	Cox and Snell R^2	Nagelkerke R^2
126649.784a	.334	.446

6. Conclusion

6.1. Summary of the study
Summary of the results of the present study is as follows. First, multichannel customers show a higher ratio of men than women. Men can be seen to make greater use of online shopping because they are relatively more interested in IT equipment, and they enjoy the relatively store-less shopping. The customer ratings of multichannel customers for customer loyalty are higher than for single channel shoppers. The proportion of normal customers was higher than that of VIP customers because of the practical aspects of high discount rates and event participation. In terms of customer loyalty, multichannel customers are shown to possess a higher proportion of customer loyalty in this study. The age of multichannel shoppers is younger than single-channel customers; we assume that young people are more familiar with the online environment and IT equipment. Second, the purchase area for multichannel consumers is more often Seoul than in the countryside, which is closely related to the city's more advanced IT infrastructure network and equipment. Purchase price indicated a low level compared to single channel customers; consumers who buy online are shopping there mainly for discounted prices and practical reasons, as well as to purchase basic goods rather than expensive, brand name products, daily necessities or home appliances. As a result of the study shown, retailers should focus their multichannel marketing on young male citizen whose customer grade is general

member.

6.2. Implications

The biggest challenge of the current distribution industry is how to attract the consumer that is moving from shopping in department stores and the like to online websites. Demographic changes, such as an increase in the number of one-person households and the ubiquity of IT technology, have helped online malls, convenience store, H&B, and retail formats such as supermarkets successfully increase their number of customer visits.

In this situation, the present study was to analyze, by using the actual data of a large company, the current preferences of consumers, and found that multi- and single channel customers choose different products and exhibit different transaction characteristics. Accordingly, we suggest the significance of our research is as follows. From an academic point of view, the previous comparisons of multi- and single channel customers was presented as a result of empirical studies; however, due to the limitations of the data groups used, we discovered, as stated above, problems and issues with that research. By carrying out our research using big data from an actual company, we sought to correct the errors of generalization present in previous studies.

6.3 Limitations and future research directions

Multichannel distribution started from the emergence of online channels; however, it covers too wide a region to be regarded as only one path. This study is limited by considering multichannel consumers as on and offline customers simultaneously and single channel consumers as only offline customers. Another limitation of this study is that it is not appropriate to explain the complex route choice behavior of consumers by analyzing only two paths such as on and offline of sole department store from a dichotomous perspective in one country. Therefore, further studies are needed to better identify multichannel consumers and their choices, including department stores, supermarkets, convenience stores, the Internet, and mobile home shopping in several countries.

References

[1] Ansari, A., Mela, C. F., & Neslin, S. A. (2008). Customer channel migration. *Journal of Marketing Research, 45*(1), 60-76.

[2] Bhatnagar, A., & Ghose, S. (2004). Online information search termination patterns across product categories and consumer demographics. *Journal of Retailing, 80*(3), 221-228.

[3] Brynjolfsson, E., & Smith, M. D. (2000). Frictionless commerce? A comparison of Internet and conventional retailers. *Management science, 46*(4), 563-585.

[4] Cha, S. S., & Park, C. (2016). A Comparative Study on Purchasing Behavior of Multi-Channel and Single-Channel Customers Using Retailer's Data Analysis. *Journal of Distribution Research,* 21(3), 157-177.

[5] _____ (2017). Consumption Value Effects on Shopping Mall Attributes: Moderating Role of On/Off-line Channel Type. *Journal of Distribution Science,* 15, 5-12.

[6] _____ (2017). The Differences between Multi-channel and Single-channel Customer: Focusing on Shopping Motivation, Store and Product Attribute Importance, and Channel Switch. *Journal of Distribution and Management Research, 20*(2), 37-46.

[7] Danaher, P. J., Wilson, I. W., & Davis, R. A. (2003). A comparison of online and offline consumer brand loyalty. *Marketing Science, 22*(4), 461-476.

[8] Hitt, L. M., & Frei, F. X. (2002). Do better customers utilize electronic distribution channels? The case of PC banking. *Management Science, 48*(6), 732-748.

[9] Konuş, U., Verhoef, P. C., & Neslin, S. A. (2008). Multichannel shopper segments and their covariates. *Journal of Retailing, 84*(4), 398-413.

[10] Kumar, V., & Venkatesan, R. (2005). Who are the multichannel shoppers and how do they perform?: Correlates of multichannel shopping behavior. *Journal of Interactive marketing, 19*(2), 44-62.

[11] Lee, M., & Johnson, K. K. (2002). Exploring differences between Internet apparel purchasers, browsers and non-purchasers. *Journal of Fashion Marketing and Management: An International Journal, 6*(2), 146-157.

[12] Levin, A. M., Levin, I. R., & Heath, C. E. (2003). Product category dependent consumer preferences for online and offline shopping features and their influence on multi-channel retail alliances. *J. Electron. Commerce Res., 4*(3), 85-93.

[13] Mahajan, V., Srinivasan, R., & Wind, J. (2002). The dot. com retail failures of 2000: were there any winners?. *Journal of the Academy of Marketing Science, 30*(4), 474-486.

[14] McGoldrick, P. J., & Collins, N. (2007). Multichannel retailing: profiling the multichannel shopper. International Review of Retail, *Distribution and Consumer Research, 17*(2), 139-158.

[15] Myers, J. B., Pickersgill, A. D., & Van Metre, E. S. (2004). Steering customers to the right channels. *McKinsey quarterly, 4*(3), 36-47.

[16] Neslin, S. A., Grewal, D., Leghorn, R., Shankar, V., Teerling, M. L., Thomas, J. S., & Verhoef, P. C. (2006). Challenges and opportunities in multichannel customer management. *Journal of Service Research, 9*(2), 95-112.

[17] Newman, J. W., & Staelin, R. (1972). Prepurchase information seeking for new cars and major household appliances. *Journal of Marketing Research*, 249-257.

[18] Park, W. I., Kang, S., & Kim, Y. K. (2012). A Recommendation Scheme Considering Customer's Psychological Patterns in M-Commerce Environment. International Information Institute (Tokyo). *Information, 15*(7), 3005.

[19] Pourabedin, Z., Yeoh, S. F., Chatterjee, R. S., & Ho, J. S. Y. (2016). Customers' online channel switching behavior: the moderating role of switching cost. *Information, 19*(7B), 2961-2970.

[20] Rangaswamy, A., Van Bruggen, G. H. (2005). Opportunities and challenges in multichannel marketing: An introduction to the special issue. *Journal of Interactive Marketing, 19*(2), 5-11.

[21] Schoenbachler, D. D., & Gordon, G. L. (2002). Multi-channel shopping: understanding what drives channel choice. *Journal of Consumer Marketing, 19*(1), 42-53.

[22] Schramm-Klein, H., Swoboda, B., & Morschett, D. (2007). Internet vs. brick-and-mortar stores- analysing the influence of shopping motives on retail channel choice among internet users.

Journal of Customer Behaviour, 6(1), 19-36.

[23] Shankar, V., Smith, A. K., & Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International journal of research in marketing, 20*(2), 153-175.

[24] Statistics Korea (2016), E-commerce and cyber shopping trends

[25] Stone, M., Hobbs, M., & Khaleeli, M. (2002). Multichannel customer management: The benefits and challenges. *Journal of Database Marketing & Customer Strategy Management, 10*(1), 39-52.

[26] Thomas, J. S., & Sullivan, U. Y. (2005). Managing marketing communications with multichannel customers. *Journal of Marketing, 69*(4), 239-251.

[27] Venkatesan, R., Kumar, V., & Ravishanker, N. (2007). Multichannel shopping: causes and consequences. *Journal of Marketing, 71*(2), 114-132.

[28] Wallace, D. W., Giese, J. L., & Johnson, J. L. (2004). Customer retailer loyalty in the context of multiple channel strategies. *Journal of retailing, 80*(4), 249-263.

[29] Yang, S., Lu, Y., Chau, P. Y., & Gupta, S. (2017). Role of channel integration on the service quality, satisfaction, and repurchase intention in a multi-channel (online-cum-mobile) retail environment. *International Journal of Mobile Communications, 15*(1), 1-25.