Retail Store Brand and Customers Purchase Behaviors

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Abstract

Retail store or house or private label brands have been rapidly growing along with the fast growing businesses of modern retail trading stores and convenient stores in Thailand. This paper intends to reveal impacts of consumers' store image and perception on store brands on purchasing behavior of retail store brand products. The study classifies purchasing behavior into two dimensions, including frequency of purchase and purchase expenditure. Survey data are observed and estimated using Zero Inflated Poisson (ZIP) regression for frequency of purchase model and Ordered Probit for level of purchase expenditure models. The findings from ZIP model indicate that consumers first decide to purchase store brand product, then, frequency of purchase as the next step. Store images and perceptions of store brands, and brand experience show significant impacts on consumers' purchasing behavior, frequency of purchase and level of purchase expenditure.

Keywords: Store Brand, store Image, perception of store brands, purchase behavior, Zero Inflated Poisson, Ordered Probit

Introduction

Modern retail trading or discount stores, such as Tesco Lotus and BigC superstore, and convenient stores, like 7-eleven, have been rapidly grown and widely spread throughout Thailand for the past decades. Accordingly, these stores have gained more loyalty from its customers, then, taken advantage by introducing variety products with its-own store brands. The questions arise how customers choose between store brands and other alternative

premium brands and which factors determine their purchasing decision and behavior. Unlike other studies [1]-[9], this study hypothesizes that a positive store image, high store brand's perceived quality, perceived worthy value of merchandises, and good store brand experience have been claimed as key factors determining purchase of store brand merchandise intension. This study aims at determining major factors that drive customer decision to purchase merchandises under retail store brands and testing the relationship among all major factors and purchase behaviors on store brand merchandises.

Conceptual Framework

Studies concerning on store or private labels brand had been emphasized and discussed in various aspects, such as reason of purchase [2], effect of store name and image [1], and competition with regular brands [3]. While previous studies had mostly claimed and interpreted store brand as an alternative competitive strategy for the retailer to offer discount price as well as alternative merchandising strategy to fulfill their customers' needs [1]-[3], recent studies have been emphasizing on the issue of store image and store brand equity and its relationship with the store loyalty [4]-[10]. By applying concept of both previous and recent studies, this research focuses on store image and perceptions on quality and value of store brand merchandises derived from price and merchandising strategies and store brand experience in determining their purchase behaviors.

Figure 1 illustrates conceptual framework of this study. Follow conceptual framework of [1] [3] [4] [6], each customer makes use of store name, positioning, merchandising and price strategies as information and signals in constructing their perceptions on store image, store brand merchandises quality, and value for money of the store brand merchandises, which all determine purchase behaviors on store brand merchandises. Additionally, brand experiences from the consumption of store brand merchandises also influences customers' purchase behaviors [7].

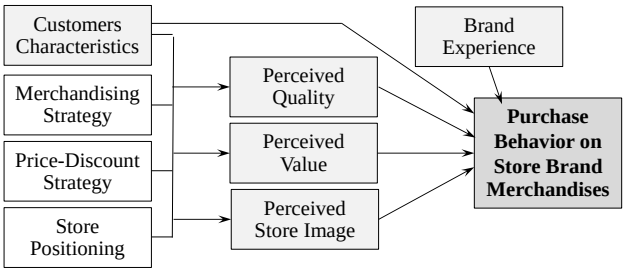

Figure 1. Conceptual Framework

Purchase Behavior on Store Brand Merchandises

According to the above conceptual framework, it can be concluded that purchase behavior (*PB*) is determined by perceived merchandise quality (*PQ*), perceived value for money (*PV*), perceived store image (*SI*), brand experience (*BE*), and personal characteristics (*CH*) of customer. The function can be stated as:

$$PB = f(PQ, PV, SI, BE, CH) \qquad (1)$$

Purchase behaviors (*PB*) in this study are divided into two dimensions, including frequency of purchase (y_1) and level of purchase expenditure (y_2) [11].

Based on the above conceptual framework, the hypotheses of this study are as follows:

H_1: Frequency of purchase (y_1) is determined by perceived merchandise quality (*PQ*), perceived

value for money (*PV*), perceived store image (*SI*), brand experience (*BE*), and personal characteristics (*CH*) of customer.

H_2: Level of purchase expenditure (y_2)is determined by perceived merchandise quality (*PQ*), perceived value for money (*PV*), perceived store image (*SI*), brand experience (*BE*), and personal characteristics (*CH*) of customer.

Models

According to conceptual framework equation (1) and two hypotheses based on dimensions of purchase behaviors, research models in determining purchase behaviors are divided into two groups, including models for frequency of purchase and models for level of purchase expenditure.

Models for Frequency of Purchase

Linear Regression Model

By assuming linear relationship between dependent variable and independent variables, linear regression model for frequency of purchase store brand based on equation (1) can be stated as:

$$y_{1i} = X_{1i}\beta_{11} + u_{1i} \quad (2)$$

where y_{1i} represents frequency of purchase as dependent variable, X_{1i} is matrix of independent variables, $X_{1i} = [PQ \quad PV \quad SI \quad BE \quad CH]$, $_1$ is vector of the coefficients of linear regression model, and u_{1i} is random error term. Personal characteristics of customers as control variables in this study consist of gender, age, educational level, and income of the customers. The model can be estimated by using ordinary least squares (OLS).

However, since the dependent variable, frequency of purchase, is measure as integer counted number, the suitable econometric model for dependent variable with counted data should be Poisson Regression Model.

Poisson Regression Model

By assuming the distribution of the counted data dependent variable follows Poisson distribution, the model can be stated as:

$$P[Y_{1i} = y_{1i}] = \frac{\exp(-\mu_i)\mu_i^{y_{1i}}}{y_{1i}!} \quad (3)$$

where μ_i is mean of the dependent variable (y_1) and $\mu_i = \exp(X_{1i}\beta_{12} + u_{1i})$, $_{12}$ is vector of the coefficients of Poisson regression model, also for Poisson distribution, mean of dependent variable is assumed to be equal to its variance. Finally, this Poisson regression model can be estimated by using maximum likelihood estimation method.

However, since the dependent variable in this study does not only determine frequency of purchase but also the decision not to purchase, which will then be determined as zero. With the high possibility of having too many zero number in the dependent variable, the distribution of the dependent variable might not completely be Poisson distributed. The suitable econometric model for dependent variable with counted data and too many zero should Zero Inflated Poisson regression model.

Zero Inflated Poisson (ZIP) Regression Model

By assuming the distribution of the counted data dependent variable follows Poisson distribution and combining with the decision making model by employing Probit model, the density function of the Zero Inflated Poisson (ZIP) regression model can be stated as:

$$P[Y_{1i} = y_{1i}] = \begin{cases} f_1(0) + (1 - f_1(0))\, f_2(0) & if\ y_{1i} = 0 \\ (1 - f_1(0))\, f_2(y_{1i}) & if\ y_{1i} > 0 \end{cases} \quad (4)$$

Where $f_1(.)$ is probability distribution when $y_{1i} = 0$ and $f_2(.)$ is Poisson distribution when $y_{1i} > 0$.

$$f_1(0) = P[Y_{1i} = 0] = \Phi(X_{0i}\beta_{01}) \quad (5)$$

(.) is cumulative normal distribution for decision model as Probit model. X_{0i} is matrix of independent variables, $X_{0i} = [PQ \quad CH_0]$, $_{01}$ is vector of the coefficients of Probit (Inflate) part. Personal characteristics (CH_0) are educational level and income of the customers.

$$f_2(y_{1i}) = P[Y_{1i} = y_{1i}] = \frac{\exp(-\mu_i)\mu_i^{y_{1i}}}{y_{1i}!} \quad (6)$$

where μ_i is mean of the dependent variable (y_1) and $\mu_i = \exp(X_{1i}\beta_{12} + u_{1i})$, $_{12}$ is vector of the coefficients of Poisson regression part. The ZIP model can be estimated by using maximum likelihood estimation method.

Models for Level of Purchase Expenditure

Linear Regression Model

By assuming linear relationship between dependent variable and independent variables, linear regression model for level of purchase expenditure on store brand based on equation (1) can be stated as:

$$y_{2i} = X_{2i}\beta_{21} + u_{2i} \quad (7)$$

where y_{2i} represents level of purchase expenditure as dependent variable, X_{2i} is matrix of independent variables, $X_{2i} = [PQ \quad PV \quad SI \quad BE \quad CH]$, $\square_{21}$ is vector of the coefficients this linear model, and u_{2i} is random error terms.

However, since dependent variable, level of purchase expenditure, is measure as ordered data, the suitable econometric model should be Ordered Probit model.

Ordered Probit Model

By assuming ordered normally distributed, the model can be stated as:

$$
\begin{aligned}
-\infty < \mathrm{P}\left[y_{2i}=0\right] &\le \Phi(X_{2i}\beta_{22}) \\
\Phi(X_{2i}\beta_{22}) < \mathrm{P}\left[y_{2i}=1\right] &\le \Phi(X_{2i}\beta_{22}+\tau_1) \qquad (8)\\
&\vdots \\
\Phi(X_{2i}\beta_{22}+\sum_{j=1}^{4}\tau_j) < \mathrm{P}\left[y_{2i}=4\right] &\le \Phi(X_{2i}\beta_{22}+\sum_{j=1}^{5}\tau_j) \\
\Phi(X_{2i}\beta_{22}+\sum_{j=1}^{5}\tau_j) < \mathrm{P}\left[y_{2i}=5\right] &\le \infty
\end{aligned}
$$

where: $P\left[y_{2i}=j\right]$ is probability that $y_{2i}=j$ and j=0,1,...,5 and β_{22} is vector of the coefficients this Ordered Probit model, τ_i is threshold i that separate order i, and $\Phi(.)$ is cumulative normal distribution. This model can be estimated by using maximum likelihood estimation method.

Results

Empirical survey data of 800 respondents, customers of modern retail trading stores and convenience stores in Bangkok and Vicinity, are randomly observed based on stratified groups using self-reported questionnaire.

Dependent variables, purchase behaviors, consist of frequency of purchase store brand merchandises measured as number of time purchase each week and level of purchase expenditure measured as ordered data (0 for never purchase, 1 for less than 100 Baht a week, ..., and 5 for more than 500 Baht a week).

Independent variables, including perceived store brand merchandise quality, perceived value for money of store brand merchandise, perceived store image, and brand experience, are all determined by Likert scale, then, exploratory analyzed by employing factor analysis, and reliability tested by using Cronbach alpha, with the values of 0.8213, 0.8025, 0.8242, and 0.8475, respectively.

Personal characteristics of customer are treated as control variables, including gender, age, educational level, and income of the customers, which are all measured as dummy variables. Female is dummy variable for gender equals to 1 for female and 0 for male, Age>40 for age equals to 1 for age greater than 40 and 0 otherwise, Edu>Bachelor for education equals to 1 for high than bachelor degree graduate and 0 for bachelor degree or lower, and Income>20,000 for income equals to 1 for income greater than 20,000 Baht a month and 0 for less than or equal 20,000 Baht a month.

To test and confirm conceptual framework proposed by this study, all proposed econometric models for purchase behaviors, including frequency of purchase and level of purchase expenditure, are estimated using OLS and maximum likelihood estimation method.

Models for Frequency of Purchase

The estimated results of linear regression model, Poisson regression models, and Zero Inflated Poisson (ZIP) regression models for frequency of purchase store brand merchandises based on models in equation (2) to (6) are shown in Table 1.

Table 1 ESTIMATED RESULTS OF FREQUENCY OF PURCHASE

Variable	Linear		Poisson		ZIP	
Perceived Quality	0.511		0.371			
Perceived Value	1.375	***	0.936	***	1.028	***
Perceived Store Image	1.847	***	1.197	***	1.250	***
Brand Experience	1.130	***	1.272	***	1.306	***
Female	-0.240	***	-0.169	***	-0.150	**
Age>40	-0.479	***	-0.374	***	-0.275	**
Edu>Bachelor	0.619	***	0.413	***	0.276	***
Income>20,000	-0.228		-0.180		0.315	**
Constant	-0.978	**	-1.801	***	-1.770	***
Inflate						
Perceived Quality					-5.157	***
Edu>Bachelor					-1.057	**
Income>20,000					2.069	
Constant					-0.789	***
N	800		800		800	
Log-likelihood	-1258.6		-1168.0		-1143.3	
F-test	15.082	***				
Chi-square Test			128.073	***	109.633	***
R^2	0.132					
Pseudo R^2			0.052			
Vuong Test					4.138	***

Note: * significant at 0.1, ** significant at 0.05, *** significant at 0.01

The estimated results of the three models are all significant confirming that all independent variables, perceived merchandise quality, perceived value, perceived store

image, and brand experience, are significantly determined number of time to purchase store brand merchandises each month.

As expected in section III, estimated results of Poisson regression model show better fit than those of the linear regression model as indicated by the higher log-likelihood value. Additionally, the significance of Vuong test confirms the hypothesis that there exists zero inflated in the dependent variable. Accordingly, the estimated results of ZIP models present a better fitted of the data compared to Poisson regression models.

The significances of ZIP models imply that the customer first decide to purchase or not to purchase, then, if decide to purchases, he/she will decide how many time each month. First, the estimated results of inflate model, based on Probit model, indicate that perceived quality is the first factor that positively determines decision whether not to purchase store brand merchandise. Second, the estimated results of Poisson model reveal that number of time purchasing store brand merchandises is positively influenced by perceived value, perceived store image, and brand experiences. These findings help confirming the hypotheses and explaining the processes of purchasing decision.

Additionally, the estimated results of control variables of customer characteristics in the inflate model indicate that customers with high education are more likely to purchase store brand merchandises while customers with high income level are less likely to purchase. Based on estimated results of Poisson part, female or older customers less frequently purchase store brand products compare to male or younger customers. On the contrary, high educated or high income customers are more likely to frequently purchase store brand merchandises.

Models for Level of Purchase Expenditure

The estimated results of linear regression model and Ordered Probit models for level of purchase expenditure on store brand merchandises based on the regression models presented in equation (7) and (8) are shown in Table 2.

The estimated results of both models show significant relationships which help confirming that all independent variables, perceived merchandise quality, perceived value,

perceived store image, and brand experience, are all significantly and positively determined level of purchase expenditure of store brand merchandises each time.

As discussed in section III, estimated results of Ordered Probit model reveal better fit than those of the linear regression model as indicated by the higher log-likelihood value. All threshold coefficients, Cut1-Cut5, are all significant which indicate that all levels of expenditure are significantly different.

The estimated results of Ordered Probit model imply that perceived quality, perceived value, perceived store image, and brand experiences are positively determined level of purchase expenses of store brand merchandises each time. The hypotheses of this study are confirmed.

Additionally, similar to the estimate results of frequency of purchase models, control variables of customer characteristics are all significantly influenced level of purchase expenses. Female and older customers are more likely to spend less on store brand merchandises while high educated and high income customers have potential to spend more on these private label products.

Table 2 ESTIMATED RESULTS OF LEVEL OF PURCHASE EXPENDITURE

Variable	Linear		Ordered Probit	
Perceived Quality	-1.026	***	0.709	**
Perceived Value	0.598	**	1.172	***
Perceived Store Image	1.825	***	1.630	***
Brand Experience	-0.746	***	2.047	***
Female	-0.157	**	-0.193	**
Age>40	-0.225	*	-0.262	*
Edu>Bachelor	0.504	***	0.470	***
Income>20,000	0.211	*	0.136	*
Constant	2.780	***		
Cut1			0.966	***
Cut2			2.440	***
Cut3			3.337	***
Cut4			4.385	***
Cut5			6.449	***
N	800		800	
Log-likelihood	-1117.5		-1065.3	
F-test	14.024	***		
Chi-square Test			199.484	***

R^2	0.124	
Pseudo R^2		0.086

Note: * significant at 0.1, ** significant at 0.05, *** significant at 0.01

Discussion

All estimated models confirm the hypotheses of this study that purchase behavior is influenced by perceived merchandise quality, perceived value for money, perceived store image, and brand experience. This findings are in line with the previous [1]-[3] and recent studies [4]-[10].

Perceived quality of store brand merchandises has been claimed as the main factor which helps retail stores to obtain trustworthy from their customers [1]. If the customers of any retail stores perceive and have trust in the merchandises of that particular retail store being high quality, building store own brand would easily be successful. In Thailand, major players in modern retail trading stores, including Tesco Lotus and Big C super stores, and the leading convenience store, 7-eleven, have been emphasizing and successfully implementing its merchandising strategies by consistently signaling their customers of the standard of all merchandises in the stores. Therefore, merchandises under their store brand are mostly success.

Perceived value of store brand merchandises is also another factor that has also been criticized as the major strength for introducing the store brand [10]. By positioning themselves as discount stores, the price strategies of the modern retail trading stores have been set as low price strategy. Value merchandising strategy has consistently played an important role for this type of stores. Accordingly, store brand merchandises with lower price have continuously become successful in motivating their customers to switch from regular brand to their store brands.

Store image should be strategically targeted and built in order for the retailers to sustain their competitive advantage [6]. Through the appropriated merchandising and pricing strategies and clear store positioning [12], retailers can obtain their store image, which can help building store brand merchandises [1] [7]. With their good and strong store images, Thai leading modern retail trading stores, Tesco Lotus and Big C, can easily introduce variety of store brand merchandises.

Positive brand experience can help enhancing sale of the store brand products [7]. Good impression and experience from consuming store brand merchandises would motivate customers to repeat purchasing store brand merchandises. With the carefully and seriously concern on quality and value of their store brand merchandises, the current Thai modern retailers can successfully provide good experience for their store brand customers.

Additionally, the findings of this study also confirm role of gender in the relationship with store brand merchandises, which is similar to the findings of [9]. Male and female customers perceive on products quality and value differently [13][14], thus, their purchase behaviors are different in term of number of frequency and amount spending.

Furthermore, unlike previous studies, by employing advanced microeconometric models, ZIP and Ordered Probit models, which more suitable with the variables and the data set, the estimated results of such models help providing a better understanding of decision process of purchase behaviors, especially decision to purchase and frequency of purchase.

Conclusion

In conclusion, this study intends to reveal impacts of consumers' perceptions on merchandises quality, value, store image, and brand experiences on purchasing behavior of retail store brand merchandises. Survey data are observed and estimated using Zero Inflated Poisson (ZIP) model for frequency of purchase and Ordered Probit model for level of purchase expenditure. The findings of both models confirm the relationships that store images and perceptions of store brands merchandises in term of quality and value, and brand experience show significant impacts on consumers' purchasing behaviors. Based on estimated results of ZIP model, consumers first decide to purchase store brand product, then, frequency of purchase is the second step.

According to the findings, modern retail trading stores and convenience stores should focus more on setting up appropriated merchandising and pricing strategies, which are suitable for their store positioning. These appropriated strategies can help enhancing and achieving good and creditable perceptions of their customers on the merchandise quality, value, and store image, which will in turn help sustaining their competitive advantage.

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