

IMPLEMENTATION OF DISCRIMINANT ANALYSIS IN DETERMINING OFFLINE AND ONLINE CONSUMER SHOPPING BEHAVIOR IN RETAIL MARKET

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Abstract : *The purpose of this research is to know the factors of retail mix and brand image in forming consumer preference and to know trend of offline and online shopping behavior. The data used in this study is the primary data by questionnaire. This questionnaire consists of six variables of retail mix: service quality, product diversity, price, promotion, store atmosphere, and brand image with the total number of statements that are thirty-two statements and have been tested for validity and reliability. Samples taken as many as 300 respondents. The analytical method used is discriminant analysis. Based on the calculation of the whole analysis it can be concluded that product diversity and store atmosphere are variables affecting consumer behavior in offline and online shopping on retail business and shopping behavior trends in retail business leads to offline shopping system.*

Keywords: *Consumer Preferences, Shopping Behavior, Retail mix, Brand image.*

I. INTRODUCTION

The development of the retail industry in the last few years is growing very rapidly. The retail industry is evolving along with the changes that occur in society. The ever-growing level of people's incomes leads to segments of consumers seeking a change in the management of the retail industry. Thus, the presence of modern retail is characterized by the opening of retail business competition. Retail has grown into an industry and is not only monopolized by one business actor.

The optimism of retail growth in 2017 and this is also reinforced by the reminder of the number of households with a budget of US \$ 5,000-US \$ 15,000 which currently controls 36% -40% of the total population. Moreover, in accordance with the release nielsen Indonesia is still in the top position as the world's optimistic country based on Consumer Confidence Index.

As the development of the modern era, entrepreneurs must make innovations in the economy. The Association of Indonesian Retailers (Aprindo) stated that in 2016, there was a 10% increase in sales in the national retail industry. This increase is in line with the improvement of the Indonesian economy in 2016. The improvement of retail industry performance this year is supported by several factors, ranging from the national inflation rate that tends to improve, the price of electricity components, as well as controlled and supported gas and fuel (BBM) by Bank Indonesia's benchmark interest rate that has fallen three times in 2016. In addition, among other ASEAN countries, Indonesia's retail business, including the growth is quite good, in Singapore retail business actually decreased.

The Bank Indonesia Survey shows that non-food retail sales growth as of September 2017 shrank 6.2 percent compared to the same period last year. In some news also mention some clothing retail stores that start closing outlets in some areas in

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Jakarta. But the interesting growth in retail sales of e-commerce online which the majority of the transaction is non-food sales actually increased rapidly. New statistics.com data released in October 2017 describes the number of online retail sales of e-commerce has reached US \$ 7.05 billion or approximately Rp91, 6 trillion (exchange rate assumption Rp13.000 per US dollar). The figure grew 22 percent compared to the end of December 2016. The increase was also higher than those of large offline retailers whose sales only grew an average of 10 percent.

This progress can not be separated from the large number of internet users in Indonesia which makes Indonesia become one of the largest online transaction market in the world. Until 2022, the number of Internet users is estimated to be 139.54 million from 104.96 million in 2017 based on statist data. About a third of that amount or about 43.9 million is the potential number of online shoppers.

Based on the above matters, this study aims:

1. To know the factors that differentiate consumer shopping behavior offline and online in the retail market
2. To know the trend of offline and online shopping behavior.
3. To know the model of consumer preferences in offline and online shopping behavior on retail business.

II. LITERATURE REVIEW

2.1 *Theoretical basis*

2.1.1 Retail mix

Levi & Weitz (2001) states that retail is a business activity that adds value to products or services sold to consumers for the family or the consumer itself. Retail management needs to build a retail mix that accommodates the needs of the target market better than its competitors. Retail mix is a combination of retail factors that meet consumer needs as the basis of consumer decisions to make purchases. The elements of the retail mix consists of:

- Consumer services.

According to Kotler (2000), service quality is the totality of the characteristic forms of goods and services that demonstrate its ability to satisfy the needs of the customer, both visible and hidden. According to Zeithaml, Parasuraman & Berry (2011) to know the quality of service perceived significantly by consumers. There are indicators of service quality that lies in the five dimensions of service quality, namely: tangible, reliability, responsiveness, certainty, and empathy.

- Product diversity

Product diversity is a process of planning and controlling products in one group or number of product groups that are in stock at a retail store. Kotler (1012) revealed that there are 4 indicators of product diversity namely: variation of product brand, variation of product completeness, variation of product size, and variation of product quality.

- Price

According to Engel, Blackwell & Miniard and Kotler (1996), price is one important factor for consumers in making decisions to make transactions or not. There 5 indicators of price, namely: affordable price, competitive price, compatibility price with quality, and information of a discount.

- Promotion

Promotion by Berman and Evans (2010) is an activity that influences perceptions, attitudes and consumer behavior towards a retail store with all its offerings. There are 4 indicators of promotion, namely: quantity of promotional activities, discount pricing, coupons with prizes, and discounts.

- Store Atmosphere

According to Levy and Weitz (2007), the atmosphere of a store refers to the design of an environment through visual communication, lighting, color, music, and smell to stimulate consumer perceptions and consumer emotional responses so as to influence their buying behavior. The store atmosphere consists of 5 indicators, namely: exterior, interior, layout, security, and facilities.

2.1.2. Brand image

Brand image is a collection of perceptions about a related interrelated brand that exists in the human mind (Ouwersoot and Tudorica, 2001). According to Keller (2008), the brand image is a brand perception represented by the brand associations that exist in human memory. Keller (2008) also revealed that there are three dimensions of brand image: favorability of brand association, strength of brand association, and uniqueness of brand association. While the indicator used to measure brand image is indicator mentioned by Aaker (2010) which consist of 4 indicators namely recognition, reputation, affinity, and domains.

- Consumer Value Perceived

Value according to Woo (1992) illustrates four common definitions. First, the value of the consumer in life as the value of humanity and as living beings with one unified whole. Second, the interpretation of value that is collective and objective. Third, values is individual and subjective. Fourth, value refers to what is obtained from the activity of purchasing, consumption and disposition of products and services. Zeithaml (1998), value is the result of consumer assessment of the whole product based on perception of what is given and accepted. While Chen & Dubinsky (2003) define value as a basic advantage that consumers get in return for the costs incurred to obtain the benefits expected by consumers.

- Desire to Buy

Darden & Howell (1987), Gutman & Mills (1982) and Hawkins, Best & Coney (1989), describe the buying desire as complex and multidimensional phenomena (such as motives, needs, interests, economic conditions and social class) and dimensions market behavior (choice of information sources, role models and store attributes). Babin, Darden & Griffin (1994) define buying intentions as a comfort orientation that emphasizes value of useful spending, as task-related, sensible, cautious and efficient.

III. METHODS

3.1. Population and Sample

The population in this study is all consumers who have been shopping in offline stores and online sites on retail business, in Jakarta and Bandung area and because of the large population can not be known exactly how much, the authors use quota sampling. According Sugiyono (2001) states that quota sampling is a technique to determine the sample of a population that has certain characteristics to the desired amount (quota). In this study the researchers determine the sample size of 300 samples.

The sampling technique used in this research is accidental sampling technique. Accidental sampling technique is a sampling technique by chance that consumers who have been shopping in offline stores and online sites and domiciled in the area of Jakarta and Bandung who happened to meet researchers at the site of research.

1.2. Instrument Test (validity & reliability test)

Validity test according to Sugiyono (2004: 138), the way used is by Item analysis, where every value that existed in each item is correlated with the total value of all questions for a variable using product moment correlation formula. The minimum requirement to be considered is the value of $r > r$ table value. R table at $\alpha = 5\%$ (0.05) with degrees of freedom $df = \text{number of respondents} - 2$. In this study, the number of respondents 30, so df is 11, and r table (0.05; 30) is 0.361.

While the reliability test is intended to determine the consistency of measuring instruments in its use, or in other words the measuring tool has consistent results when used many times at different times. According to Arikunto (1998: 145), for reliability test used Cronbach Alpha Technique, where an instrument can be said reliable if it has a coefficient of reliability or alpha of 0.6 or more.

3.3. Data Analysis Technique

The data collected in this study was analyzed with Discriminant Analysis. This grouping is mutually exclusive, in the sense that if object A has entered group 1, then it can not also be a member of group 2. Analysis can then be developed on any variable that makes group 1 different from group 2, what percentage goes to group 1, what percentage goes to group 2. Since there are a number of independent variables, there will be one dependent variable, discriminant analysis characteristic is data type of dependent variable of type (category), like code 0 and 1, or codes 1, 2 and 3 and other combinations (Santoso, 2001). Using SPSS is to simplify the calculation process.

IV. FINDINGS AND ARGUMENT

4.1. Finding

4.1.1. Test Validity

Validity test results are valid if obtained r-count value greater than r-table (<0.361) with 30 respondents, then the instrument or item question is declared valid. From note that the results of the calculation of 32 questions are all declared valid because it has a number greater than 0.361 is between 0.592 and 0.796.

4.1.2. Test Reliability

Based on the reliability analysis results obtained value of reliability coefficient of 0.968, it can be stated that the whole question as many as 32 items are declared reliable because it has a reliability coefficient of 0.968 > 0.6.

4.1.3. Discriminant Test

Based on the variables entered table then it can be seen the factors that differentiate consumer shopping behavior online and offline in retail market are as follows:

Table 1: Variables Entered

	Entered	Min. D Squared					
		Statistic	Between Groups	Exact F			
				Statistic		f2	
		,110	0	7,882	1	298,000	,005
	ER	,167	0	5,946	2	297,000	,003

Based on the table of variables in the analysis of the six variables of consumer service, product diversity, price, promotion, store atmosphere and brand image there are only two variables that are included in the analysis of store atmosphere and product diversity. Both variables have Sig numbers below 0.05, ie 0.005 Sig. Store atmosphere variables and 0.003 sig variable product diversity variable. Thus, of the six variables included, there are only two significant variables. Or it could be said the store atmosphere and the diversity of the product affects consumer behavior to shop offline or online on the retail market.

The next step is to analyze the two variables that have been selected included in the analysis.

- A significant test of the discriminant function is formed

From the calculation results obtained Chi-square value of 11.660 with sign <0.05, then H0 rejected, it concluded that the average value of store atmosphere variables and product diversity of two groups of consumers offline shopping and online shopping together have differences between groups.

- Test the strength of discriminant function relationships

Based on the analysis of eigenvalues obtained canonical correlation value of 0.596, or square canonical correlation (CR2)=(0.596)² or equal to 0.351.

So it can be concluded that the consumer group in deciding to buy offline or online can be explained by the store atmosphere and product diversity of 35% and 65% explained by variables outside of the variable.

- Discriminant Function

The display of canonical discriminant function coefficients shows that the magnitude of the product type coefficient of 0.836 and the store/site atmosphere coefficient of 1.251.

Table 2: Canonical Discriminant Function Coefficients

	Function
	1
ER	,836
	1,251
	5,193

Standardized coefficients are used to assess the importance of discriminant variables relative to the formation of discriminant functions. The higher the standardized coefficients, the more important the variable is to the other variables and vice versa. Variable of store atmosphere relative more important than variable of product diversity in forming discriminant function. Based on the calculation hence obtained discriminant function as follows:

$$z \text{ Score} = 5,193 + 0,836 \text{ product diversity} + 1,251 \text{ store atmosphere}$$

• Classification

Based on the original value indicates that group 1 is the offline shopping consumer and group 2 is the online shopping consumer.

The classification results show that out of 183 consumer group 1 (offline shopping), 58 of them fall into group 2 classification (online shopping) because it has average value on the discriminant variable more closely to group 2 (online shopping). Of the 117 consumer groups of 2 (online shopping), 62 of them fall into group 1 (offline shopping) because they have an average of discriminant variables closer to group 1 (offline shopping). Based on the original total score obtained that of 300 respondents, as many as 183 respondents have the behavior of offline shopping and 117 respondents have the behavior of online shopping, it can be concluded that the tendency of consumer behavior to shop in the retail market more to offline shopping. So from 300 samples of consumers it is only able to explain the accuracy of classification of:

$$\frac{125 (\text{group 1}) + 55 (\text{group 2})}{300 \text{ respondent}} = 60$$

The prediction accuracy of the discriminant model is 60%, according to Santoso (2002: 173) if accuracy above 50% is considered high. Because the precision value is 60% > 50% then the above discriminant model can be used to classify in the case of consumer behavior that has offline or online shopping preferences in the retail market.

Table 3: Classification Results^{a,c}

		Predicted Group Membership		Total
		,00	,00	
		125	58	183
		62	55	117
		68,3	31,7	100,0
		53,0	47,0	100,0

ated ^b	125	58	183
	62	55	117
	68,3	31,7	100,0
	53,0	47,0	100,0

4.2. Discussions

1. The store atmosphere affects the behavior of consumer purchases offline and online on retail business

The results of this study indicate that consumer buying behavior offline and online is influenced by the atmosphere of the store. These results indicate that the more attractive the mood of a store or site displayed by offline stores and online sites in retail business will further enhance consumer purchase decisions on the store. Store atmosphere is one of the important elements of the retail mix that is able to influence consumer purchasing decision process. This is as stated by Levy & Weitz (2001: 556), customer purchasing behavior is also influenced by the store atmosphere. In purchasing decisions consumers not only respond to goods and services offered by retailers, but also respond to a pleasant purchasing environment for consumers, so that consumers choose the preferred store and make a purchase. Knowing and understanding the atmosphere of the store is not easy because the atmosphere of the store is a combination of things that are emotional.

According to Kotler and Keller (2009), the mood of the store is a planned atmosphere that suits the target market and that can attract customers to buy. The store's situation can be described as a change to the purchasing environment planning that generates special emotional effects that can cause consumers to take a buying action. Managing a good store atmosphere will create a comfortable and enjoyable shopping experience, so consumers will give a good perception of the store's atmosphere and the greater the thrust to make a purchase at the store.

2. The product diversity affects consumer purchasing behavior offline and online

The results of this study indicate that consumer buying behavior offline and online is influenced by the product diversity. These results indicate that the more diverse products offered by offline stores and online sites in retail business will further enhance consumer purchase decisions on the store or site. The buyer wants a product that is purchased in an always-stock condition, available quite a lot and complete. Thus, buyers do not need to look elsewhere if the buyer needs a product. According to Philip Kotler (2002) completeness of the product is the availability of all products required by consumers produced by a manufacturer. While the definition of product diversity according to Engels (1995), product diversity is the completeness of products concerning the depth, breadth and quality of products offered as well as the availability of these products at all times in the store. Retailers need to offer products that are diverse because of the tendency in consumers who want a variety of goods. The diversity provided is expected to provide encouragement and choice for consumers to purchase complementary products in shopping. This means the creation of a good store atmosphere and in accordance with consumer tastes is very important to do primarily to maintain consumer buying interest.

3. Shopping behavior trends in retail business leads to offline shopping systems

The results of this study indicate that shopping behavior trends in retail business leads to offline shopping systems. This identifies that consumers are more likely to shop in offline stores rather than shopping on online sites in retail business. This is because when they shop offline they can feel and see the product directly (55.7%), can try the product so that it can increase shopping satisfaction (30.7%). Based on the results of the Wall Street Journal in 2014 reveals the reasons why Indonesians will still choose offline stores to shop because of several things that they can check the goods directly, will not be fooled, there will be no booking errors, can ask advice to the seller when buying a product, and by offline shopping

consumers can bargain. The results of this study are not in line with the results of research (Levin2005) which shows that the tendency of Shopping Behavior in Retail Business more leads to the online system

V. CONCLUSIONS

1. Store atmosphere and product diversity affect consumer buying behavior offline and online.

This means that if the store/site atmosphere is styled in such a way that it blends products, graphics and interiors that can stimulate and create the look that looks the way it wants, and can create a cheerful, warm, or cozy atmosphere, it will make consumers are interested in buying. Likewise, the diversity of products offered by retail stores should also vary both variations of brand variations, product variety variations, and product size variations. This is important because the activities undertaken in the retail business are to sell various products, services or both, to consumers for both personal and shared consumption.

2. Shopping behavior trends in retail business leads to offline shopping system.

This identifies that consumers are more likely to shop in offline stores rather than shopping on online sites in retail business. Consumers are more likely to shop at offline stores because when they shop at offline stores they can feel and see the product directly (55.7%), can try the product so as to increase the satisfaction.

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