

# FINANCIAL MATHEMATICS APPLICATION OF FACTORS AFFECTING TRADE BANK PURCHASE FOR CURRENCY EXCHANGE RATES

Sagundala A/P Pune Silva, Siti Mistima Maat

Faculty of Education, Universiti Kebangsaan Malaysia, Bangi, Malaysia

Corresponding Author: [sagun906@yahoo.com](mailto:sagun906@yahoo.com)

---

**Abstract:** This study is an application of financial mathematics in determining the buying pattern of customers in the bank. The study was conducted by focusing on the pattern of currency purchase by customers by using Planned Behavior Theory (TPB) to determine which factors (customer attitude; subjective norms and behavioral control) influence the pattern of currency buying in Commercial Banks. This study was conducted on Trade that operate in Melaka only. Study design conducted for a survey study involving 200 respondents in Trade. The findings of the study indicate that there is a significant value for attitudes, subjective norms and behavioral control in influencing the pattern of currency purchases in banks. Although these three factors impact consumer purchasing decisions, studies prove that, these three variables have a relationship to currency purchases which is the most important factor. In conclusion, the application of financial mathematics assists customers in determining the transactions of the currency in the bank.

**Keywords:** Attitude, behavioral control, customers, currency, subjective norms.

---

## 1. INTRODUCTION

Banks are one of the interesting areas for studying consumer behavior. However, consumers are exposed to various types of offers by other banks that offer a wide range of prices, quality, packages and sizes. When a person spends his money at the bank to buy a currency, the user first checks the currency market to buy at a cheap price by scanning and finally, decides to buy the currency (Karnizova & Khan 2015). The scenario is an application of financial mathematics used in daily life. Knowledge of currency transactions is needed to understand every transaction made by the customer especially with matters related to profit and loss. What is learned in school about financial mathematics only serves as a basis. So when becoming a user, the skill of understanding this application becomes very important.

Consumer behavior is actually an ongoing process, not only showing the interaction between consumers and manufacturers at the time of purchase but it includes various stages in the usage process: purchasing issues and post-purchase issues (Farah & Ramadan 2017). One consumer has several different perceptions of a product or service and it becomes the basis in building their own different tastes based on individuals who have a unique culture and shared experience, so there is no right or wrong answer in the issue of buying patterns of customers (Seth & Wadhawan 2018). More importantly in this research is relationships in interpretivist approaches focus on interactive, collaborative collaboration with researchers as part of the phenomena under study. (Solomon, 2013) Therefore it is important to know the factors that influence the buying patterns of customers Trade with currency exchange rates.

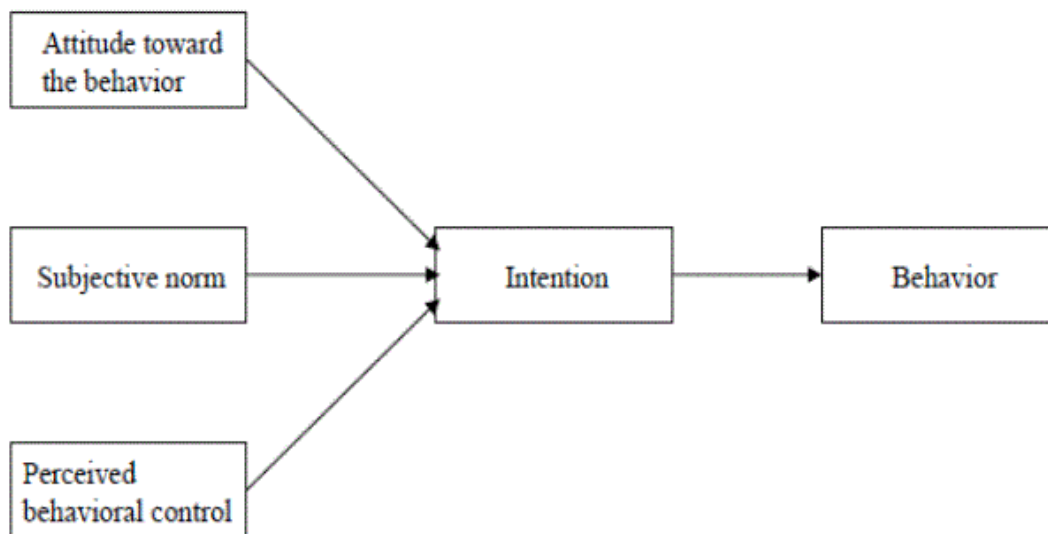
The purpose of the study is to find out more about the factors that influence the buying patterns of customers. Commerce can use this study as a reference to take immediate action in considering structured strategies in increasing currency purchases across Commerce outlets in Malaysia.

The objective of this study is to find out more about the extent to which customer attitudes influence currency buying patterns in Trading and to find out the extent to which subjective norm factors influence customers to purchase currency in Trading. Other than that, to find out the extent to which Behavioral control factors influence customers to purchase currency in Trading.

## 2. LITERATURE REVIEW

A survey conducted by Grimmer & Miles (2017) found that the most important factor influencing their assessment of product quality is price. In the minds of consumers, lower prices may be associated with inferior quality (Karimi Papamichail, et al. 2015). According Wang (2017), high-priced products may not meet the expected quality, which will lead to refusal to repurchase in the second. Lin and Fang (2013) found that there is a correlation between price and thinking to buy the product. If there is a big price difference, the intention to buy will be stronger, whereas it will be weak if the difference is small. This is because large price differences can desire consumers to make a careful assessment of quality product before making a purchase, and if they see the price not much different, their desire to buy will decrease (Suki, et al. 2016).

Customers today pay more attention to informational texts as they are more concerned with the value and health of nutrition (Silayoi & Speece, 2004); therefore, manufacturers and retailers need to strengthen the clarity of nutritional information and place it in a prominent place in the package to meet the needs of consumers in this regard (Wang, 2013). Roe, Levy and Derby (1999) suggest that information on nutritional and health values should be presented on the label on the front of the package where it is more likely to attract consumers.



Source: Ajzen, 1991

### 2.1 PROBLEM STATEMENT

There is no study has been done by focusing customer buying patterns on currency using theory planned behavior (TPB) to determine which factors (customer attitudes; subjective norms and behavioral controls) influence currency buying patterns in Commerce. Previous studies have determined consumer purchasing patterns based on knowledge and experience that have a greater degree to purchase the product by evaluating and processing brands and cognitive capabilities that depend on consumer knowledge (Kotni et al., 2019). Other studies have also shown that there are differences in consumer perceptions in marketing stimuli resulting in differences in behavioral purchasing actions (Ramya, & Mohamed Ali 2016). It is therefore important to know whether customer attitudes influence currency buying patterns in Trading.

## International Journal of Novel Research in Interdisciplinary Studies

Vol. 7, Issue 4, pp: (31-37), Month: July - August 2020, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

### 3. METHODOLOGY

Referring to Ryan, Scapens, et al. (2002), research methodology is a descriptive study using survey methods to obtain information. This chapter explains the research method used by SPSS analysis in an effort to obtain information to answer the objectives of this study.

#### 3.1 RESEARCH DESIGN

According to Creswell (2009), research design is carried out in terms of research methods, research strategies and research philosophy. According to Robson (2011), study design serves to transform research questions into projects involving the components of purpose, theory, research questions, methods and sampling strategies.

The study design conducted for this study is a quantitative method. Through the quantitative method used, the method of collecting data is made using questionnaires. The sample used to represent the population is also large and probability-based. Therefore, the quantitative study design was chosen by the researcher rather than the qualitative design and combined methods

##### 3.1.1 SAMPLE

Data were collected from primary sources or primary data as described above. Specifically, involving 200 respondents in Commerce who will be the respondents in this study. The sampling technique used in this study is stratified random sampling technique. Customers who come to buy foreign currency at Trade Element Mall as well as working staff are selected to answer this questionnaire.

##### 3.1.2 INSTRUMENTS

Research instruments are conducted to obtain data for a study. Researchers used the questionnaire in this study to obtain information. There are 5 sections in this questionnaire. The purpose of this study is to obtain information on the factors that influence the pattern of currency buying in Commerce. As discussed before this study uses 3 research questions. Referring to the above in sections B and E are the questions for which factors (Nature; Subjective norms; Behavioral control) influence the pattern of currency purchase in Trade while part one shows the part where the researcher wants to extract demographic information from the respondents. Trade users and staff will fill in their information in answering their information in terms of gender, work experience, etc. which refer to this study. This questionnaire was adapted from Ajzen 1999.

This instrument is divided into 4 parts namely Part A, Part B, Part C, Part D and Part E.

**Table 3.1: Study Instrument Design**

Section	Purpose / Descriptive	Nombor Soalan
<b>A</b>	Demographic information of respondents	<b>4</b>
<b>B</b>	TPB	<b>5</b>
<b>C</b>	Attitude	<b>5</b>
<b>D</b>	Subject Norms	<b>5</b>
<b>E</b>	Perceived Behavioural Control	<b>5</b>

##### 3.1.3 RELIABILITY ANALYSIS

**Table 3.2 Summary of Reliability Analysis**

Section	Descriptive	Cronbach Alpha
<b>B</b>	Attitude	<b>0.670</b>
<b>C</b>	Subject Norms	<b>0.740</b>
<b>D</b>	Perceived Behavioural Control	<b>0.626</b>
<b>E</b>	Purchasing Pattern	<b>0.689</b>

Referring to findings above we can see that all the variables measured show a Cronbach alpha value of more than 0.6. Therefore, this study assumes that we can proceed with further analysis.

### 3.2 DATA ANALYSIS

#### Correlation Analysis

Pearson product-moment correlation was conducted to determine the relationship between the attitude and pattern of the purchase. There was a strong positive correlation between attitude and buying patterns, which was statistically significant ( $r = .354$ ,  $n = 200$ ,  $p = 0.00$ ). In addition, correlations are also conducted to determine the relationship between subjective norms and purchasing patterns. There was a positive correlation between two statistically significant relationships ( $r = .327$ ,  $n = 200$ ,  $p = 0.00$ ). There is a strong positive correlation between perceived behavioural control and statistically significant buying patterns ( $r = .607$ ,  $n = 200$ ,  $p = 0.00$ ).

Correlation analysis and measured items showed that all items had good measured levels and there were no multicollinearity issues among the measured items.

#### Regression Analysis

There is a significant relationship between buyer pattern and subject norms. It can be found from the coefficient table is that the result shows the Sig value of the two variables measured is at  $p < 0.000$  which is more than  $p > 0.000$ . The overall results show that attitude affect buying pattern.

There is a significant relationship between buyer pattern and subjective norms. It can be found from the coefficient table is that the result shows the Sig value of the two variables measured is at  $p < 0.000$  which is more than  $p > 0.000$ . The overall results show that the Subjective Norms influence buyer pattern.

There is a significant relationship between buyer pattern and behavioural control. It can be found from the coefficient table is that the result shows the Sig value of the two variables measured is at  $p < 0.000$  which is more than  $p > 0.000$ . The overall results show that Behavioural Control affects Buyer Pattern.

There is a significant relationship between buyer pattern and attitude, subjective norma and behavioural control. It can be found from the coefficient table is that the result shows the Sig value of the two variables measured is at  $p < 0.000$  which is more than  $p > 0.000$ . Overall results show that attitude, subjective norma and behavioural control affect buyer pattern.

## 4. DISCUSSION

This study was conducted to identify the factors that influence the pattern of currency buying in Trading: by using 3 factors; Attitude; Subjective norms; Behaviour control. Although these 3 factors impact consumer purchasing decisions, studies prove that, these three variables have a relationship to currency purchase which is the most important factor. Customers prefer lower prices and also pay attention to other qualities depending on consumer preferences.

Malaysian consumers recognizes Trade very well and has a strong mind of it. Positive associations or organizations and powerful brands create a positive attitude among consumers towards the organization (Cheng Gan, et al. 2018). Moreover, Trade is a strong corporate having the advantage of creating habits. The low currency prices offered in Commerce will enhance the attitudes of consumers with their own perceptions and attention. The application of financial mathematics using moving averages is used in determining the price of a currency in trading. Advertising has little effect on consumer attitudes and buying patterns. Profitable users have high Behavioral Control over Trade.

The majority of consumers are satisfied with the products in Commerce and the prices offered by the company, this has a positive impact on customer attitudes. Price is the highest factor influencing the behaviour of buying currency in Trading. Some of consumers think that the cost in Trade is lower than other similar companies can also save money from lower price offers. The value is considered valuable for consumers who purchase currency in Commerce; which means lower price with acceptable quality.

A large number of consumers quite agree that it is a trustworthy belief to buy currency in low Trading with well-known companies. The customer believes with the Trading Company that no counterfeit money was given by the company. Studies show that if the pattern of buying a currency by a customer is high the probability of trust for Trading is high, this has an impact on buying behavior. The results show that almost 85% of consumers are already familiar with Trade money.

**International Journal of Novel Research in Interdisciplinary Studies**

Vol. 7, Issue 4, pp: (31-37), Month: July - August 2020, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

The evidence from the overall findings of the study emphasizes that cost is an important factor for target groups that persuade them to buy to buy currency in Trading. This means, people buy in Trade because most consumers consider it lower than other similar companies and they can save some money to buy currency in Trade. However some target groups think cost of the product is not the most important factor to buy Trade but they consider other aspects such as service to customers in terms of time in managing one customer.

Financial applications such as statistics are used in determining the pattern of buying a currency in a bank. Statistics such as mean, mode, and median are used in determining customer patterns in terms of nature, subjective norms and behavioral control. In addition, the application of financial mathematics using moving averages is used in determining the price of a currency in trading. This application can help customers in determining the pattern of purchase at the bank.

**5. CONCLUSION**

The findings show that the majority of respondents know about the basics of Trade. However, research proves that a minority of consumers who buy at Commerce do not know about the price of the currency and there are also some consumers who know about Trading and they do not want to buy. Therefore, brand familiarity is not an important factor influencing purchasing decisions. In addition, 94% of consumers are aware of the brand in the store the remaining 6% are influenced by advertising and other factors for that reason studies prove that advertising has little effect on buying currency in Commerce.

Trade is well known and has a strong position in the minds of Malaysian consumers. A strong organizational association creates a strong positive attitude towards the organization. Low prices Common trade with most consumers with their own perceptions and attention. Advertisements have little effect on their habits. Profitable users have high familiarity with Trade. The majority who buy first-generation Trade shoppers are low-key and feel secure against brands taken over by well-known retailers. Low Commerce prices can be considered as an alternative among consumers who want to sell some categories for lower prices, but acceptable quality Consumers who are more hesitant to buy low Commerce prices and have negative buying intentions to Trade brands. On the other hand, consumers with less income prefer to buy Trade at a lower price and have a positive attitude towards the brand and have the intention of buying.

**REFERENCES**

- [1] Ajzen, I., & Fishbein, M. (1988). Theory of reasoned action-Theory of planned behavior. University of South Florida.
- [2] Ballco, P., & De Magistris, T. (2019). Spanish Consumer Purchase Behaviour and Stated Preferences for Yoghurts with Nutritional and Health Claims. *Nutrients*, 11(11), 2742.
- [3] Biswas, A., & Roy, M. (2015). Green products: an exploratory study on the consumer behaviour in emerging economies of the East. *Journal of cleaner production*, 87, 463-468.
- [4] Carmines, E. G., & Zeller, R. A. (1979). Reliability and validity assessment (Vol. 17): Sage publications.
- [5] Cheng, B. L., Gan, C. C., Imrie, B. C., & Mansori, S. (2018). Service recovery, customer satisfaction and customer loyalty: evidence from Malaysia's hotel industry. *International Journal of Quality and Service Sciences*.
- [6] Coakes, E. (2005). Encyclopedia of communities of practice in information and knowledge management: IGI Global.
- [7] Coakes, E., Amar, A. D., & Luisa Granados, M. (2010). Knowledge management, strategy, and technology: a global snapshot. *Journal of Enterprise Information Management*, 23(3), 282-304.
- [8] De-Magistris, T., & Gracia, A. (2017). Does hunger matter in consumer purchase decisions? An empirical investigation of processed food products. *Food Quality and Preference*, 55, 1-5.
- [9] Emery, C. D., & Gellatly, P. (2018). Buyers and borrowers: the application of consumer theory to the study of library use: Routledge.
- [10] Emory, C. W., & Cooper, D. R. (1991). Business Research Methods. Homewood IL: Richard D. Irwin: Inc.

**International Journal of Novel Research in Interdisciplinary Studies**

 Vol. 7, Issue 4, pp: (31-37), Month: July - August 2020, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

- [11] Farah, M. F., & Ramadan, Z. B. (2017). Disruptions versus more disruptions: How the Amazon dash button is altering consumer buying patterns. *Journal of Retailing and Consumer Services*, 39, 54-61.
- [12] George, J. M. (2000). Emotions and Leadership: The role of emotional intelligence. *Human Relations*, 53(8), 1027-1054.
- [13] Grimmer, M., & Miles, M. P. (2017). With the best of intentions: a large sample test of the intention-behaviour gap in pro-environmental consumer behaviour. *International journal of consumer studies*, 41(1), 2-10.
- [14] Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*: Sage Publications.
- [15] Joshi, Y., & Rahman, Z. (2015). Factors affecting green purchase behaviour and future research directions. *International Strategic management review*, 3(1-2), 128-143.
- [16] Juhl, H. J., Fenger, M. H., & Thøgersen, J. (2017). Will the consistent organic food consumer step forward? An empirical analysis. *Journal of consumer Research*, 44(3), 519-535.
- [17] Karimi, S., Papamichail, K. N., & Holland, C. P. (2015). The effect of prior knowledge and decision-making style on the online purchase decision-making process: A typology of consumer shopping behaviour. *Decision support systems*, 77, 137-147.
- [18] Karnizova, L., & Khan, H. (2015). The stock market and the consumer confidence channel: evidence from Canada. *Empirical Economics*, 49(2), 551-573.
- [19] Khor, K. S., & Hazen, B. T. (2017). Remanufactured products purchase intentions and behaviour: Evidence from Malaysia. *International Journal of Production Research*, 55(8), 2149-2162.
- [20] Lee, J., & Lee, J.-N. (2015). How purchase intention consummates purchase behaviour: the stochastic nature of product valuation in electronic commerce. *Behaviour & Information Technology*, 34(1), 57-68.
- [21] Lima, S. (2017). The Effect of Celebrity Endorsement on 15-34 Year Old Consumer Buying Behaviour. *The IIE*.
- [22] Mahesh, M. (2018). CONSUMER BUYING BEHAVIOUR TOWARDS ORGANIC FOOD PRODUCTS IN RAIPUR CITY OF CHHATTISGARH. *Indira Gandhi Krishi Vishwavidyalaya, Raipur*.
- [23] Mishal, A., Dubey, R., Gupta, O. K., & Luo, Z. (2017). Dynamics of environmental consciousness and green purchase behaviour: an empirical study. *International Journal of Climate Change Strategies and Management*, 9(5), 682-706.
- [24] Montano, D. E., & Kasprzyk, D. (2015). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. *Health behavior: Theory, research and practice*, 70(4), 231.
- [25] Nguyen, D. H., de Leeuw, S., & Dullaert, W. E. (2018). Consumer behaviour and order fulfilment in online retailing: a systematic review. *International journal of management reviews*, 20(2), 255-276.
- [26] Nguyen, T. N., Lobo, A., & Nguyen, B. K. (2018). Young consumers' green purchase behaviour in an emerging market. *Journal of Strategic Marketing*, 26(7), 583-600.
- [27] Pappas, N. (2016). Marketing strategies, perceived risks, and consumer trust in online buying behaviour. *Journal of Retailing and Consumer Services*, 29, 92-103.
- [28] Pham, T. H., Nguyen, T. N., Phan, T. T. H., & Nguyen, N. T. (2019). Evaluating the purchase behaviour of organic food by young consumers in an emerging market economy. *Journal of Strategic Marketing*, 27(6), 540-556.
- [29] Ramya, N., & Mohamed Ali, S. (2016). Factors affecting consumer buying behavior. *International Journal of Applied Research*, 2(10), 76-80.
- [30] Rani, N. M., & Ramachandra, K. (2019). A Study on Consumer Perception Regarding Buying Fresh Produce in Organized Retail Stores in Bangalore, India: Do Demographics Matter? *Theoretical Economics Letters*, 9(8), 2864-2884.



**International Journal of Novel Research in Interdisciplinary Studies**

 Vol. 7, Issue 4, pp: (31-37), Month: July - August 2020, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

- [31] Ryan, B., Scapens, R. W., & Theobald, M. (2002). Research method and methodology in finance and accounting.
- [32] Sangroya, D., & Nayak, J. K. (2017). Factors influencing buying behaviour of green energy consumer. *Journal of cleaner production*, 151, 393-405.
- [33] Sekaran, U., & Bougie, R. (2009). *Research Methods for business* 5th ed: John Wiley & Sons Ltd. United Kingdom.
- [34] Sekaran, U., & Bougie, R. (2013). Edisi 6. *Research Methods For Business*.
- [35] Shapiro, J. M. (2015). Impulse buying: A new framework. Paper presented at the Proceedings of the 1992 Academy of Marketing Science (AMS) Annual Conference.
- [36] Simmonds, G., & Spence, C. (2017). Thinking inside the box: How seeing products on, or through, the packaging influences consumer perceptions and purchase behaviour. *Food Quality and Preference*, 62, 340-351.
- [37] Suki, N. M., Suki, N. M., & Azman, N. S. (2016). Impacts of corporate social responsibility on the links between green marketing awareness and consumer purchase intentions. *Procedia Economics and Finance*, 37, 262-268.
- [38] Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate analysis* (5 ed.). Bosten: Allyn and Bacon.
- [39] Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*: Allyn & Bacon/Pearson Education.
- [40] Teng, C.-C., & Wang, Y.-M. (2015). Decisional factors driving organic food consumption: Generation of consumer purchase intentions. *British food journal*, 117(3), 1066-1081.
- [41] Unger, A., & Raab, G. (2015). The dark side of globalization and consumption: How similar are Chinese and German consumers toward their proneness to compulsive buying? *Journal of Asia-Pacific Business*, 16(1), 4-20.
- [42] Vedovato, G., Trude, A., Kharmats, A., & Martins, P. (2015). Degree of food processing of household acquisition patterns in a Brazilian urban area is related to food buying preferences and perceived food environment. *Appetite*, 87, 296-302.
- [43] Visser, M., Schoormans, J., & Vogtländer, J. (2018). Consumer buying behaviour of sustainable vacuum cleaners- Consequences for design and marketing. *Journal of cleaner production*, 195, 664-673.
- [44] Wadhawan, N., & Seth, A. (2018). *Understanding Consumer Buying Behavior: A Study with respect to Baby Care Industry*.
- [45] N., McCormack, J., Verbiest, M., Jiang, Y., Lang, B., & Ni Murchu, C. (2019). Energy labelling for alcoholic beverages in New Zealand: Impact on consumer purchase and consumption. Phase 2 report: Randomised trial.
- [46] Wang, H.-J. (2017). Determinants of consumers' purchase behaviour towards green brands. *The Service Industries Journal*, 37(13-14), 896-918.
- [47] Weaver, C. N. (1980). Job satisfaction in the United States in the 1970s. *Journal of applied Psychology*, 65(3), 364.
- [48] Wiese, M., & Kruger, L. (2016). Parental influence on consumer and purchase behaviour of Generation Y. *Journal of Consumer Sciences*, 44.
- [49] Yang, D.-J., & Lee, C. (2016). In-store promotional mix and the effects on female consumer buying decisions in relation to cosmetic products. *International Journal of Management, Economics and Social Sciences*, 5(2), 35-56.
- [50] Yeboah, S. K., Junior, E. T., & Adonteng-Sakyi, J. (2017). Effect of Brand on Consumer Purchase Decision in the Mobile Telecommunications Industry. *Imperial Journal of Interdisciplinary Research*, 3(8), 683-692.