

## Statistical Analysis of Factors Influencing Student Buying Behaviour Towards Online Shopping using Multiple Linear Regression Analysis

Norshaieda Abdullah <sup>1\*</sup>, Suzainiwati Suhaimi <sup>2</sup>, Noor Azlem Che Kamaruzaman <sup>3</sup> and Nurul Aisya Fatiera Mohd Zaki <sup>4</sup>

<sup>1,2,3,4</sup>Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Kelantan, Bukit Ilmu, Machang, Kelantan, Malaysia

\*norsha052@uitm.edu.my

**Abstract:** This paper is a study about Universiti Teknologi MARA (UiTM) Kota Bharu students' buying behaviour towards online shopping during the COVID-19 pandemic. This study is conducted to identify significant factors that influence students' buying behaviour towards online shopping during pandemic. 307 undergraduates in UiTM Kota Bharu were taken as samples using Stratified Probability Sampling technique. Then, direct questionnaires were distributed to all of them and the data were analysed using Statistical Package for the Social Sciences (SPSS). This study found that the relationship between convenience and product variety on students' buying behaviour towards online shopping has a strong positive linear relationship. However, time and trust have a weak positive relationship. The Multiple Linear Regression analysis shows that convenience and product variety are significant factors that influence students' buying behaviour. As a recommendation, future researchers should add more factors to be studied as well as the number of items for each factor in the questionnaire.

**Keywords:** Buying behaviour, multiple regression, online shopping, students

### 1 Introduction

In a developed society, online shopping is increasing at a quite rapid rate. Besides physical store, most retailers have also provided online stores to meet the demands of consumers. There are companies that are only used to physical selling transactions but because of the pressure to increase customers and sales, they are slowly adapting to the digital platform. According to A.T. Kearney [1], retail e-commerce has grown nearly to US\$840 billion in 2014 surpassing the sales of US\$695 billion in year 2013 and it was estimated to increase to US\$1506 billion in 2018.

Today, the young generation, who are mostly students, have been active online shoppers. Based on a paper by Gardyn [2], 90 percent of university students' population access the internet daily, and, they also spend US\$200 billion a year in the US market. Therefore, because of students' power in the marketplace, it is important for retailers and consumer behavior educators to better understand this population's attitude towards online shopping. According to Sabri et al. [3], in the Malaysian perspective, with the expansion of educational services, university students have become common consumers of market segments.

Therefore, this study examines the factors that influence students' buying behaviour towards online shopping based on shopping motives such as entertainment seeking or functional purpose. These factors need to be identified and considered by online retailers in order to satisfy consumer demands and compete in the online market. Furthermore, this study would also serve as a guide to find any significant relationship using a comprehensive set of factors based on the original model.

The objective of this study is to identify significant factor(s) that influence students' buying behaviour towards online shopping using the multiple linear regression analysis

## **1.1 Students' Buying Behaviour**

Several researchers studied the factors that influence the buying behaviour of Malaysian university students. Abdullah et al. [4] conducted a study on how personal factors such as lifestyle, personality and economic status affect the buying behaviour of Malaysian college students. Furthermore, it was concluded that students' buying behaviour is related to lifestyle and economic status. The research also pointed out that economic conditions are negatively correlated with consumer behaviour. The findings of this study have improved our understanding of consumer behaviour of Malaysian college students. However, Poovenraj [5] pointed out that consumer behaviour has been changing over time especially throughout the Covid-19 pandemic. The rise of e-commerce ensures that these changes are inevitable. Therefore, the study of students' buying behaviour should be a continuous act.

## **1.2 Factors Influencing Buying Behaviour**

### **1.2.1 Trust**

Aineah [6] believes that consumers often depend on trusted online shopping platforms to purchase online products or services. If the website is more secure and reliable, the number of customers will increase. In addition, Farah et al. [7] found that among the influencing factors, the function of the network provider is the most important, followed by trust, privacy, perceived value, and company reputation. This research supports the findings in Bashir et al. [8] which claim that among the younger generation, trust is the most relevant factor influencing customers' online shopping behaviour. It can be seen from the research that most customers prefer to find the seller's ability to provide them with trust and excellent protection, especially to avoid the risk of circumventing their detailed information, such as storing their payment information in the seller's database, when conducting online transaction mediums.

### **1.2.2 Convenience**

According to Marzieh et al. [9] who studied online shopping behaviour among young adults in Malaysia, the most obvious item of convenience that make young people engage on the internet is easy and it allows them to buy many products that they would not find from nearby physical stores. In a research study by Jayasubramanian et al. [10], convenience has been claimed to be the first factor that influence online shopping. However, Jadhav and Khanna [11] stated that in the case of college students, convenience has become the fifth factor that influences online shopping. According to [11] the main influencing factors of online shopping are identified as availability, comparison of low prices, promotions, customer service, convenience, perceived ease of use, attitude, time awareness, trust and diversity seeking.

### **1.2.3 Time**

Research by Neger and Uddin [12] aimed to examine factors that affect consumers' internet shopping behaviour during the COVID-19 pandemic in Bangladesh. The factors examined were product, price, time saving, payment, security, administrative and psychological factor. The researchers found that all factors had a momentous and positive relationship with consumers' internet shopping behaviour during the COVID-19 pandemic in Bangladesh. Another research by Sultan and Uddin [13] found that time-saving has a positive effect on online shopping behaviour. In addition, findings in [9] state that, ease of use and time-saving are the main advantages of online shopping for Malaysian users.

### 1.2.4 Product Variety

Mohammad et al. [14] show that consumers do online shopping because it saves time, provides door-to-door delivery, facilitates shopping, and provides a wider variety of products. Maiyaki and Mokhtar [15] found that there is a significant relationship between product categories and online shopping. They stated that the study determined that each of the price and product categories has a significant positive correlation with online shopping behaviour. Besides, the research results also show that the type of product has a more important influence on online shopping behaviour than price.

## 2 Methodology

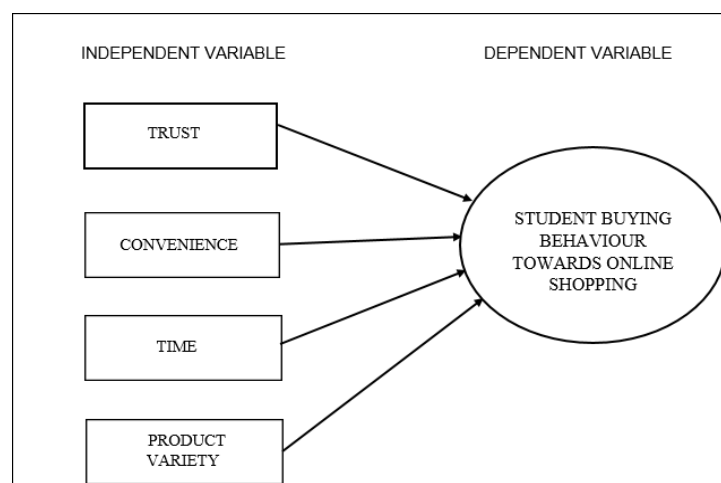
The target population for this study included all students of UiTM Kota Bharu which consist of students from the Faculty of Computer Sciences and Mathematics and the Faculty of Business Management. This study used Stratified Random Sampling in order to get the samples for each stratum. Six strata existed in this study which represent different programmes in UiTM Kota Bharu. The population size was 1502 students, and 307 samples were selected proportionately from each stratum using the generated random number. Stratified Random Sampling has the slightest bias and offered the highest generalizability to represent the entire population.

The primary data was collected from students in UiTM Kota Bharu, Kelantan through online questionnaires. The questionnaire was created using Google Form and the link to the form was shared to the selected samples via instant messaging. To analyse the data, this study used Statistical Package for the Social Sciences (SPSS) version 25.0. Methods used in this study were Pearson's Correlation and Multiple Linear Regression.

### 2.1 Theoretical framework

The theoretical framework gives the logical meaning of the relationship between the independent variable and the dependent variable that is to study the relationship between the factors that influence students' buying behaviour towards online shopping. The buying behaviour is assumed to be dependent on the four independent variables which are trust, convenience, product variety and time. The theoretical framework is shown in Figure 1.

Figure 1 : The Theoretical Framework of the Study



## 2.2 Pilot Study

The pilot study involved 30 students who have been randomly chosen from different programmes available in UiTM Kota Bharu. A reliability test was conducted on the pilot study sample to assess the reliability of the questionnaire and to identify if there are any amendment needed.

## 2.3 Reliability Analysis

The reliability of the measure for the study was identified using Cronbach's alpha coefficient. Cronbach's alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another. Generally, the value of Cronbach's alpha is needed to be 0.60 and above as suggested by Zikmund et al. [16].

## 2.2 Pearson's Correlation

This method was used to identify whether there is the existence of a significant relationship between trust, convenience, time, and product variety on students' buying behaviour towards online shopping.

## 2.3 Multiple Linear Regression

Multiple regression analysis allows researchers to assess the strength of the relationship between the dependent variable and several independent variables as well as the importance of each of the independent variables to the relationship, often with the effect of other independent variables statistically eliminated. The multiple regression model is as shown in equation (1).

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon \quad (1)$$

Where;

$Y$  is the students' buying behaviour

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$  are the regression coefficient

$X_1, X_2, X_3, X_4$  are the value of independent variable

$\varepsilon$  is the error term

### 3 Results and Discussion

#### 3.1 Reliability analysis

The reliability measure for the study was identified using Cronbach's alpha coefficient. Most items appeared to be worthy of retention, resulting in a decrease in the alpha if deleted. Based on Table 1, the value of Cronbach's alpha of pilot study for all sections were greater than 0.6 and therefore, all the variables are considered as reliable.

Table 1 : The Reliability Analysis Result

Section	Cronbach alpha	Number of items
Student buying behaviour	0.631	4
Trust	0.664	4
Convenience	0.743	6
Product variety	0.785	6
Time	0.765	5

#### 3.2 Pearson's Correlation Analysis

Table 2 shows the Pearson Correlation values of the students' buying behaviour with all the independent variables. The correlation value for trust and students' buying behaviour is 0.060 and the significant value is 0.146, this shows that there is insignificant weak positive linear relationship exists between trust and students' buying behaviour. Next, the correlation value for convenience and students' buying behaviour is 0.507 and the significant value is less than 0.0001. Therefore, the students' buying behaviour and convenience has a significant strong positive linear relationship. The value of correlation for product variety and students' online buying behaviour was 0.572 and the significant value was less than 0.0001, this indicates that there is significant strong positive relationship exist between convenience and students' buying behaviour. Lastly, it shows that the correlation value of time and students' buying behaviour was 0.233 and the significant value is less than 0.0001, so it is shown that time and students' buying behaviour have a significant weak positive.

Table 2 : Result of Pearson's Correlation

	Trust	Convenience	Product variety	Time
Pearson correlation	0.060	0.507	0.572	0.233
P-value	0.146	0.0001	0.0001	0.0001

### 3.3 Multiple Linear Regression

#### 3.3.1 Checking the Assumptions

Figure 2 shows that the normal P-P plot of the points are scattered along the straight line on students' buying behaviour towards online shopping. Therefore, the normality assumption was satisfied.

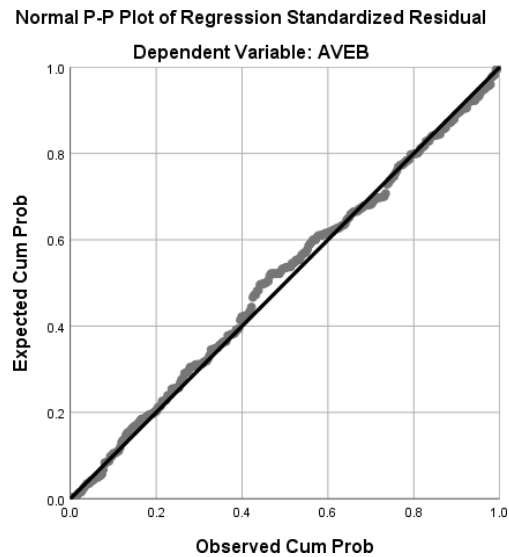


Figure 2 : The Normality Distribution Test Using P-P Plot

Figure 3 shows that the scatter plot of the points was scattered around randomly. Therefore, the homoscedasticity assumption was satisfied.

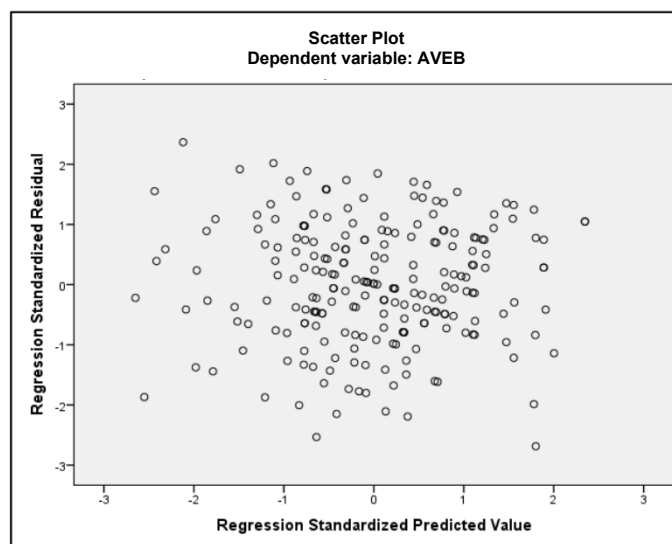


Figure 3 : Scatter Plot of Students' Buying Behaviour

### 3.3.2 Multicollinearity

Table 3 shows that, all the tolerance values exceeded 0.1 and the VIF value were less than 10. Therefore, it can be concluded that there is no multicollinearity exists among independent variables. Thus, the independent variable of the study has no relationship among each other and not dependent on each other.

Table 3 : Multicollinearity among variables

Variable	Tolerance	VIF	Findings
Trust	0.953	1.049	No multicollinearity
Convenience	0.506	1.978	No multicollinearity
Product variety	0.474	2.112	No multicollinearity
Time	0.871	1.148	No multicollinearity

### 3.3.3 Goodness of Fit

Table 4 shows the measure of coefficient of determination. The value of R square is 0.358 which indicates that 35.8% of the variation in students' buying behaviour towards online shopping can be explained by the list of independent variables (trust, convenience, product variety and time) while 59.8% was explained by other factors.

Table 4 : Model Summary

R	R Square
0.598	0.358

### 3.3.4 General Fitness Model

Table 5 presents the general fitness model for this study. The F statistic is 42.047 and the significant value is 0.000. As the p-value is less than the significance level (0.05), therefore, it can be concluded that the overall model is significant and testing on regression coefficient can be done.

Table 5 : Multiple Linear Regression ANOVA Results

Variables	F-test	P-value
Students' behaviour	42.047	0.000

### 3.3.5 Test of Regression Coefficient

Table 6 shows the summary coefficient of the significant value for convenience was 0.001 and product variety 0.000 are less than ( $\alpha=0.05$ ). However, the significant value for trust and time was 0.675 and 0.075, the value is greater than ( $\alpha=0.05$ ), so it can be concluded that trust and time do not significantly influence students' buying behaviour towards online shopping.

Table 6 : Regression Coefficient Summary

Variable	Coefficient Value	P-value	Finding
Constant	1.641	0.000	
Trust	0.012	0.675	Not Significant
Convenience	0.204	0.001	Significant
Product Variety	0.394	0.000	Significant
Time	0.057	0.075	Not Significant

### 3.3.6 Model Estimation

Multiple regression model was used to describe the relationship between dependent variable of the study. Since there were only two significant variables, the significant variables for the model were renamed.

Let:

$$Y = \text{Student Behaviour}$$

$$X_1 = \text{Convenience}$$

$$X_2 = \text{Product Variety}$$

General model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \tag{2}$$

$$Y = 1.641 + 0.204X_1 + 0.394X_2$$



The interpretation for each beta coefficient is presented as follows:

Table 10 : Interpretation of Beta Coefficient

$\beta_0 = 1.641$	Based on the value, it can be concluded that the Students' Buying Behaviour (Y) constant at 16.41 percent if not influenced by any other variables.
$\beta_1 = 0.204$	This indicates that Students' Buying Behaviour (Y) is expected to increase by 20.40 percent for every increase in one percent in Convenience (X1), while other variables remained constant.
$\beta_2 = 0.394$	This indicates that Students' Buying Behaviour (Y) is expected to increase by 39.4 percent for every increase in one percent of Product Variety (X2), while other variables remained constant.

#### 4 Conclusion

To determine the relationship between trust, convenience, time, product variety and students' buying behaviour, correlation analysis was done. According to the correlation analysis result, we can conclude that convenience and product variety has a strong positive linear correlation with students' buying behaviour towards online shopping during the pandemic. This result means that the two independent variables have high positive influence on students' buying behaviour while trust and time have a weak positive relationship with students' buying behaviour.

Furthermore, the Multiple Linear Regression (MLR) indicates that convenience and product variety are significant variables that influence students' buying behaviour. Thus, trust and time were removed from the regression model. Perhaps it can be said that most consumers consider that perceived convenience is the most important consideration to engage in online purchasing as it is easier to navigate and accessible. This shows that convenience and product variety give a positive impact on students' buying behaviour.

Thus, in order to get better sales, business owners should provide an easy-to-use online and mobile shopping experience and also a wide variety of products. Small businesses – especially during the COVID-19 pandemic – have been creating mobile-optimized sites so customers can quickly buy items for pickup or delivery. Mobile sites should load quickly, have clear calls to action and be simple to navigate to the students.

As a recommendation, future researchers should increase the number of independent variables as well as the number of items for each variable in the questionnaire. On the other hand, the distribution of questionnaire must be monitored by the researchers so that the respondents give their full attention while answering every question.

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