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Consumers' Buying Behavior Towards Online Shopping During The Covid-19 Pandemic: An Empirical Study In Malaysia

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Abstract— The world has been affected by the COVID-19 outbreak recently, affecting the economy worldwide. Due to the booming of online activities, especially online shopping, this study is interested in finding the relationship between factors affecting consumers' buying behavior on online shopping in Malaysia during the COVID-19 pandemic. The least studies related to this issue is needed in Malaysia to further understand the behavior of the consumers on online shopping. Based on available literatures, the factors of interest were trust, convenience, price, product variety and promotion on consumers' buying behavior in Malaysia. The study employed survey procedures to collect the data, whereby online questionnaires were disseminated and recorded from a total of 335 respondents. The data was then analysed using several statistical analyses, namely pilot test, descriptive statistics and an ordered probit model. The result from an ordered probit model indicated that convenience, product variety, trust and promotion affected the Malaysian consumers' buying behavior during the pandemic. Only price showed an insignificant impact on online shopping. This gave the sellers insight into understanding the consumers' buying behavior on the online platform by planning marketing strategies to fascinate more customers.

Keywords— COVID-19, online shopping, consumer buying behaviour, ordered probit model.

I. INTRODUCTION

At the end of 2019, the world was suddenly affected by a coronavirus outbreak, whereby no vaccine was available to protect the population from getting infected. In Malaysia, the movement control order (MCO) was implemented on 18 March 2020 to prevent the spread of the coronavirus outbreak due to a religious gathering held in Kuala Lumpur. The consequences of this MCO introduced various regulations and standard operating procedures (SOPs), whereby all

Malaysians need to abide to restrict movements and gatherings. As most people could not go anywhere except for buying groceries and other basic needs, the online platform became an appropriate medium for shopping. People tend to shop online rather than offline shopping or in-person shopping for safety reasons to avoid being infected by the COVID-19 virus.

As such, online shopping becomes more popular as everything are now at our fingertips. The frequency of people browsing the internet for online shopping is believed to be related to buying behavior. It was also supported by a survey conducted by Rakuten Insight Surveys Malaysia, whereby about 62% of the respondents stated that they increased their online purchases due to physical distancing practices and minimised outdoor activities. The same survey also showed that Malaysians made more online purchases during the pandemic compared to only 6% of the respondents, who indicated that they did not make any online purchases [1].

E-commerce platforms through online shopping are the best way to re-empower economic sectors affected by the COVID-19 outbreak. Despite several studies focusing on consumers' buying behavior, the existing literature is more focused on normal consumers' behavior before the COVID-19 pandemic. Therefore, this study aimed to identify the consumers' buying behavior during the pandemic and related factors that influenced this behavior for online shopping.

II. LITERATURE REVIEWS

Several studies were available in the literature, which focused on consumers' buying behavior. Among the factors that could be considered as the effect of this behavior were trust, convenience, price, product variety and promotion.

A) Trust

Relationships with the users in e-commerce platforms are the most important factor in sustaining trust from customers [2]. Regarding vigilance towards secure transactions, online retailers should ensure that they would never use customers' personal information for other unrelated purposes. This should be stated in the privacy policy. This would allow users to gain more security about their identity [3].

B) Convenience

The internet provides convenience for the users with a one-click purchase, and the items will be delivered to them. However, the characteristics and antecedents issues of convenience were debated [4]. Nonetheless, most studies argued on three convenience attributes in the context of internet shopping, which were time-saving, effortless and the ability to shop at any time and anywhere [5, 6].

C) Price

Price is the major determinant of a buyer's choice in deciding to proceed with the purchase [7]. The sellers need to be creative in price manipulation to increase consumers' buying desires as part of a marketing strategy [8]. In contrast to offline shopping, online shopping allowed consumers to obtain more information about the price to compare prices from different online store sites [9].

D) Product Variety

Consumers can compare products, brands, prices, customers' reviews and make purchases easily anywhere and anytime, through virtually unlimited and varieties of product options, which is one of the most important reasons to buy goods on the internet [10, 11]. Results from [12] proved that the reason for the usage of online shopping for students was due to the availability of varieties of products they could choose from the online store. Hence, it was not based on cheaper prices. It was also supported by [13] that the availability of a good and wide selection of products encouraged customers to purchase products and services on the internet.

E) Promotion

Several studies agreed that online advertising was effective for companies in terms of low operating costs, but they argued whether they were attracted to the advertisements [14]. Similarly, several studies showed that different promotional methods were highly effective marketing tools that could increase short-term sales. However, different environment influenced the effectiveness of various promotional strategies for which there were two types of purchasing methods, namely traditional stores and online stores [15].

This study was conducted due to the interest of finding the relationship between consumers' buying behavior on online shopping and factors affecting this behavior during the COVID-19 pandemic. Specifically, the objectives of this study were to illustrate the demographic profiles of the consumers and to analyse the impact of trust, convenience, price, product variety and promotion on consumers' buying behavior in Malaysia. The results of this study would provide valuable perceptions for online sellers on consumers' behavior towards online shopping. Furthermore, this could benefit the online sellers to plan for better strategies to attract consumers to shop more.

III. DATA COLLECTION AND METHODOLOGY

A. Sampling and Data Collection

The respondents' data were collected using the survey technique with a questionnaire, randomly distributed through social media networks such as WhatsApp, Facebook, Telegram and Instagram. More than 300 Malaysian respondents, who had various experiences in the field of online shopping, were targeted from different age groups, educational backgrounds and occupations.

The questionnaire was designed based on the availability of previous literatures. The structured questionnaire consisted of three parts: Part 1, Part 2 and Part 3. Part 1 included the socio-demographic profiles of respondents to obtain general information such as gender, age, educational level, occupation, nationality, ethnicity, residential and state locations and average monthly income. In Part 2, each respondent was

required to answer the question on their internet usage habits. In contrast, Part 3 included questions to measure the responding variable, including consumers' buying behavior on online shopping. The respondent was required to give their level of agreement on online shopping factors, mainly on trust, convenience, price, product variety and promotion. A five-point Likert scale, which ranged from 1, 2, 3, 4 and 5, or strongly disagree, disagree, neutral, agree and strongly agree, respectively, were applied to measure the ordered level of questions.

B. Methodology

Several statistical analyses were performed to achieve the objective of this study. A brief description is given below:

- Pilot study: Cronbach's alpha was employed in the pilot study to investigate the reliability of each item in the survey questions as it could measure the consistency of the questions. The threshold for Cronbach's alpha was 0.6.
- Descriptive statistics: This analysis was conducted to illustrate and summarise the behavior of the data. The result represented and described the respondents' demographic profiles and internet usage habits. The value of frequency and percentage were calculated.

1) Ordered Probit Model

The application of the five-point Likert scale items (strongly disagree to strongly agree) enabled this study to measure the agreement of consumers' buying behavior on online shopping. As such, the ordered probit model is the most reliable and robust method to be employed with this ordinal data. The functions of one or more independent variables could be well explained within an ordered categorical dependent variable using the ordered probit model.

Based on an ordered response model of an individual's buying behavior, the following ordered probit model was applied [16,17]:

$$Y' = X\beta + e, \quad (1)$$

where

X : vector of independent variables (trust, convenience, price, product variety and promotion),

β : vector of parameters to be estimated, and

e : unobserved error term.

: unobserved variable of the response Y (consumer buying behaviour).

The unobserved variable was defined under the threshold between μ_j and μ_{j-1} and j was the order of the ordinal variable with $j = 1,2,3,4,5$ based on the five-point Likert scale.

Following the study by [18,19], the probability of the respondents to score their level of agreement on online shopping was provided as follows:

$$P(Y = j) = \Phi(\mu_j - X\beta) - \Phi(\mu_{j-1} - X\beta) \quad (2)$$

with $j = 1,2,3,4$ and for $j=5$, the general form of (2) was then given by

$$\begin{aligned} P(Y = 5) &= \Phi(\mu_5 - X\beta) - \Phi(\mu_4 - X\beta) \\ &= 1 - \Phi(\mu_4 - X\beta), \end{aligned} \quad (3)$$

where Φ was defined as the standard normal cumulative distribution function. The model parameter estimates in equation (1) could be obtained via the Maximum Likelihood Estimator (MLE), which were believed to be accurate, consistent and efficient.

$$L = \sum_{j=1}^5 \log[\Phi(\mu_j - X\beta) - \Phi(\mu_{j-1} - X\beta)] \quad (4)$$

IV. RESULTS AND DISCUSSION

The pilot study was conducted with 34 respondents, where the results were displayed in Table I. Based on the findings' summary in each variable, all values of Cronbach's alpha shown in Table I were acceptable, ranging from 0.592 to 0.882. The values had fulfilled the acceptable value of Cronbach's alpha, which was greater than 0.6. As such, all items in the questionnaire would be used for further data collection.

TABLE I
CRONBACH'S ALPHA RESULT IN THE PILOT STUDY

Variable	Number of items	Cronbach's Alpha Value
Consumer buying behaviour	4	0.59
Trust	5	0.84
Convenience	7	0.80
Price	5	0.75
Product variety	4	0.88

A total of 335 responses was successfully collected and a summary of the demographic profiles was presented in Table II. This table provided the information of the respondents' demographic profiles based on the number of frequency and percentage of each profile. The majority of the respondents were female (68.1%), while more than 1/3 of the respondents were between 18 to 24 years old (37.6%), while 57.3% were bachelor's degree holders. Out of 100%, 33.7% were students, while 41.2% were respondents with the least income of less than RM1,000.

TABLE II
THE SUMMARY OF THE DEMOGRAPHIC PROFILE OF RESPONDENTS

Profile	Item	Frequency	Percentage (%)
Gender	Male	107	31.9
	Female	228	68.1
Age	Below 18 years	1	0.3
	18 - 24 years	126	37.6
	25 - 34 years	27	8.1
	35 - 44 years	54	16.1
	45 - 54 years	97	29.0
	Above 54 years	30	9.0
Educational level	Secondary School	48	14.3
	STPM/Matriculation/ Foundation/Diploma	62	18.5
	Bachelor's Degree	192	57.3
	Master's degree	28	8.4
	Others	5	1.5
Occupation	Government	64	19.1
	Private	79	23.6
	Self-employed	33	9.9
	No employed	18	5.4
	Housewife	14	4.2
	Student	113	33.7
	Retired	13	3.9
	Others	1	0.3
Average monthly income	Less than RM 1,000	138	41.2
	RM 1,001 -RM 3,000	56	16.7
	RM 3,001 - RM 5,000	61	18.2
	RM 5,001 - RM 10,000	68	20.3
	Above RM 10,001	12	3.6
Ethnicity	Malay	290	86.6
	Chinese	26	7.8
	Indian	13	3.9
	Other	6	1.8
Area Living	Urban	269	80.3
	Rural	66	19.7
State Living	Perlis	3	0.9
	Kedah	6	1.8
	Pulau Pinang	35	10.4
	Perak	13	3.9
	Selangor	121	36.1
	WP Kuala Lumpur	59	17.6
	Melaka	6	1.8
	Johor	37	11.0
	Negeri Sembilan	10	3.0
	Pahang	6	1.8
	Terengganu	17	5.1
	Kelantan	9	2.7
	Sabah	8	2.4
Sarawak	5	1.5	

Table III provided the results of the respondents' internet usage habits. This information was needed to reveal the time spent and duration of the Malaysian habits in using the internet and their tendency to shop online.

TABLE III
THE INTERNET USAGE OF RESPONDENT

Measure	Item	Frequency	Percentage (%)
Time spends on the internet every day	Below 1 hour	17	5.1
	1 - 2 hour	55	16.4
	3 - 4 hour	103	30.7
	5 - 9 hours	110	32.8
	Above 9 hours	50	14.9
How often do you shop online in the last six months	Everyday	4	1.2
	Twice a week	17	5.1
	Weekly	37	11.0
	Once in every two weeks	71	21.2
	Once a month	96	28.7
	Once every two or three months	71	21.2
	Others	39	11.6

Table IV presented the findings of the ordered probit model as stated in equation (1). Based on the results, all variables that were trust, convenience, product variety and promotion provided significant impact, except for the price.

The trust had a positive sign, which revealed that a person who trusted the online shopping platform was more likely to shop online compared to a person who had doubts. Similarly, the convenience had a positive coefficient, which indicated that a person who felt that online shopping was convenient, whereby they did not have to leave their home nor travel to obtain the desired items, were more likely to shop through an online shopping platform. Likewise, for product variety and promotion, both variables showed a positively significant sign with consumers' buying behavior. It revealed that as the product selection became wider and the variety of sales for a particular product increased, the tendency of people to purchase on the online shopping platform also increased. Accordingly, all independent variables were positively related to consumers' buying behavior. It indicated that as the independent variables increased, they had a higher probability of shopping online, and their buying behavior was more likely to contribute to the study area.

The marginal effects provided a detailed explanation of how the independent variables shifted the agreement's probability between the five ordinal levels. The results of marginal effects for consumers' buying behavior were displayed in the same table, Table IV, and were described as follows:

i. Trust: The trust had a positive significant relationship with the consumers' buying behavior for the response 'strongly agree', while it had a negative significant relationship with the response 'neutral' and 'agree'. It

showed that a person who trusted the online shopping platform had a 9.3% more probability to strongly agree on the given statement. In comparison, it showed a decrease by 2.8% and 6.5%, respectively, on the probability of response 'neutral' and 'agree'.

- ii. Convenience: The convenience had a positive significant relationship with consumers' buying behavior for the response 'strongly agree', which was more likely to increase by 28.7%, while it showed a decrease by 8.6% and 19.9%, respectively, as it had a negative significant relationship with the response 'neutral' and 'agree'.
- iii. Product variety: The probability of the response 'strongly agree' for the product variety increased by 10.9% as it had a positive sign, while the probability of the response 'neutral' and 'agree' showed a decrease by 3.3% and 7.6%, respectively, as it indicated a negative sign.
- iv. Promotion: For the promotion, it increased by 9.2% with the probability of response 'strongly agree', while it reduced by 2.8% with the probability of response 'neutral' followed by 6.4% with the probability of response 'agree', accordingly.
- v. Price: The price had a negative sign of response on 'neutral' and 'agree', each reduced by 0.3% and 0.8%, respectively. Meanwhile, it increased by 1.1% on the probability response of 'strongly agree', as it had a positive sign. The table displayed illustrated that all the independent variables had 0% probability on the response of 'strongly disagree' and 'disagree' for the given statement.

TABLE IV
THE RESULT OF THE ORDERED PROBIT MODEL

Variable	Coefficients	Marginal Effects				
		P(Y=1 X)	P(Y=2 X)	P(Y=3 X)	P(Y=4 X)	P(Y=5 X)
Trust	0.24* (0.11) [0.02]	0.00 [0.53]	0.00 [0.44]	-0.03* [0.03]	-0.07* [0.03]	0.09* [0.02]
Convenience	0.75* (0.12) [0.00]	0.00 [0.52]	-0.00 [0.42]	-0.09* [0.00]	-0.20* [0.00]	0.23* [0.00]
Price	0.03 (0.13) [0.82]	0.00 [0.83]	0.00 [0.82]	-0.01 [0.82]	-0.01 [0.82]	0.01 [0.82]
Product Variety	0.29* (0.12) [0.01]	0.00 [0.53]	0.00 [0.44]	-0.03* [0.02]	-0.08* [0.02]	0.11* [0.01]
Promotion	0.24* (0.12) [0.04]	0.00 [0.53]	0.00 [0.44]	-0.03* [0.04]	-0.06* [0.04]	0.09* [0.04]

Note: *p<0.05. The values given in square brackets are the p-value and in brackets are the standard error of the coefficient. Here, '1' represents strongly disagree, '2' represents disagree, '3' represents neutral, '4' represents agree, and '5' represents strongly agree.

V. CONCLUSION

This study was designed to determine consumers' buying behavior on online shopping in Malaysia during the COVID-19 pandemic. The findings of the study showed that the price was an insignificant factor in determining the consumers' buying behavior. This was because, in the presence of the COVID-19 outbreak, the consumers did not have many choices of the items they would like to buy at a lower price than the traditional shop. Some consumers purchased higher-priced items that had the same price as the traditional shop on online shopping. Therefore, in the current situation, low price is no longer the main factor that affects consumers' buying behavior on online shopping.

Based on these results, it is suggested for the Malaysian government to provide a similar online shopping platform, for example, Shopee and Lazada, which offers lower prices and many promotions to enliven the online shopping market in Malaysia. It is such a waste that Malaysia does not have any online shopping platform, whereby it can be a marketplace for the local sellers to generate their income.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

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