

Consumer behavior models on online purchase of horticultural commodities

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Abstract. An increase followed the increasing trend of online purchases in online sales platform providers. Increased fraud cases and the ease of use of features on online sales platforms impact consumer behavior in online purchasing decisions for agricultural commodities. This study aims to determine the characteristics of consumers and the stages of consumer purchasing decisions, analyze the influence of trust, ease of use, and lifestyle factors on purchasing decisions, and develop models of consumer purchasing decisions for horticultural commodities online. The research was conducted using a survey method with a purposive sampling method. Data were analyzed descriptively and quantitatively so that a regression model was composed. The model used is multiple linear regression. The results show that the trust variable (X1), ease of use (X2), and lifestyle (X3) have a real influence on purchasing decisions (Y). This study supports the model presented by previous researchers. The practical recommendation from this research is for e-commerce business actors to always maintain their reputation by guaranteeing the trustworthiness of their transactions so that horticultural consumers are willing to make repeat purchase transactions and recommend them to other consumers. Business actors should display application features that are easy to use, practical, and fast. The model shown can be used to develop competitive strategies for improving services to online consumers.

1 Introduction

The development of technology and information in Indonesia is growing very fast. The number of internet users in Indonesia reached 202.6 million or 73.7 percent of the total population of 274.9 million in January 2021 [1], The average mobile internet user is 20-35 years old and spends 5 hours and 4 minutes daily to access the Internet [2] The development of technology and information in Indonesia has led to a change that has affected people's lives, especially those in big cities. One of the emerging changes is the change in the marketing system.

In 2018, the digital marketing system in Indonesia began to develop rapidly from what was previously traditional to digital [3,4] Online marketing is part of a marketing method that uses digital technology through the Internet, and some authors have adopted the terms "digital marketing", "internet marketing", online marketing, web marketing, email marketing, e-marketing, and marketing 4.0. as an interchangeable term [5,6]. The online market is also a business activity by selling products to consumers online [7, 6] (Meise et al., 2014; Hossain & Rahman, 2017). According to Purwana et al. [8], the online market consists of interactive and integrated marketing that can facilitate interaction between producers and potential consumers. System online market relies heavily on information and communication technology to support the marketing process from online markets that marketplace and e-commerce. Marketplace is a website that sells various kinds of products from different sellers. Whereas e-commerce only sells products belonging to the website owner. The online market has become a requirement for every company that will compete on a global level, to compete globally [9,10]. Many large and small companies already use online markets to increase their business [11,12].

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For some consumers, the online market has become an option for some people, especially for groups of people who are busy with various activities, so they need more time to meet their needs. The number of consumers using online marketing technology increased rapidly during the COVID-19 pandemic, which required people to stay at home and reduce mobilization outside the home to change buying behavior [13]. This change in consumer behavior has led to a new lifestyle of staying home with living activities due to social distancing. Shopping activity online market has become a new shopping behavior for consumers in meeting the needs of life. Online shopping behavior in addition to fulfilling various needs for fashion, beauty, electronic goods, stationery, and agricultural products [14,15].

Consumer demand for agricultural products has been taken advantage of by platform providers. Lotsecommerce nor marketplaces such as Shopee, Tokopedia, Lazada, Sayurbox, and Tani Hub take advantage of this phenomenon as a new business unit that becomes a source of profit. However, companies purchasing agricultural products to serve consumers have advantages and disadvantages [12, 16]. Companies that sell agricultural products need to pay attention to the characteristics of agricultural products, namely perishability, irregular shape, and wilting, so they need unique and fast handling so that the products sent to consumers remain fresh and of good quality.

In addition to the problem of declining product quality, online marketing services are also constrained by the tendency to decrease consumer confidence because there are many cases of fraud. Cyber Security in Malaysia reported 51.6% fraud including online shopping in 2014. Meanwhile, there were 115,756 cases of online shopping fraud on e-commerce platforms, marketplaces, and social media in 2021 [17]. The occurrence of this fraud will affect consumer behavior in making decisions to buy agricultural products online.

Companies providing online marketing services also need to pay attention to features that make it easier for consumers to choose an e-commerce platform. The ease of use factor relates to consumer knowledge in operating the features provided to purchase transactions online. If consumers need help using the feature online market, This reduces interest in making decisions to transact online.

Research on consumer behavior models toward online marketing still needs to be expanded to non-agricultural and manufacturing commodities. Even though analyzing online marketing consumer behavior models for agricultural commodities, especially horticulture, is very important. This relates to horticultural commodities, which have a relatively high risk of damage. Several previous studies stated that the factors that influence consumer purchasing decisions for online horticultural products are related to content sharing, content creation, socio-demographic factors, brand image, perceived price, and product quality, the conditions of the Covid-19 pandemic [18-21].

In this study, the factors of trust, ease of use of the platform, and lifestyle are used in analyzing consumer purchasing decisions for buying horticultural products online, be it fruits, vegetables, or ornamental plants. Consumers who buy fruits, vegetables, and ornamental plants are chosen because these three types of commodities are consumed mainly by consumers compared to other horticultural commodities [22,23]. The Indonesian government also assumes that consumer demand for fruits, vegetables, and ornamental plants has increased due to the co-19 pandemic. This is caused by changes in a healthy lifestyle which positively impact the human body's immunity [24,25].

Previous studies have not found specific research on consumer behavior models in purchasing horticultural commodities online. Research on horticultural consumer behavior models is unique because horticultural products have specific characteristics, namely perishable, bulky, and voluminous, which are different from manufactured products, which is new to this research. This research aims to determine consumer characteristics and stages of purchasing decisions, analyze the influence of trust, ease of use, and lifestyle factors on purchasing decisions, and develop a model of buying decisions for online horticultural commodities. This research is helpful for companies providing online marketing platforms for horticultural commodities. The presented model can be used to develop competitive strategies to improve services to online consumers.

2 Research Methods

2.1 Location and Time of Research

This research was conducted in the cities of Jakarta, Bogor, Depok, Tangerang, and Bekasi or Jabodetabek with a purposive sampling method. Purposive sampling was employed to obtain information from certain target groups based on their knowledge or experience [26]. This research was conducted from April to May 2022.

2.2 Data Types and Sources

The types of research data are descriptive and quantitative. Data is collected by filling out a Google Forms questionnaire disseminated via social media such as Instagram, WhatsApp, and Facebook. The type of questionnaire used is a closed questionnaire sampling technique using non-probability sampling by purposive sampling. Respondent criteria in this study were people who had purchased horticultural products, including vegetables, fruits, and ornamental plants, online. The number of respondents analyzed was 152 people.

2.3 Research Hypothesis

H1: Trust influences the purchasing decision of horticultural products significantly online in the cities of Jakarta, Bogor, Depok, Tangerang, and Bekasi

H2: Ease of use affects purchasing decisions for horticultural products online in the cities of Jakarta, Bogor, Depok, Tangerang, and Bekasi

H3: Lifestyle influences the decision to purchase horticultural products online in the cities of Jakarta, Bogor, Depok, Tangerang, and Bekasi

2.4 Data Processing and Analysis Methods

The descriptive analysis method is used to study the stages of consumer purchasing decisions on horticultural products. Quantitative analysis methods are used to analyze the influence of trust, ease of use, and lifestyle factors on purchasing decisions for horticultural products online in the cities of Jakarta, Bogor, Depok, Tangerang, and Bekasi and developed a horticultural consumer purchasing decision model using software SPSS. The online consumer purchasing decision model for horticultural products is used as the dependent variable (Y) with three independent variables, namely the trust variable (X1) [27-32], ease of use (X2) [28,33,34,35,36,37] and lifestyle (X3) [38,37,39,40].

The validity test [4 1] and reliability test immunity [42] were also used in the questionnaire given to the respondents. A questionnaire using a scalelike, namely a scale of 1 to 5 with information: 1 = Strongly Disagree (STS), 2 = Disagree (TS), 3 = Neutral (N), 4 = Agree (S), and 5 = Strongly Agree (SS). Next, a hypothesis test was carried out, including multiple linear regression analysis, coefficient of determination, f-test, and t-test [41-45].

3 Results and discussion

3.1 Characteristics of Respondents

Table 1 shows the characteristics of respondents based on gender, age, employment, income, and purchasing frequency. The results stated that the most dominant respondent in this study was female, with a percentage of 79%. [46] explained that women are the gender that makes the most purchases of online agricultural commodities. Women understand more about what is needed to meet the needs of agricultural products.

The most dominant age of the respondents is in the range of 15-25 years, with a percentage of 67.1%. This follows the research of Putri & Iriani [47], which states that e-commerce users are from 15 to 25 years old. This age is included in the millennials and millennial generations. The characteristics of the millennial and millennial generations are that they are attached to technology because they live in an era where technology has developed very rapidly. This makes them use technology more to meet their needs, including online shopping.

Table 1. Characteristics of Respondents

Variable	Number of Farmers	Percentage n=152
Gender		
Male	32	21,05%
Female	120	78,95%
Age (year)		
15-25	102	67,11%
25-35	42	27,63%
35-45	8	5,26%
Occupation		
Lecture	4	2,63%
Employee	57	37,50%
Entrepreneur	6	3,95%
Student	69	45,39%
Housewife	16	10,53%
Income		
< Rp. 3.500.000	113	74,34%

Variable	Number of Farmers	Percentage n=152
> Rp. 3.500.000	39	25,66%
Purchase frequency		
Less than 5 times	58	38,15%
5-10 times	79	51,97%
10-15 times	15	9,86%

The most dominant occupations in this study were students, with a percentage of 45.4%. Students, as the younger generation, really like a shopping system that is practical and effective. Shopping online is something that students are very interested in because it makes it easier to find the items they are looking for, so it takes little time, and also, students do not have to pay for transportation costs. 74% of respondents' income is in the category > Rp. 3,500,000. This is under the frequency of respondents' purchases, namely 5-10 times. People with a large income tend to shop more often than those with a small income because if income increases, the level of consumption will increase [48].

Purchase frequency is in the category of 5-10 times with a percentage of 52%. This is because the respondents were satisfied with purchasing agricultural products regularly online, so respondents are interested in buying again. This follows the respondents' answers on the post-purchase evaluation. All respondents said that they were satisfied with the purchase of horticultural commodities on an ongoing basis online because the goods sent are under the goods ordered, so respondents are willing to buy again.

3.2 Stages of Purchase Decision

3.2.1 Requirement Recognition

Respondents must buy horticultural products regularly online because getting what they seek is easier. This is one of the advantages possessed when consumers shop through the online market compared to directly. Online markets provide convenience to consumers so that consumers do not need to go around to find the desired product. Besides being more effective in terms of time, Consumers can skip paying for transportation costs by shopping online.

3.2.2 Information Search

Respondents regularly get information about selling horticultural products online through social media. The characteristics of the respondents, namely the dominant respondents aged 15-25 years who belong to the millennial and millennial generations, where one of the characteristics of this generation is that they are very attached to technology. This generation lives in an era where technology and social media have become daily necessities. So, advertisements posted through social media are the most effective and right on target.

3.2.3 Alternative Evaluation

Respondents tend to consider good reviews from previous buyers at the alternative evaluation stage. This is to the problems in online purchases, namely the prevalence of fraud. Reviews from previous buyers are one of the things that influence purchasing decisions. This was done so that respondents were not exposed to fraud.

3.3 Purchase Decision

When buying horticultural products for free online, the dominant respondent chose to use the Shopee platform as an online market. This is to the results of a survey conducted by a research company from France, namely Ipsos, that Shopee ranks first in the category marketplace, the most widely used by the public in 2021 [49]. This is because the shop offers many exciting promotions and strategies, including Shopping Day Online National, where Shopee will provide many discounted prices, free shipping, flash sales, etc. The horticultural products sold at Shopee are also more diverse. Therefore, many people are interested in making transactions on the market like Shopee

The most frequently purchased horticultural commodities by respondents were ornamental plants. Ornamental plants have aesthetic value that humans can enjoy. In recent years, caring for ornamental plants has become a trend that is in great demand by the public, especially during a pandemic. An appeal to stay indoors makes people confused looking for fun activities; immediately, ornamental plants become the solution. The type of ornamental plant purchased most by respondents was Monstera. During the pandemic, Monstera was among the most popular ornamental plants and was much sought after by the public. The Ministry of Agriculture [50], also stated that Monstera was one of the ornamental plants that became a trend during the Covid-19 pandemic.

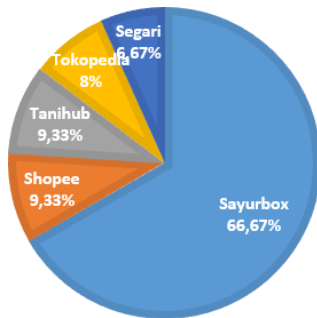
Meanwhile, the most purchased type of vegetable by respondents was kailan, and the most purchased type of fruit was kiwi. Kailan and kiwi are horticultural commodities that are difficult to find, especially in traditional markets. Respondents

reasoned that buying horticultural products for free online the aim is to make it easier to find the item you are looking for.

3.4 Post-Purchase Evaluation

If the goods purchased by the respondent follow the goods received, it will lead to satisfaction with the transactions made. Respondents who are satisfied with previous transactions will be willing to buy again. So that in this study, the frequency of purchases made by respondents during the last two years was 5-10 times.

The Easiest Online Market to Operate for Buying Vegetables



The Easiest Online Market to Operate for Buying Fruit

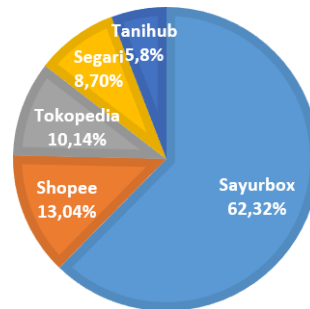


Figure 1. The Most Frequently Used Online Markets for Fruits and Vegetable Commodities

In vegetable and fruit commodities, the online market, the easiest to use is the skybox shown in Figure 1. The Sayur box has Sayurkilat and COD (Cash On Delivery) features. Sayurkilat is a feature that guarantees that the goods sent will arrive at their destination within two hours. This makes it very easy for consumers to get goods quickly. Especially the characteristics of vegetables and fruits are commodities that quickly wither and rot. With this feature, vegetables and fruits will stay fresh when they reach consumers. The COD (Cash On Delivery) feature makes it easy for consumers to make payment transactions. In addition, Sayurbox offers a variety of products and a wide selection of organic products. Sayurbox also provides various other healthy food variants, such as ready-to-eat products in the form of snacks to other processed products such as salads, herbs, puddings, chili sauce, and others.

On the other hand, ornamental plants' commodity is different from that of vegetables and fruits. The results of the study stated that online market, the easiest way to buy ornamental plant commodities is through Shopee. This is because, in the Shopee application, there is a COD (Cash On Delivery) payment system that makes it easier for consumers to make payment transactions. In addition, Shopee also provides a return application feature, making it easier for consumers to return goods if what is sent does not match what was received.

The Easiest Online Market to Operate for Buying Ornamental Plants

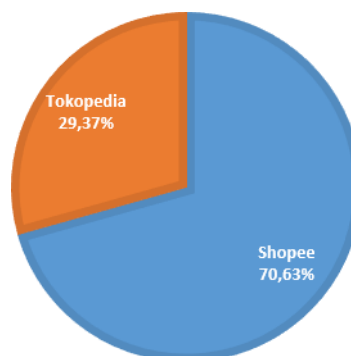


Figure 2. The Most Frequently Used Online Market for Ornamental Plant Commodities

3.5 The Effect of Trust, Ease of Use, and Lifestyle on Purchase of Horticultural Commodities Online

3.5.1 Validity Test

Tests were carried out with a significance level of 0.05, and the number of respondents was 30, so an r table of 0.306 was obtained. Based on the results of the validity test that has been carried out based on decision-making, all questions in this questionnaire result in a value of r count > r table (0.306), so each question item is said to be valid. Based on these results, this questionnaire is feasible for respondents.

3.5.2 Reliability Test

The purchase decision variable (Y) has a Cronbach Alpha value of 0.897. This value is > 0.6, which means that when interpreted in the Alpha model, the purchasing decision variable (Y) can be declared reliable; in other words, this questionnaire will give relatively the same results if given to the same subject even at different times, places, and conditions.

The trust variable (X1) has a Cronbach Alpha value of 0.902; this value is > 0.6. So, the trust variable (X1) is reliable or can give relatively the same results if given to the same subject, even at different times, places, and conditions. The ease of use variable (X2) has a Cronbach Alpha value of 0.937. The Cronbach Alpha value on the ease of use variable (X2) > 0.6, which can be interpreted that the ease of use variable (X2) is reliable, or, in other words, it will give relatively the same results when given to the same subject even though at different times, places and conditions. The lifestyle variable (X3) has a Cronbach Alpha value of 0.799. This value still exceeds or > 0.6, which can be interpreted that lifestyle variables are reliable or can give relatively the same results if given to the same subject even though at different times, places, and conditions.

3.5.3 Multiple Linear Regression Analysis

The multiple linear regression equation in Table 2 shows a value of 1.133, namely the condition when the purchase decision variable has not been influenced by other variables, namely trust (X1), ease of use (X2), and lifestyle (X3). If the independent variable does not exist, the purchasing decision variable does not change. The same thing is also explained in Figure 3, which shows the level of consumer trust, ease of use of platforms, and consumer lifestyles moving in the same direction as consumer purchasing decisions.

Table 2. Results of Multiple Linear Regression Analysis

Coefficients a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.133	.094		11.996	.000
	Trust	.333	.031	.388	10.723	.000
	Ease of Use	.095	.020	.181	4.754	.000
	Lifestyle	.340	.034	.478	10.064	.000
a. Dependent Variable: Consumer Purchasing Decision						

The results of the analysis of the factors that influence the purchase decision of horticultural commodities online in Jabodetabek, it was obtained that the variable of trust (X1) had a coefficient value of 0.333, a calculated t value of 10.723 which was more significant than t table (0.676) and a significance of 0.000 which means it was smaller than a (0.05). This shows that the trust variable (X1) positively and significantly affects purchasing decisions (Y) or H01 rejected, H11 accepted.

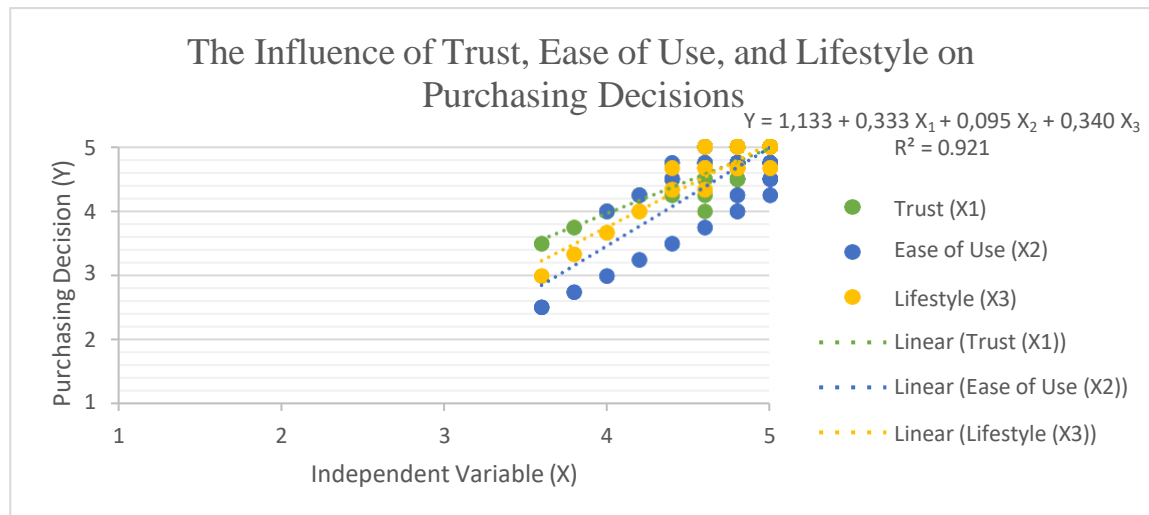


Figure 3. Influence of Trust, Ease of Use, and Lifestyle on Purchase Decisions

In purchasing horticultural commodities online, consumers do not directly see the goods to be purchased; in addition, the rampant cases of online purchase fraud influence consumers in making purchasing decisions; therefore, it is necessary to have consumer confidence in the online market to determine purchasing decisions. From various online markets used by respondents to purchase agricultural commodities on an ongoing basis online, the goods received by the respondents followed what was ordered [51]. The trust variable which has a positive and significant influence on purchasing decisions is in line with research conducted by [52,29,53,54], but it does not follow research conducted by [28] that the trust variable does not affect purchasing decisions.

The ease of use variable (X2) has a coefficient value of 0.095, a calculated t value of 4.754 which is greater than the t table (0.676), and a significance of 0.000, which is smaller than a (0.05). This shows that the ease of use variable (X2) positively and significantly affects purchasing decisions (Y) or H02 rejected, H12 accepted. This is in line with the research conducted by [33,34,32,35,36,37]. Furthermore, Rossa & Ashfath [34] strengthen this opinion that the ease of use variable affects impulse buying behavior which provides time efficiency and reduces transaction barriers to immediately make purchases. The ease of operating a platform is closely related to convenience, especially when using an online market platform. This follows what respondents feel that the most used platform is the easiest to use [55].

The lifestyle variable (X3) has a coefficient value of 0.340 and a calculated t value of 10.064, which means it is greater than the t table (0.676) and has a significance of 0.000, which is smaller than a (0.05). This shows that the lifestyle variable (X3) has a positive and significant effect on purchasing decisions, or, in other words, H03 rejected, H13 accepted. These results are supported by research conducted by [38,37,39,40] that lifestyle affects both partial and simultaneous buying decisions. The emergence of online shopping trends is considered to influence lifestyle changes, especially during a pandemic; some people have switched to online purchases online, including horticultural commodities. In addition to digital technology, the marketing system, a new lifestyle, also makes it easier for people to meet their daily needs [56,57].

During the pandemic, people's lifestyles underwent changes, one of which was in the marketing sector caused by implementing the PSBB or PPKM policy, where people were restricted from leaving their homes and encouraged to avoid crowds. In dealing with this phenomenon, some people use digital technology to shop online to fulfill their needs [58,59].

4 Conclusion

Characteristics of respondents who buy horticultural products regularly online, dominated by female students aged 15 to 25 years, with income above Rp. 3,500,000, and the frequency of purchases over the last two years is 5 to 10 times. The stage of purchase decision on horticultural commodities are acknowledgments of requirements, information search, evaluation of alternatives, purchase decision, and post-purchase evaluation. The variables that have the most significant influence on purchasing decisions are lifestyle, then trust, and ease of use of the platform and the purchasing decision model is $Y = 1,133 + 0,333X_1 + 0,095X_2 + 0,340X_3$.

The practical recommendation from this research is for e-commerce business actors to always maintain their reputation by guaranteeing the trustworthiness of their transactions so that horticultural consumers are willing to make repeat purchase transactions and recommend them to other consumers. Business actors should display application features

that are easy to use, practical, and fast. E-commerce business actors can determine the focus of target consumers with a lifestyle that leads to online purchases, especially in horticulture. This research needs to be carried out further by adding variables such as age, promotional programs, alternative payment methods, and quality of information. Apart from that, further research will use multivariate analysis methods.

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