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RESEARCH ARTICLE

## Determinants of Purchasing Intention of Agricultural Products via E-commerce Platforms in Jakarta, Indonesia

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**Abstract:** The emergence of the internet as a global phenomenon is swiftly reshaping consumers' shopping habits and the process of purchasing goods and services. Consumers now have access to a wide array of products and services, especially with the aid of e-commerce. Additionally, companies can analyse consumer behaviour and gain a deeper understanding of their habits with the assistance of e-commerce or social media. The objective of this research is to ascertain the factors that impact consumers' intention to buy agricultural products. In April 2022, we performed an online consumer survey among 200 internet shoppers in Jakarta, Indonesia. The data was then analyzed using the WarpPLS software and Structural Equation Modeling (SEM). Our research showed that among the respondents, women, with an average age of 20–25 accounted for nearly 60% of respondents who purchased agricultural produce online in Jakarta. Moreover, SEM-PLS method revealed that the following factors had highly significant effects on consumers' purchasing intention to buy agricultural products in Indonesia: consumer behavior, subjective norms, demographic variables, time savings, and convenience. In light of these findings, it offers valuable technical and practical implications for agribusiness management and policymakers.

**Keywords:** Purchasing intention; Covid-19; Agricultural products; Online shopping; Indonesia

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## 1. Introduction

The availability of technology and tools has altered people's perception of Internet marketing and pushed the boundaries of a new digital marketing concept <sup>[1,2]</sup>. The growth of the Internet has extensive implications for the daily lives of customers and has significantly altered the operations of businesses as well as the behavior of consumers and has swiftly reshaped consumers' shopping habits and the process of purchasing goods and services <sup>[2]</sup>. With the availability, speed and development of the Internet, online shopping is changing rapidly as a result of new and improved Internet apps and technology that give consumers easier access to a greater selection of goods at lower prices than they could with traditional brick-and-mortar stores <sup>[3]</sup>.

Before the arrival of digital marketing practices and Covid-19, businesses merely rely on offline strategies including channels such as billboards, television and radio advertising, catalogues, brochures and newspapers <sup>[1]</sup>. Notably, due to the Covid-19 pandemic, there has been increased customer interest in online marketing especially for fresh agricultural products <sup>[6-9]</sup>. This surge can be attributed to the imperative of adhering to social distancing measures and remaining at home, all while ensuring the fulfillment of essential requirements. As highlighted by Pham et al. (2020) <sup>[10]</sup>, Covid-19 has had a significant impact on the perception of the advantages of online shopping. The pandemic has become a driving factor for shoppers to embrace online shopping, as it instils a greater sense of security. In light of the Covid-19 pandemic, there has been a growing acknowledgment among customers regarding the convenience and practicality of online shopping, along with an increased awareness of the importance of consuming nutritious food which has resulted in significant changes to consumer behavior and purchase patterns <sup>[11]</sup>.

The utilisation of e-commerce and online purchase in disrupting conventional and well-established relationships throughout the entire value chain is leading to a transformation of e-commerce and digital marketplace service providers. These providers act as aggregators and distributors in the agricultural value chain, effectively managing transportation, and warehousing, as well as the identification of producers and consumers. An increasing number of AgTech providers and companies in Indonesia are introducing digital tools that facilitate the monitoring of agribusiness operations. Panos and Daniele (2019) <sup>[4]</sup>

have observed that the technology providers have introduced innovative solutions to the digital and agricultural domains. These solutions encompass a wide range of activities such as facilitating the procurement and sale of crops through marketplaces and enabling farmers to obtain financing for digital tools.

Indonesia is anticipated to rapidly emerge as the third-largest e-commerce market in Southeast Asia <sup>[12]</sup>. According to statistical estimates, the internet retail industry in Indonesia has been experiencing an annual growth rate of 60–70% since 2014. It is projected to increase from \$8 billion in 2016 to \$60 billion by the end of 2022, as reported by Macquarie Research in 2017. Furthermore, a significant majority of online shoppers (79 percent) utilize mobile devices for conducting electronic commerce, as shown by Hoppe et al. (2016) <sup>[13]</sup>. Due to the expanding e-commerce industry in Indonesia, many multinational corporations are prioritizing larger markets like Indonesia. Consequently, online retailers in Indonesia are modifying their business strategies in order to remain competitive and stay afloat.

Most logistics service providers such as e-commerce companies and online stores have therefore started to emerge in Indonesia, some of which are known as Sayurbox and TaniHub. Established in July 2016, Sayurbox is a Business to Customer (B2C) based on e-agribusiness that sells fresh farm products including fruits and vegetables online <sup>[5]</sup>, while TaniHub is an app-based online marketplace that connects farmers and producers who sell their products to retailers, wholesalers and individual customers. This mobile marketplace platform, which is available for Android users, allows buyers to purchase fruits, vegetables, grains, meat, seafood and other farm produce, also offers in-house delivery through its delivery service known as Tani-Express <sup>[4]</sup>. Other e-commerce platforms that are becoming popular in Indonesian agricultural online markets include Ubuy, Happyfresh, RegoPantes, Chilibeli, GoMart, Carisayur, and TukangSayur.co, Shopee and Tokopedia. In 2022, Momentum Works' research revealed that Shopee and Tokopedia dominated the Indonesian e-commerce industry, capturing market shares of 36% and 35% respectively. Altogether, they established a substantial disparity compared to other competitors, such as Lazada, Bukalapak, Blibli and etc, which only commanded a market share of 10% or less.

According to Hanaysha (2018) <sup>[14]</sup>, consumers nowadays start to look for good information from internal sources (their past experiences) about the

products; for instance, their friends, family, relatives, neighbours, the Internet and social media. Ultimately, consumers evaluate all possibilities and choose the most appropriate brand for them that may satisfy their needs.

However, the intricacies of consumer behaviour and purchasing intention encompass a broad spectrum of actions, ranging from consumption to disposal. Numerous factors, including economic conditions, socio-demographic characteristics, income levels, as well as consumer attitudes and behaviours, have been identified as influential in the consumption of food and agricultural products<sup>[15]</sup>. Empirical evidence has demonstrated that stress can have an impact on dietary habits<sup>[15,16]</sup>. Additionally, research findings by Theodoridou et al. (2019)<sup>[17]</sup> have revealed that factors such as quality, taste, freshness, price, and nutritional value play significant roles in shaping food preferences and choices during non-pandemic periods. However, the effect of these factors may vary during times of crisis or a pandemic. They further argued that the impact can be contingent on an individual's level of optimism or pessimism about the future. As individuals become less optimistic about the future, they tend to curtail present spending and focus on saving<sup>[18]</sup>.

Despite the extensive body of literature on the determinants of purchase intention, there exists a paucity of research on the factors that influence consumer purchasing intentions of fresh agricultural products in the context of online shopping in Indonesia during the post Covid-19 pandemic. Notably, the results of empirical investigations carried out within the pandemic may demonstrate significant heterogeneity and yield a substantial impact on consumers across diverse locations or nations. This calls for further investigation, particularly in countries like Indonesia, characterised by a rapidly growing population and a diverse cultural landscape. Additionally, the research aims to address the disparity by examining the factors that influence consumer purchases of fresh agricultural commodities through online channels or e-commerce in Jakarta, Indonesia's capital city, which remains unexplored. This information may be useful to agricultural service providers and online sellers, especially Indonesian farmers, to promote their products and services on digital platforms. The accumulated knowledge will also aid policy makers and stakeholders in developing more effective digital marketing strategies in Indonesia. Additionally, it can contribute to the research field by exploring the impact of the post Covid-19 pandemic.

To elucidate the impact of customers' attitudes, subjective norms, and perceived behaviour control on their buying intention for agricultural products via e-commerce or online, the theory of planned behaviour (TPB) is employed. Additionally, we aim to comprehend other factors which have important roles in the online shopping process of fresh agricultural products including convenience, time-saving, product characteristics and demographic variables.

The organisation of this study is as follows. The second section will include the literature review, while the third section will focus on the study method. The fourth section will present the findings. The fifth section contains the discussion and conclusion, while the concluding section focuses on the theoretical and practical implications.

## **2. Literature Review**

### **2.1 Purchase Intention**

Purchase intention is defined by Pibulcharoensit et al. (2021)<sup>[19]</sup> as the customer's enthusiasm to purchase products or services in the future. Tarigan and Jacqueliene (2018)<sup>[20]</sup> described purchase intention as the likelihood of a customer purchasing a product or service when being motivated to make the purchase.

However, there are also numerous research papers that specifically examine the intention to purchase online as the main variable of interest. These studies include the works of Chan et al (2018)<sup>[21]</sup>, Lim et al. (2016)<sup>[22]</sup>, Shaily (2021)<sup>[23]</sup> and Roy and Datta (2023)<sup>[24]</sup>. Researchers have given priority to comprehending online purchase intention as it serves as a robust indication of actual online purchases. Online purchase intention is a quantitative measure employed to forecast real purchase actions<sup>[25]</sup>. The purchasing behaviour of the buyer is dichotomous, which entails a clear decision regarding whether or not to purchase the product<sup>[25]</sup>. Therefore, the current study evaluated individuals' propensity to engage in online purchases rather than investigating their actual actions. The primary aim was to examine the factors that influence customers' intention to make purchases online. Purchase intention in this study pertains to the consumer's propensity to engage in online transactions.

### **2.2 Product Attributes**

Khan and Khan (2020)<sup>[26]</sup> stated that convenience is very crucial in online shopping. The convenience factor

refers to the situation in which it is easier to search for information online compared to conventional stores. It indicates that consumers can easily find things in accessible stores and purchase products with minimal effort. Convenience reflects how easily consumers can find the products or services they require on the website<sup>[27]</sup>. In addition, studies have shown that the majority of respondents employed digital marketing for a variety of reasons, one of which was time-saving<sup>[28,29]</sup>. Another study has found that time-saving has a positive correlation with online buying intention (Jati, et al., 2020)<sup>[30]</sup>.

Studies have also found that product information can affect consumers' purchase intentions<sup>[31-34]</sup>. They are more likely to look for product information before making a purchase decision. Customers evaluate price when selecting a product. The findings indicate that product information, packaging design, pricing and quality all have a favourable impact on consumer purchase intentions. Generally, products are classified into three types: search, experience and credence goods. To illustrate, the availability of information, products and websites is referred to as search. Experience on the other hand relates to a person's understanding of previously purchased things, which leads to experience and knowledge about the product's quality and pricing. Credence product refers to someone who believes in the product and finds it difficult to rate it even after purchasing and using it<sup>[35,36]</sup>.

The perception of online consumers is a crucial factor that influences their intentions to engage in online buying<sup>[37]</sup>. Consumers utilizing websites can compare prices across several platforms and select the most favorable option for their needs. This is because the Internet enables consumers to engage in price comparison. Therefore, it offers valuable information to online consumers for purchasing products at a reduced price<sup>[38]</sup> and ensuring a high level of service quality<sup>[39]</sup>.

The consumer's preference for saving time is a significant aspect that greatly influences their online purchasing behavior. The availability of time is a crucial determinant in enticing working individuals to utilize online food delivery services<sup>[40]</sup>. Consumers are inclined to "save time" by resorting to internet buying in order to be more efficient with their time<sup>[41]</sup>. According to Wu (2003)<sup>[42]</sup>, consumer lifestyles and time constraints contribute to the challenges faced by consumers when purchasing at physical retail venues such as stores and shopping malls. Wu has emphasized that as long as online shopping provides time-saving benefits, users will persist in using the service.

Assumptions are formulated as:

$H_1$ : Convenience has a significant relationship with the purchase intention of fresh agricultural products via online shopping in Jakarta City, Indonesia.

$H_2$ : Time-saving has a significant relationship with the purchase intention of fresh agricultural products via online shopping in Jakarta City, Indonesia.

$H_3$ : Product information has a significant relationship with the purchase intention of fresh agricultural products via online shopping in Jakarta City, Indonesia.

### 2.3 Theory of Planned Behavior (TPB)

The Theory of Planned Behaviour (TPB) has been widely employed in numerous studies to elucidate individuals' behaviours. The Theory of Planned Behaviour (TPB) posits that an individual's behaviour is influenced by their intention to engage in a specific activity. Intentions, in turn, are associated with elements such as attitude, subjective norm, and perceived behavioural control. Attitude is the term used to describe an individual's positive or negative opinions about a particular behaviour. The term "subjective norm" describes an individual's perception of the social acceptability of an activity. Perceived behavioural control pertains to an individual's view of their capacity to do a particular behaviour. A study conducted by Ajzen (1991)<sup>[43]</sup> suggests that when an individual's attitude, subjective norm, and perceived behavioural control are all strong, their intention to engage in a particular behaviour would be resolute, leading to the desired behaviour.

Attitude is defined as the extent to which a customer perceives the behaviour as either negative or positive<sup>[43]</sup>. A study conducted by Dharmesti et al. (2019)<sup>[44]</sup> revealed a direct correlation between the attitude towards online shopping and the intention to make online purchases among millennials from Australia and the United States. The research conducted by Mao and Lyu (2017)<sup>[45]</sup> and Gu and Wu (2019)<sup>[46]</sup> revealed that the attitude towards online purchasing behaviour strongly influences the propensity to engage in online shopping. However, according to Laohapensang (2009)<sup>[47]</sup>, there is no statistically significant impact of attitude towards internet purchasing on online shopping intention.

Research studies have provided evidence that subjective norms play a crucial role in influencing the purchase intentions of consumers in the domain of e-commerce. According to Koch et al. (2020)<sup>[48]</sup>, the impact of familial and social networks, commonly



referred to as social support, has a significant effect on consumers' purchasing behaviours. The subjective norms construct can be bifurcated into two discrete classifications, specifically intrinsic and extrinsic factors. Dwilaksono et al. (2018) <sup>[49]</sup> posited that internal factors encompass close social networks, such as family and friends, while external factors encompass more remote influences from sources beyond one's immediate social sphere, such as media and advertising.

According to Zhao, et al. (2017) <sup>[50]</sup>, online agricultural product sales in China expanded substantially in 2014–2015, demonstrating consumers' increased awareness of agricultural e-marketplaces. Consumer perceived behavioural control towards online purchase intentions is also influenced by their comprehension of Information Technology (IT). It is possible to deduce that IT knowledge and consumers' awareness of agricultural e-markets influence consumer behaviour towards online shopping. Consumers began to buy owing to the simplicity of accessing information and the price that is comparable to the traditional market <sup>[51]</sup>. In his research, Laohapensang (2009) <sup>[47]</sup> discovered that perceived behavioural control is the primary determinant of internet purchase behaviour in Thailand. Gu and Wu (2019) <sup>[45]</sup> conducted research which revealed that perceived behavioural control has a greater impact on online purchase intention when compared to attitude and subjective standards. Based on these arguments, we therefore formulated the subsequent hypothesis:

*H<sub>4</sub>*: Consumer attitude has a significant relationship with purchase intention of fresh agricultural products via online shopping in Jakarta City, Indonesia.

*H<sub>5</sub>*: Consumer behaviour has a significant relationship with purchase intention of fresh agricultural products via online shopping in Jakarta city, Indonesia.

*H<sub>6</sub>*: Subjective norms have a significant relationship with the purchase intention of fresh agricultural products via online shopping in Jakarta City, Indonesia.

## 2.4 Socio-demographic Factors

Makkonen et al. (2021) <sup>[52]</sup> have suggested that demographic variables, including age, gender, education and income level, exert an impact on online purchasing by shaping consumer attitudes and actions. In another study, Wang and Somogyi (2018) <sup>[53]</sup> reported that various factors, including age, income, occupation and marital status, have an impact on the inclination of consumers to engage in online shopping. Consequently, the ensuing hypotheses were postulated based on the literature as follows:

*H<sub>7</sub>*: Demographic variables have a significant relationship with the purchase intention of fresh agricultural products via online shopping in Jakarta City, Indonesia.

## 3. Materials and Methods

### 3.1 Sampling Unit

The sample unit refers to the specific individual or group of individuals that are chosen from a broader population to take part in the study. It can be individuals that possess similar views and behaviors towards an entire group of people <sup>[54]</sup>. These individuals utilize social media and are at least 18 years of age. The individuals under investigation are regarded as the population for this study. Consequently, the general population is not known or unidentified in this particular research. In this study work, the overall population does not have a designated sampling unit. Therefore, our study focuses on a population consisting of housewives, students, business professionals, teachers and those who have access to online shopping.

This research employed non-probability sampling to acquire data from respondents in Jakarta City, the home to 58% of Indonesian online store customers (Statista, 2020) <sup>[55]</sup>. The total population size was indefinite and the sample size used for the study was 200 respondents who have experience buying fresh agricultural products from online platforms.

### 3.2 Sampling Technique

The participants for this study were selected utilizing an online purposive sampling technique and non-probability sampling methods. The data for this research was gathered during the Covid-19 pandemic. The researcher gathered data by disseminating the questionnaire via a Google Form Link and sending this link to other individuals who were easily accessible through various channels such as email, Facebook and WhatsApp. Nonprobability sampling is employed due to its efficiency in terms of time and cost savings in preparing a sampling frame. Out of the several methods of non-probability sampling, the snowball sampling methodology is chosen due to its easy accessibility, cost-effectiveness, and convenience. According to Efthymiou and Antoniou (2012) <sup>[56]</sup>, social media is a recently developed technological approach that is well-suited for gathering data collection. The snowball sampling method, also known as network or respondent-driven sampling, was selected because

participants were requested to distribute the survey to their friends, families and colleagues, as well as share the survey URL or the Google form link. This approach aligns with the methodologies proposed by Sarstedt and Mooi (2014)<sup>[57]</sup> and Neuman (2014)<sup>[58]</sup>. The online data collection was conducted in Jakarta from April to June 2022.

### 3.3 Measurement Scale of Dependent and Independent Variable

The questionnaire utilised in this study was formulated in both English and Indonesian languages and consisted of three distinct sections. Section A encompasses the demographic data of the participants, encompassing variables such as gender, age, race, ethnicity, educational attainment and income. Section B of the survey pertains to the intentions and behaviours of participants about online purchasing. This includes inquiries about the frequency of monthly purchases, the types of products procured within the past 12 months, monthly expenditure and frequency of online purchases, as well as the underlying motivations for engaging in online transactions. Section C focuses on the factors influencing online purchasing, with questionnaire items sourced from various existing literature. The measurement of each variable was conducted through the utilisation of a 5-point Likert scale, wherein the scale points were labelled as follows: 1 for “Strongly Disagree”, 2 for “Disagree”, 3 for “Uncertain”, 4 for “Agree” and 5 for “Strongly Agree”. All of the adopted items have been adjusted to conform to the context of online procurement of agricultural goods by consumers in Indonesia.

The questionnaire was initially composed in the English language. Nevertheless, the questionnaire was translated into Bahasa Indonesia because all of the respondents were fluent in the language. The back-to-back translation method, as described by Brislin in 1970<sup>[59]</sup>, was employed to guarantee the adequacy and preservation of the original meaning in the translation.

As illustrated in Figure 1, the study used seven constructs to examine online purchase intention during the Covid-19 pandemic. Convenience factors include 4 items which are on-time delivery, product information, product accessibility and product comparison. The time-saving factor includes less time to shopping, less time in evaluating and selecting a product, purchase time saving and availability of time. Trust factor includes safety and ease of navigation order, familiarity with the website and trustworthiness. Attitude factors include the evaluation of products,

satisfaction, reliability and cultural surroundings. Product characteristics include product quality, comparison, availability and being more likely to shop online. Consumer behavior is measured by 4 items which include satisfaction, easiness, freshness and higher quality. Subjective norms include family, friends, advertisements, and own decisions. Demographic variables include age, income, price and gender. Purchase intention encompasses the desire to engage in online shopping for fresh agricultural products, the act of recommending these products to others, and the ongoing practice of purchasing online.

### 3.4 Methods

The data analysis employed in this study encompasses descriptive analysis as well as Structural Equation Modeling (SEM) with the utilisation of WarpPLS version 8.0. A descriptive analysis is employed to elucidate and comprehend the fundamental characteristics of a particular dataset by providing concise summaries of the sample and statistical measures of the data. The study will employ descriptive analysis techniques, including mean, frequency, tabulate, and summary, to investigate the key attributes of Indonesian consumers that impact their purchasing intention of agricultural products in online shopping. Additionally, the analysis will examine the purchasing intention of Indonesian consumers when it comes to agricultural products in the online shopping platform.

SEM, or Structural Equation Modeling, is a statistical research tool that is used to investigate the structural relationship between many variables. This method integrates component analysis and multiple regression analysis to investigate the underlying link between observed variables and latent constructs. The literature in quantitative methods commonly categorises SEM techniques into two primary types: covariance-based and component or variance-based. The component-based approach to SEM, also known as the PLS-based technique, uses partial least squares. PLS-based SEM offers advantages over covariance-based SEM, such as (a) always finding a solution in complex models, (b) not requiring parametric analysis criteria like multivariate normality and large sample sizes, and (c) estimating parameters in models with formative LVs and moderating effects<sup>[60]</sup>. Due to this advantage, this study utilizes Structural Equation Modeling (SEM)—PLS to analyze the key determinants that impact customers' inclination to purchase agricultural products through online shopping.

The WarpPLS analysis is a derivative of the PLS

analysis. Partial Least Square (PLS) analysis was originally devised by Herman Wold, a professor at Karl Joreskog, who is known for developing Structural Equation Modeling (SEM). WarpPLS uses PLS regression, which minimises multicollinearity among local variables, even with overlapping indications. WarpPLS provides unique features that are not commonly found in PLS-based SEM software products. It automatically calculates P-values for path coefficients, rather than supplying merely standard errors or T-values and leaving the user to determine them. The tool estimates meaningful model fit indices for PLS-based SEM investigations. WarpPLS generates the indicators' product structure and moderating relationships automatically. It also estimates variance inflation factor (VIF) coefficients for LV predictors linked to each criterion. This allows the users to determine if certain predictors will be removed due to multicollinearity<sup>[60]</sup>.

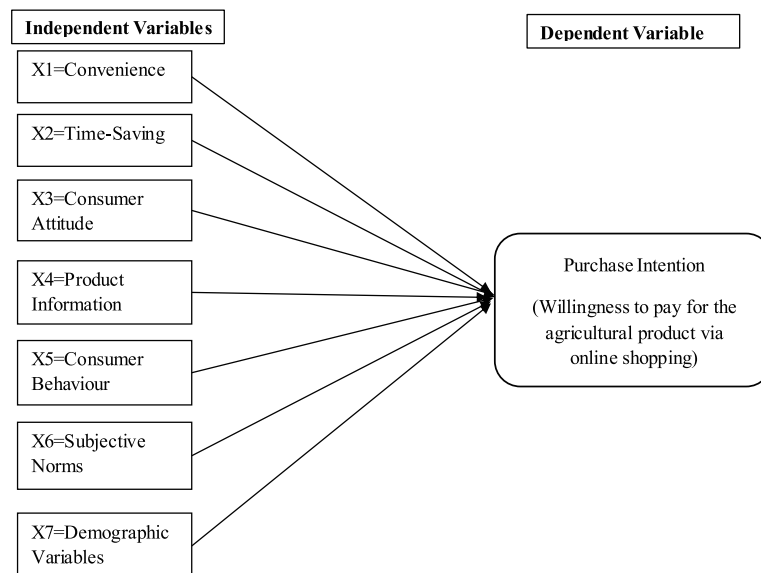
## 4. Results and Discussion

### 4.1 Demographic Features of the Respondents

Table 1 provides an overview of the participants' characteristics. The study's sample was comprised of 60% female and 40% male participants. In this sample study, female consumers exhibited a greater propensity to procure vegetables and fruits for personal and familial utilisation as compared to their male counterparts. Furthermore, with respect to age demographics, a significant proportion of the

participants belonged to the age group of 20–36 years or above, whereas the age group of 31–35 years constituted the smallest segment, comprising merely 13% of the total sample. The data demonstrated that a significant proportion of the participants, specifically 73%, possessed an undergraduate degree. The study findings indicated that a significant proportion of the respondents, specifically 42%, reported a monthly income exceeding Rp 5,000,000 (\$338.05). According to the statistics provided by BPS-Statistics Indonesia, the average Indonesian worker in Jakarta can expect to earn a net monthly income of around 3.75 million Indonesian rupiah in 2023. In this particular study, about 89 respondents earned approximately more than 30 percent higher than the national average income of workers in Jakarta.

Additionally, 40% of the participants reported a monthly income ranging between Rp 3,000,000 (\$202.5) and Rp 5,000,000, while 12% earned between Rp 1,500,000 (\$101.5) and Rp 3,000,000. Finally, 16% of the respondents reported a monthly income below Rp 1,500,000. In terms of experience with online shopping channels, nearly 37% of the respondents had prior experience, ranging from 3 to 4 years. Among these respondents, 72% shopped online occasionally, at least once a month, 22% shopped once every six months, whereas only 6% of the respondents shopped once a year. It can be concluded that the pandemic might have affected people's shopping behaviour, from buying agricultural products in traditional markets to shopping the products online.



**Figure 1.** Conceptual framework of factors influencing purchase intention for the agricultural product via online shopping.



**Table 1.** The demographic characteristics of the participants.

Variables	Category	Frequency	Percentage (%)
Gender	Male	84	40
	Female	126	60
Age	20–25	76	36
	26–30	46	22
	31–35	27	13
	36 or more	61	29
Education	Primary school	0	0
	Junior high school	1	0.48
	Senior high school	41	19.52
	Bachelor	154	73
	Master	14	7
	Not taking formal education	0	0
Income	Less than Rp 1,500,000	12	6
	Rp 1,500,000 to Rp 3,000,000	25	12
	Rp 3,000,000 to Rp 5,000,000	84	40
	More than Rp 5,000,000	89	42
Buying intensity	Frequently or at least once a month	151	72
	Once in six months	47	22
	Once a year	12	6
	Never bought online	0	0
Experience	Less than 1 year	23	11
	1 to 2 years	61	29
	3 to 4 years	78	37
	More than 5 years	48	23
Sources	Referred by friend or family	65	31
	Read a review about the product	69	33
	Saw an online advertisement	76	36
Stores visit	1 to 3 online stores	138	66
	3 to 5 online stores	46	22
	More than 5 stores	26	12

## 4.2 Reasons for Choosing Online Shopping

Among the six reasons mentioned, 179 respondents cited time-saving as the top motive for purchasing agricultural products via online shopping. Around 123 respondents expressed a preference for online shopping due to concerns about Covid-19. Additionally, 75 respondents indicated that they chose online shopping because it allowed for easy price comparison, while 68 respondents cited convenience and comfort as determining factors in their decision to shop online (Figure 2). This result confirms the finding of Chai and Yat (2020) <sup>[61]</sup> where customers preferred to conserve time to perform other important tasks as quickly as feasible. Other findings from Ganapathi (2015) <sup>[62]</sup> and Muhammad Umar and Nasir Uddin (2011) <sup>[63]</sup> found that time-saving had a significantly beneficial effect on behavioural intention to use online purchasing.

## 4.3 Sources of Online Shopping Information

When considering online shopping, consumers

deemed essential the provision of information about the products, their merits and drawbacks, as well as the relevant website links. The survey results illustrated that 75 respondents, accounting for 36% of the total, became aware of the availability of fresh agricultural products for online purchase through online adverts and websites. It is noteworthy that various social media platforms, such as Facebook, Twitter, and Instagram, have played a crucial role in this context. Moreover, 70 respondents (33%) sought insights from product reviews, while 65 respondents (31%) relied on recommendations from friends and family members (refer to Figure 3). These findings align with the research conducted by Hajli (2014) <sup>[64]</sup> and Miah et al. (2022) <sup>[11]</sup>, which underscored the efficacy of diverse online platforms in promoting online shopping and fostering consumer confidence in products and brands.

## 4.4 Preference for Online Store

The accompanying figure presents the preferred

online store site for purchasing fresh agricultural products in Jakarta. According to the results, Shopee has established itself as the primary electronic commerce platform among the participants, with SayurBox closely trailing in second place. Moreover, Tokopedia was ranked the third most popular e-commerce. Shopee,

Sayur Box and Tokopedia were in the top three rankings (Figure 4), perhaps because they are well-known to consumers for selling a variety of products in addition to fresh agricultural products. It can also be stated that Shopee is the store with the most customers in Jakarta for e-commerce that specialises in selling fresh agricultural products.

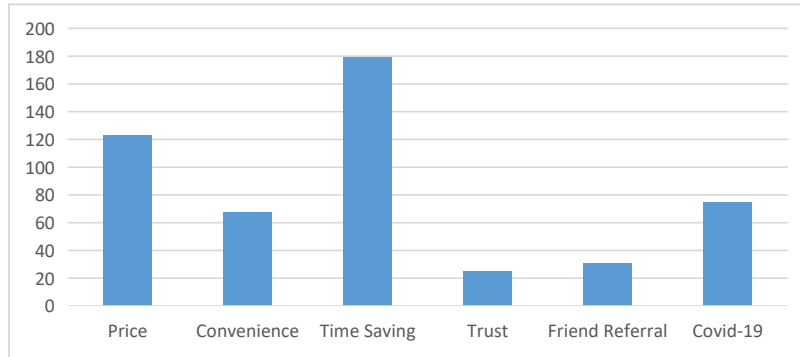


Figure 2. Reasons to shop online.

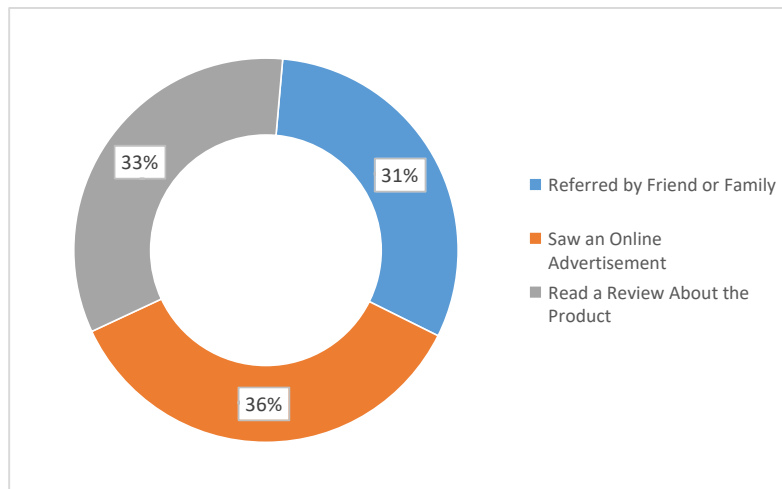


Figure 3. Sources of online shopping.

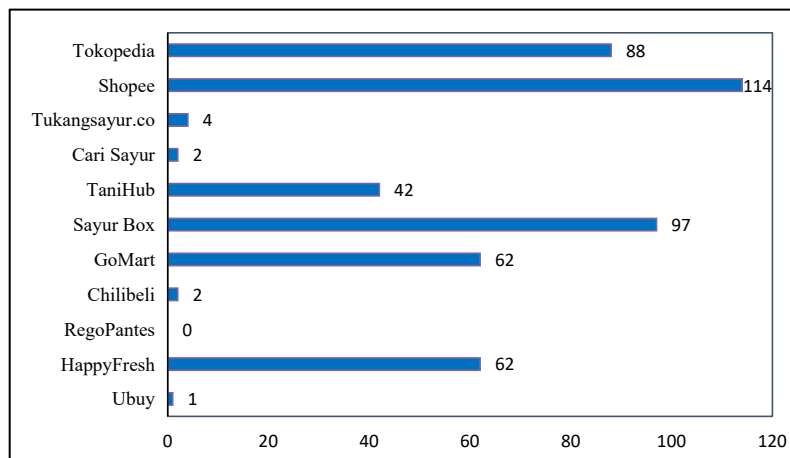


Figure 4. Favourite online stores.

## 4.5 Structural Equation Model (SEM)

### Evaluation of Measurement Model (Inner Model)

In estimation of SEM parameters using WarpPLS approach, there are analytical algorithms, named the outer model and the inner model algorithms. The algorithm in the inner model can be determined by various measures including the Goodness of Fit Model or hypothesis test <sup>[65]</sup>. The assessment of the Goodness of Fit model in the WarpPLS analysis encompassed multiple metrics. The values of the goodness-of-fit model are presented in Table 2. It was evident from Table 2 that every criterion for the model fit and quality indices had been satisfied. As a result, the Goodness of Fit model was satisfied, and it is possible to utilise the model for testing hypotheses in this investigation.

The findings from Table 2 further indicate that the Goodness of Fit (GoF) analysis demonstrated a favourable fit value, with ten fit indicators being presented by the model. The Average Path Coefficient (APC) was utilised as a metric for the mean path coefficient in the research model. The analysis of Table 2 suggested that the model constructed in this investigation satisfied the requirements for statistical significance. The determination of the desired threshold for the APC value is based on the resultant P-value, which is expected to be less than 0.05. Table 2 displays that the APC value with a P-value of less than 0.001, signifying that the model utilised in this investigation satisfied the significance criteria. The findings revealed the Average R-square (ARS), which denotes the mean value of R-square (R<sup>2</sup>) in the research model, has met the criteria for statistical significance.

The Average Adjusted R-squared (AARS) is utilised as a metric for quantifying the mean adjusted R-square

value in a given research model. The determination of the desired threshold for the AARS value is based on the resulting P-value, which is expected to be less than 0.05. As per the data presented in Table 2, the AARS metric demonstrated a value of 0.864, accompanied by a P-value of less than 0.001. This suggests that the model employed in the current investigation satisfies the criteria for statistical significance.

The model fit measurements yielded values of SPR = 0.857, RSCR = 0.996, SSR = 1 and NLBCDR = 1, which satisfied the optimal threshold of 1. Thus, it can be deduced that the four measurements of model fit were met. The assessment of the ten goodness of fit model measurements leads to the inference that the inner model was considered satisfactory.

### Evaluation of Measurement Model (Outer Model)

Using convergent validity, discriminant validity, and composite reliability, the measurement model (outer model) in SEM WarpPLS with reflective indicators can be assessed. This process entails an evaluation of three distinct criteria for every variable indicator, namely composite reliability, Variance Inflation Factor (VIF) and Average Variance Extracted (AVE). The evaluation outcomes of the measurement model (outer model) are as in Table 3.

The study found that the Composite Reliability, Average Variance Extracted (AVE), and Full Collinearity Variance Inflation Factor (VIF) values of the eight variables in Table 2 satisfied the reliability criteria. Based on Table 3, it was known that all latent variables of the study had a composite reliability value with a p-value less than 0.01, consequently, it can be concluded that the composite reliability was met. The results of Full Collinearity VIF demonstrate the values were less than 3.3, which suggests no collinearity problems. Meanwhile, Latan and Ghazali (2017) <sup>[66]</sup>

**Table 2.** Evaluation of goodness of fit.

Model Fit and Quality Indices	Fit Criteria	Results	Notes
Average Path Coefficient (APC)	P < 0.05	0.202 P < 0.001	Fit
Average R-squared (ARS)	P < 0.05	0.869 P < 0.001	Fit
Average Adjusted R-squared (AARS)	P < 0.05	0.864 P < 0.001	Fit
Average Block VIF (AVIF)	Acceptable if ≤ 5, ideally ≤ 3.3	1.901	Fit
Average Full Collinearity VIF (AFVIF)	Acceptable if ≤ 5, ideally ≤ 3.3	2.174	Fit
Tenenhaus Gof (GoF)	Small ≥ 0.1, Medium ≥ 0.25, Large ≥ 0.36	0.685	Fit
Simpson's Paradox Ratio (SPR)	Acceptable if ≥ 0.7, ideally =1	0.857	Fit
R-squared Contribution Ratio (RSCR)	Acceptable if ≥ 0.7, ideally =1	0.996	Fit
Statistical Suppression Ratio (SSR)	Acceptable if ≥ 0.7	1.000	Fit
Nonlinear Bivariate Causality Direction Ratio (NLBCDR)	Acceptable if ≥ 0.7	1.000	Fit

suggested that an AVE value greater than 0.5 is indicative of a situation where at least 50% of the variance in the indicators can be adequately accounted for in the research model.

### Hypothesis Test Result

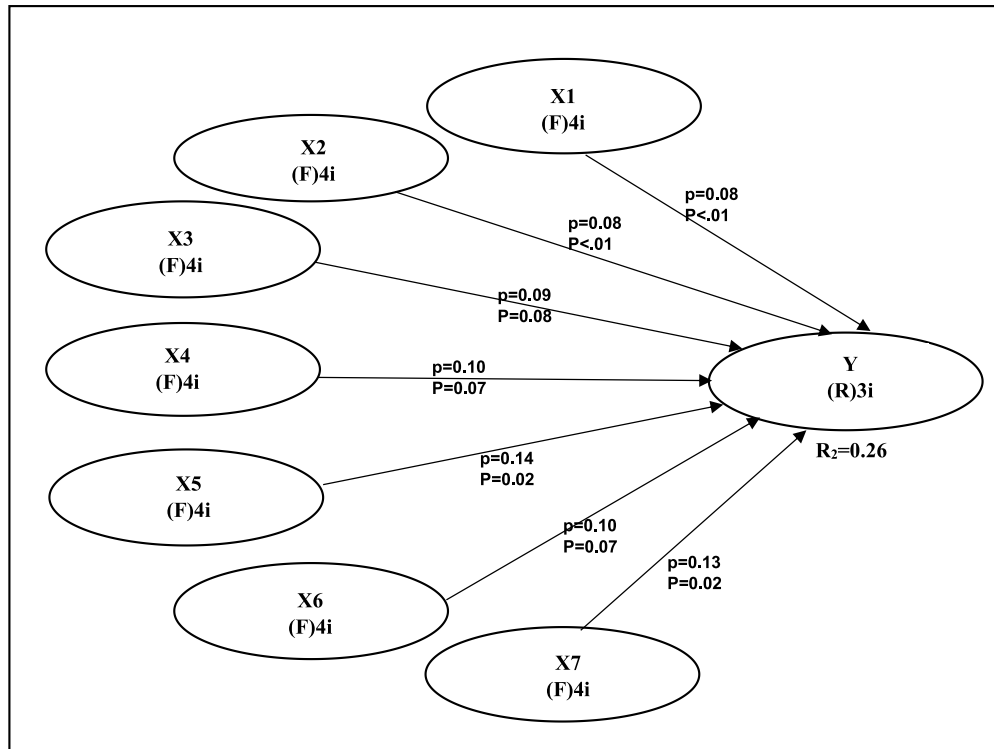
The evaluation of the hypothesis of this study can be accomplished through the analysis of the path coefficient values and their respective p-values. When a variable displays a positive path coefficient

accompanied by a statistically significant p-value, it suggests the presence of a significant effect. Conversely, in cases where the path coefficient exhibits positivity while the p-value fails to attain statistical significance, it implies that the variable in question lacks a significant impact<sup>[67]</sup>. Figure 4 displays the path coefficient values and associated p-values, which offer valuable insights into the statistical significance of the interrelationships among the variables.

**Table 3.** Composite reliability value, variance inflation factor (VIF) values.

Indicator	Statement	Composite Reliability Value	P-Value	VIF	AVE
C1	I get on-time delivery by shopping online	0.392	< 0.001	1.273	0.707
C2	Detail information is available while shopping online	0.283	< 0.001	1.094	
C3	I can buy agricultural products anytime 24 hours a day while shopping online	0.419	< 0.001	1.313	
C4	It is easy to choose and make comparisons with other agricultural products while shopping online	0.372	< 0.001	1.176	
T1	Online shopping takes less time to purchase	0.363	< 0.001	1.447	0.755
T2	Online shopping does not waste time	0.365	< 0.001	1.447	
T3	I feel that it takes less time to evaluate and select a product while shopping online	0.326	< 0.001	1.288	
T4	I can buy the products anytime 24 hours a day while shopping online	0.320	< 0.001	1.272	
CA1	While shopping online, I prefer to purchase from a website that provides safety and ease of navigation order	0.401	< 0.001	1.513	0.687
CA2	I believe that familiarity with the website before making an actual purchase reduces the risk of shopping online	0.353	< 0.001	1.262	
CA3	I like to shop online from a trustworthy website	0.380	< 0.001	1.409	
CA4	The culture of the society around me influences my purchasing decisions	0.279	< 0.001	1.130	
PC1	Detail information is available while shopping online	0.340	< 0.001	1.092	0.719
PC2	It is easy to choose and make comparisons with other products while shopping online	0.361	< 0.001	1.112	
PC3	I prefer to buy from a website that provides me with quality information	0.395	< 0.001	1.170	
PC4	The website design helps me search the products easily	0.425	< 0.001	1.211	
CB1	Using the internet for online shopping is easy	0.400	< 0.001	1.065	0.672
CB2	There is a certain satisfaction when shopping online	0.506	< 0.001	1.131	
CB3	Since the Covid-19 pandemic emerged, I decided to shop online	0.310	< 0.001	1.027	
CB4	Agricultural products provided by online stores are fresher and of higher quality	0.410	< 0.001	1.072	
SN1	I made an online purchase on a recommendation from a friend or family	0.265	< 0.001	1.185	0.791
SN2	Advertisements on social media make me want to buy the products shown	0.329	< 0.001	1.357	
SN3	Usually, I will shop at a store that my family has trusted	0.372	< 0.001	1.561	
SN4	I decided to shop online because I know that my friend has no problem shopping online	0.382	< 0.001	1.630	
D1	I don't care about the price of the product as long as it has good quality	0.392	< 0.001	1.101	0.732
D2	I shop online just to follow the trend	0.381	< 0.001	1.087	
D3	The older I get, the less I want to shop online	0.469	< 0.001	1.179	
D4	The more my income increases, the more I spend my money on online shop	0.328	< 0.001	1.070	
PI1	I repurchase the products within 7 days	0.575	< 0.001	1.099	0.810
PI2	I prefer to shop for vegetables online	0.592	< 0.001	1.106	
PI3	Recommend to others to shop for vegetables online	0.263	< 0.001	1.010	





**Figure 4.** SEM-PLS path diagram.

Additionally, Table 4 displays the results of the path coefficient analysis through coefficients and p-value. The results suggested that the purchasing intention of fresh agricultural products was influenced by all variables. This study found that Variable X1, which pertains to Convenience, had a significant impact on the purchasing intention of fresh agricultural products. The statistical analysis revealed a significant path coefficient of 0.18 with a p-value of less than 0.01, indicating clear evidence of the relationship between the variables. The present findings are consistent with a study carried out by Xie et al. (2022) <sup>[68]</sup>, which posited that the convenience factor engenders customer confidence,

thereby facilitating informed purchasing decisions. Online browsing offers consumers the convenience of purchasing necessities.

In addition, the significant impact of Variable X2 (Time Saving) on the purchasing intention for fresh agricultural products was evident from the results presented in Table 4 where the path coefficient test indicated a value of 0.18, while the p-value was < 0.01, signifying a highly significant effect. This finding aligns with the study conducted by Vasic et al. (2019) <sup>[69]</sup>, which emphasised the importance of time-saving as a leading factor in online shopping. Consumers often prioritise this aspect when making purchasing decisions through online platforms.

**Table 4.** Path coefficient and p-value.

No	Variable	Coefficients	p-value	Information
1	Convenience (X1) → Purchase intention	0.18	0.01	Significant
2	Time saving (X2) → Purchase intention	0.18	0.01	Significant
3	Consumer Attitude (X3) → Purchase intention	0.09	0.08	Significant
4	Product Characteristic (X4) → Purchase intention	0.10	0.07	Significant
5	Consumer Behaviour (X5) → Purchase intention	0.14	0.02	Significant
6	Subjective Norms (X6) → Purchase intention	0.14	0.02	Significant
7	Demographics Variables (X7) → Purchase intention	0.13	0.02	Significant

Meanwhile, Variable X3 (Consumer Attitude) has statistically influenced the purchasing intention for fresh agricultural products, as evidenced by  $\beta = 0.09$  and a p-value of 0.08, indicating a positive relationship. Consequently, individuals are more susceptible to purchasing agricultural products based on their attitude towards such goods. Prior studies have established that attitude serves as a significant predictor of behavioural intention. Attitude may influence purchasing behaviour by building trust in the website or online store and reducing perceived risk when the transaction is made. A positive correlation exists between consumers' perception of quality and their attitude towards fresh agricultural products, which in turn influences their intention to purchase said products via an online retailer. In the meantime, when making product selections, consumers should consider not only the financial but also non-financial implications of transaction risk. Furthermore, this study confirms the relationship between attitude and behaviour proposed by Fishbein and Ajzen (1975) <sup>[70]</sup>, namely that attitude positively influences the intention to purchase fresh agricultural products online.

The diagram illustrates that the variable X4, which pertains to product characteristics, demonstrated a degree of significance in its impact on the purchasing intention for fresh agricultural products. The path coefficient test revealed that the variable X4 has a statistically significant effect, as evidenced by the coefficient of 0.10 and a p-value of 0.07. Online stores owner can develop confidence toward consumers by socialising the product characteristics to the consumers so that they can have a piece of knowledge and information on fresh agricultural products for example fruits and vegetables. The more information offered about the products, the more consumers would know about the products being sold, lowering their risk perception <sup>[71]</sup>.

The variable X5, which pertains to perceived consumer behavioral control, had a significant impact on the purchasing intention of fresh agricultural products. This was evidenced by the path coefficient test, which yielded a significant effect with a value of 0.14 and a p-value of 0.02 for variable X5. The aforementioned discovery is consistent with the investigation carried out by Ćirić et al. (2020) <sup>[72]</sup> that scrutinised the pattern of e-commerce for organic food. The study demonstrated that consumers exhibited a growing preference for online platforms as a means of procuring organic fruits and vegetables amidst the Covid-19 pandemic. This trend was attributed to their heightened awareness of

health-related issues and apprehensions regarding the outbreak. Additionally, the research findings suggest a significant rise in the proportion of individuals opting for organic food amidst the surge in health awareness.

Table 4 also demonstrates that variable X6, which pertains to subjective norms, exerted a statistically significant relationship. This discovery aligns with the results obtained by Hao et al. (2022) <sup>[73]</sup> in Vietnam, wherein they investigated the impact of subjective norms on the intention to purchase. Based on their study, the researchers found that subjective norms had a favourable and constructive influence on the behavioural intentions of individuals to buy fresh produce. Social groups can generate consistent and shared behaviours at any given time due to the influence of group consciousness and norms. In this paper, consumers' purchase intention is examined about the group to which they belong and the individuals in their immediate environment; that is, their purchasing decision is impacted by the preference of those in their immediate environment (family members, relatives, friends, colleagues, etc.) for a specific product or brand, and therefore supports H<sub>6</sub>.

Finally, it is noteworthy to mention that variable X7, which relates to demographic factors, demonstrated a significant impact. The findings of the path coefficient analysis indicated that variable X7 held a significant impact on the purchasing intention of fresh agricultural products, as evidenced by the coefficient value of 0.13 and the corresponding p-value of 0.02. According to Wang and Na's (2020) <sup>[74]</sup> research, individuals tended to accumulate food supplies and opt for organic food delivery services amidst the Covid-19 pandemic, primarily driven by apprehensions regarding the transmission of the virus. Various factors such as education, income, online purchasing behaviour, gender and employment status have been found to demonstrate an influence on individuals' food stockpiling and online purchasing habits. Our results confirm the hypothesis and corroborate the findings <sup>[74]</sup> that socio-demographic variables are significantly and positively related to the online shopping behavior of Indonesian consumers during the post-Covid-19 pandemic.

## 5. Conclusions

This study has shown that the respondents of our questionnaire, specifically those residing in Jakarta, were found to purchase agricultural products online at least once a month, attributing to 3 to 4 years of experience in online shopping. The main reasons for them to shop online were saving time, price, convenience, and fear

of Covid-19. The idea to purchase online usually comes after they see an online advertisement. Before deciding to purchase the products, consumers often visit one to three stores. Their favourite e-commerce for purchasing agricultural products in Jakarta include Shopee, SayurBox and Tokopedia.

The principal aim of this investigation was to analyse the influence of crucial factors on the buying tendency of agricultural commodities in Jakarta, Indonesia by employing SEM using WarpPLS. The study's results indicated that the factors of convenience and time-saving have a robust and statistically significant impact on consumers' intentions to purchase fresh agricultural products. Moreover, this study revealed that consumer behaviour, subjective norms and demographic variables imposed a noteworthy influence on the purchasing intentions of agricultural commodities. The impact of consumers' attitudes and product characteristics on the purchasing intention of agricultural products was found to be statistically significant.

As for recommendations, it is advisable to conduct further research on the buying behaviour of agricultural products in diverse locations or regions due to variations in cultural, attitudinal and demographic factors. Furthermore, because different regions and cities have different levels of internet literacy and technical progress, which cannot be applied to the entire country as a whole, it is highly advisable to conduct a study in multiple places and regions.

Subsequent investigations may consider other external and hedonic factors in order to further explore the proposed model and delve into more intricate linkages involving various mediators and moderators. Finally, the current study relies on quantitative data, while qualitative data may yield different outcomes. Future studies should combine both quantitative and qualitative methods.

In term of theoretical implication, the finding substantiates the soundness of the Theory of Planned Behaviour (TPB) within the agricultural commercial domain. Furthermore, the study highlights the significance of attitude, perceived risk and subjective norms in enhancing agricultural productivity within a digital environment. Hence, this study can serve as a valuable resource for elucidating the influence of the theory on consumers' selection of agricultural products online in Indonesia.

Initially, managers must improve the calibre of internet shopping distributions in order to effectively compete in the Indonesia market for agricultural items during the post-Covid-19. The primary factors

influencing consumers' purchasing behaviour and inclination to acquire fresh agricultural products in the online environment are convenience, product information, time saving, attitude, socio-demographics. An effective approach is to offer a diverse range of fresh products under a strong brand that is associated with high perceived product quality. Another approach is to enhance the perceived level of quality in logistics services. Courteously offering flexible delivery time is a beneficial approach to guarantee transportation efficiency, which can potentially influence consumers' inclination to make a purchase.

Most importantly, fraud cases in online buying and selling systems should be avoided while Internet security should be enhanced to safeguard consumers' rights. The research findings offer practical advice for social commerce vendors and e-commerce organisations. Business owners should prioritise the regular provision of a varied assortment of fresh items, complemented by a robust brand that effectively conveys the perceived quality of the products. The assessment of product availability, attributes, and service quality is crucial for optimising delivery methods, payment alternatives, trustworthiness, and pricing tactics. By implementing these strategies, organisations have the potential to achieve cost reduction, enhance consumer perceptions, and access the expanding Indonesian market by leveraging online shopping platforms or e-commerce channels for the distribution of agricultural goods.

## **Author Contributions**

Rahman Rifqy Aulia wrote the paper; Abdul Rahman Saili, Wan Noranida Wan Mohd Noor, Nur Badriyah Kamarulzaman contributed data and literature review; Fazleen Abdul Fatah reviewed the paper and analysed the data; Ahmad Fadlur Rahman Bayuny reviewed the paper, Dwi Budi Santoso, Farah Wulandari Pangestuty, Ferry Prasetyia and Abdul Ghofar designed the sampling method and data collection.

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## **Data Availability**

The questionnaire and derived data supporting the findings of this study are available from the first and corresponding author, upon request.

## Conflict of Interest

The authors disclosed no conflict of interest.

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