

# Consumers' purchase behavior in short food supply chains using social commerce in Indonesia

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## ABSTRACT

Short food supply chain (SFSC) practice using social commerce is still in its infancy; this is also true in Indonesia. Many studies on the SFSC that uses social commerce have been carried out in developed countries; however, there is only limited research on this subject in developing countries. In this study, factors that explain purchase behavior toward social commerce SFSCs in Indonesia are explored by considering information-seeking variables as components of knowledge formation and the perceived economic and social sustainability of SFSCs as advantages over long food supply chains. Our conceptual framework was developed from the theory of planned behavior and alphabet theory, with the addition of a perceived SFSC sustainability variable. Data were collected from consumers who purchase agricultural produce from social commerce SFSCs and members of the respective SFSC chat groups. Data analysis was conducted using partial least squares structural equation modeling. The results reveal that perceived SFSC sustainability is influenced by product knowledge, which in turn has a positive association with information-seeking behavior. Perceived SFSC sustainability influences attitude and, subsequently, influences purchase intention. Consumers who have strong purchase intention are likely to purchase; subjective norm does not affect purchase intention for consumers who have received sufficient information from social media. Perceived behavioral control influences purchase intention but not behavior because purchasing agricultural produce is a regular activity. This research provides a deep understanding of consumer behavior toward SFSCs that use social commerce. Based on the factors identified as influencing purchase behavior, sellers can provide information through social media to facilitate consumers' purchasing decisions.

## 1. Introduction

Currently, short food supply chains (SFSCs) using social commerce (or social commerce SFSCs) is in their infancy compared to other types of SFSCs. This is also the case in Indonesia; however, they are growing rapidly. Indonesia is an agricultural country with the third-highest number of social media users worldwide (Hootsuite, 2020). Therefore, social commerce offers opportunities to support SFSC development.

SFSCs can vary from a direct supply chain with no intermediaries to indirect supply chains that have a single or limited number of intermediaries between producers and consumers (Aubry and Kebir, 2013; Benedek et al., 2018). Direct contact with the producer is one of the main drivers when consumers buy products from SFSCs (González-Azcárate, 2021). According to the European Commission

(2020), SFSCs provide opportunities for consumers who seek higher value from food on the one hand, and for producers to implement sustainable practices on the other. Also, they offer huge economic opportunities by bestowing a competitive advantage over other competitors in the market.

The use of social commerce—i.e. e-commerce via social media—for SFSCs has advantages because of the large number of social media users, its ease of use, its free social media applications, and its potential use for advertisement that reaches a wide audience (Elghannam et al., 2020). Social commerce increases community-level participation and socio-economic activity (Liang and Turban, 2011) and, at the same time, it merges the online and offline environments (Wang and Zhang, 2012). Producers have a higher probability of connecting directly with consumers through social media and obtaining feedback from them

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(Drejerska et al., 2019; Elghannam et al., 2018). Social commerce as a medium for frequent communication and interaction between members can increase trust through mutual understanding (Ji et al., 2019). Good communication provides an opportunity for consumers to obtain valuable information about products, such as origin, production, cultivation, and social dimensions (Cicatiello et al., 2015; Elghannam et al., 2017). Moreover, it has been shown that facilitating information-seeking about SFSCs by consumers is important (Elghannam et al., 2017), particularly those who consider sustainability in their purchase decisions (Torquati et al., 2016). Social commerce facilitates social relationship such as knowledge exchange between parties which has a positive impact on purchasing and consumption behavior (de Bernardi et al., 2019), increases consumer confidence when choosing a product (Vermeir and Verbeke, 2008) and simplifies consumers purchase decision (Cao et al., 2020). Therefore, social commerce has a role in social and economic sustainability.

Research on consumer behavior toward purchases at SFSCs shows that the motivation to purchase is influenced by the concern for the three pillars of sustainability, i.e. social, economic and environmental (Giampietri et al., 2016). In addition, Wang and Scrimgeour (2022) noted that consumers who are concerned about the five pillars of sustainability (i.e. social, economic, environmental, cultural, and governance) are likely to participate in SFSC. Therefore, it is important to look at the debate in the literature on whether the SFSC has more positive impacts than the long food supply chain (LFSC) on the three pillars of sustainable development goals. In the agriculture supply chain, price equity for farmers is higher in SFSCs than in LFSCs (Carmona et al., 2021) which may be attributed to the involvement of fewer actors in SFSCs. Therefore, the SFSC is perceived as having a more positive impact than the LFSC on the economic dimension (Malak-Rawlikowska et al., 2019). In the social dimension, the comparison result is inconclusive; however, the bargaining position in SFSCs tends to be higher than in LFSCs because of a higher level of trust among actors in SFSCs (Malak-Rawlikowska et al., 2019). Hence, we consider the social dimension as one of the perceived advantages of SFSCs. In terms of environmental impact, the consensus is that LFSCs generate fewer negative impacts (Majewski et al., 2020; Malak-Rawlikowska et al., 2019). Scholarly debate asserts that both SFSC and LFSC have a role in supporting the sustainable supply chain.

Although SFSCs can contribute to the development of sustainable supply chain, the number of studies that address consumer purchase behavior in SFSCs, particularly in our context, are limited. Most related research has been conducted in developed countries (Ji et al., 2019), such as Spain and Italy (de Bernardi et al., 2019; Elghannam et al., 2020; Elghannam and Mesias, 2019). Therefore, this paper aims to explore purchase behavior in social commerce SFSCs in Indonesia. Our study considers information-seeking variables as the components of knowledge formation as well as the perceived economic and social benefits of SFSC sustainability. We employ a theoretical framework that combines the theory of planned behavior (TPB) and alphabet theory to test several hypotheses about factors affecting the purchase behavior. Both theories have been used to explain behavior in food purchases (Giampietri et al., 2016, 2018; Schäufele and Hamm, 2017; Verbeke and Vackier, 2005). Hence, our research contributes to SFSC literature by generating insights into how consumers make purchasing decisions in social commerce SFSCs; thus, this study is also a reference for social commerce SFSC producers who wish to adapt to these consumer behaviors.

The remainder of this paper is structured as follows. Section 2 presents the literature review and research hypotheses. Section 3 describes the material, method, and data collection. Section 4 presents the analysis of consumer behavior regarding SFSCs for agricultural produce, and Section 5 provides the discussion. Section 6 concludes the paper.

## 2. Literature review and research hypotheses

### 2.1. Consumer behavior in short food supply chains

There have been several studies on factors that influence purchase behavior in SFSCs. One quantitative study conducted in Italy shows the roles of behavioral intention, perceived behavioral control, consumer rural residence, and fair trade in purchasing behavior in SFSCs (Giampietri et al., 2018). The authors determined behavioral intention using factors from the theory of planned behavior—namely, attitude, subjective norm and perceived behavioral control, along with an additional factor—i.e. trust. Consumers are motivated to buy from SFSCs because they support the local economy, food safety, freshness, and product quality (Maas et al., 2022).

Giampietri et al. (2016) show that the sustainability is an important factor for consumer choice. For economic sustainability, SFSCs support farmers in terms of output price, revenue, and income sustainability in developing countries (Bui et al., 2021). SFSCs also increase the profit margins of producers by removing intermediaries (Malak-Rawlikowska et al., 2019), thus increasing the quality of farmers' lives (Wang et al., 2021). From the consumer side, SFSCs provide consumers access to high-quality food at affordable prices (Wang et al., 2021). In terms of social sustainability, SFSCs can facilitate dialog and social interaction between producers and consumers (Migliore et al., 2015; Wang et al., 2021), generally have a higher bargaining position in chain, stronger trust and relations with other producers in the same chain include consumers than LFSC (Malak-Rawlikowska et al., 2019). SFSCs can increase farmers' satisfaction and confidence (Bui et al., 2021). This promotes better social sustainability, especially for smallholder farmers. Meanwhile, regarding environmental sustainability, LFSCs have been shown to have fewer negative impacts on the environment than SFSCs (Majewski et al., 2020; Malak-Rawlikowska et al., 2019).

### 2.2. Relevant consumer behavior theories on short food supply chains

In this section we review research on SFSC consumer behavior that uses the Theory of Planned Behavior (TPB) and Alphabet Theory that are related to our work.

#### 2.2.1. Theory of planned behavior

The TPB is a logical selection model in which behavioral intention is the only relevant psychological antecedent for behavior with the constructs of attitude, subjective norm, and perceived behavioral control to explain behavioral intention (Ajzen, 1991). The TPB has been applied in various research fields, including agriculture, providing accurate assumptions and results (dos Santos, 2016). In fresh food purchases, the TPB has the power to predict behavior (Verbeke and Vackier, 2005). In addition, the TPB has been used in consumer behavior research on SFSCs, and all variables used have been significant (Giampietri et al., 2016, 2018). In the context of social commerce, the TPB is one of the important theories that describe motivation in consumer behavior (Mou and Benyoucef, 2021), which includes purchase intention (Smith et al., 2013). The TBP can be extended by adding more predictors of intention or behavior (Ajzen, 2020). In our study, we add a sustainable perception variable, as well as information-seeking and knowledge from alphabet theory.

#### 2.2.2. Alphabet theory

Alphabet theory was developed by combining two environmental behavior theories, namely, value-belief-norm theory (Stern et al., 1999) and attitude-behavior-context theory (Guagnano et al., 1995), along with additional variables such as knowledge, information-seeking, habits, and demographics (Zepeda and Deal, 2009). The theory illustrates the attitude-behavior gap, which is often used as a reference in studying alternative food-buying behavior (Schäufele and Hamm, 2017). In light of the above, we apply alphabet theory in our study to

create a more specific conceptual framework to study food purchasing behavior in social commerce SFSCs by using information-seeking and knowledge variables to explain the social commerce SFSC consumer behavior. We exclude the ‘habits’ variable because social commerce SFSC is still in its initial stages and it is too early for the consumers to form habits.

### 2.3. Hypotheses on consumer behavior in short food supply chains

*Attitude* is the degree to which an individual has a favorable or unfavorable evaluation of behavior (Ajzen, 1991). It is defined as the consumer response toward a particular object, such as social commerce SFSC. In an SFSC study, consumer attitude is shown to have a positive relationship with behavioral intention (Giampietri et al., 2018). In a social commerce study, attitude is shown to have a positive relationship with purchase intention (Smith et al., 2013). Accordingly, we posit our first hypothesis to find out whether the same finding applies to social commerce SFSC.

**H1.** Attitude is positively related to behavioral intention.

*Subjective norm* refers to perceived social pressures affecting whether to engage in a particular behavior (Ajzen, 1991). The encouragement by someone close (e.g., family and friends) to buy from SFSCs positively affects behavioral intention (Giampietri et al., 2016, 2018). A study of community-supported agriculture (CSA) as a type of SFSC shows that social influences are a predictor of behavioral intention to join CSA (Diekmann and Theuvsen, 2019). Also, subjective norm is a predictor of purchase intention in a social commerce study (Smith et al., 2013). Thus, we test the same hypothesis but for social commerce SFSC.

**H2.** Subjective norm is positively related to behavioral intention.

*Perceived behavioral control* relates to how easy or difficult it is to execute a behavior; it is thought to reflect previous experience, predicted barriers, and limitation behavior (Ajzen, 1991). Perceived behavioral control positively influences SFSC consumer behavioral intention and behavior (Giampietri et al., 2018). In the context of social commerce, perceived behavioral control positively affects purchase intention (Smith et al., 2013). Thus, we posit our third and fourth hypotheses.

**H3.** Perceived behavioral control is positively related to behavioral intention.

**H4.** Perceived behavioral control is positively related to behavior.

Behavioral intention positively influences behavior (Ajzen, 2020). Past studies have shown that behavioral intention reflects buying behavior from SFSCs (Giampietri et al., 2018). Hence, we test the following hypothesis for social commerce SFSC.

**H5.** Behavioral intention is positively related to behavior.

Regarding information-seeking behavior, existing studies have shown that consumers with high involvement seek detailed information about the product and the supplier (Marshall, 2004). Among the types of information sources, information acquired via the internet greatly influences consumer behavior. Information about fresh vegetables can be searched online via microblogs, blogs, online chat groups, social network sites, videos, websites, or search engines (Kuttschreuter et al., 2014). SFSC consumers also seek information using social networking sites (Butu et al., 2020). Information-seeking in social commerce is consumers’ attempts to obtain information about a product or e-vendor from the resources available on social networking sites to optimize purchasing decisions (Hajli et al., 2017). According to previous literature, information-seeking increases people’s knowledge (Zepeda and Deal, 2009; Maichum et al., 2016) about various aspects of a product and helps during purchase decision-making (Turcotte et al., 2015). Thus, we test the following hypothesis regarding whether consumers’ information-seeking in SFSCs increases their knowledge.

**H6.** Information-seeking is positively related to knowledge.

Knowledge can affect perception (e.g., perception of SFSC sustainability) in several ways, such as by enabling perceptual categories and solving problems (Rock, 1985). Knowledge can also be a determining factor in one’s view of values (Zepeda and Deal, 2009), such as the sustainability of SFSCs. In online SFSCs, knowledge obtained online can significantly affect sustainable behavior (de Bernardi et al., 2019). Therefore, in this study, we test whether SFSC consumers with a high level of knowledge have a high level of perception of sustainability. Thus, we set the following hypothesis.

**H7.** Knowledge is positively related to perceived sustainability.

Previous studies have asserted that sustainability is positively associated with attitude toward SFSCs (Wang et al., 2021). Also, product perception has been found to be significant in relation to attitude toward SFSCs using social media platforms for food delivery (Kumar et al., 2021). Hence, in this study, we wish to test whether a more positive perception of sustainability is associated with a more positive attitude toward an SFSC.

**H8.** Perceived sustainability is positively related to attitudes.

## 3. Materials and methods

This section provides descriptions of our conceptual framework, data collection, and method of analysis.

### 3.1. Conceptual framework

The theoretical framework (Fig. 1) used in this study is built upon the TPB and alphabet theory. We add perceived SFSC sustainability because it has been identified as an important factor in the SFSC literature.

The constructs are measured using a questionnaire that includes indicators for the following: behavior (Ajzen, 2006; Tomić Maksan et al., 2019), behavioral intention (Ajzen, 2006; Verbeke and Vackier, 2005), attitude, subjective norm, perceived behavioral control (Ajzen, 2006), information-seeking (Kuttschreuter et al., 2014), knowledge (Maichum et al., 2016), and perceived SFSC sustainability (Bui et al., 2021; Forssell and Lankoski, 2015; Malak-Rawlikowska et al., 2019; Migliore et al., 2015). Indicators are measured using either seven-point Likert-type scales from 1 (*strongly disagree*) to 7 (*strongly agree*) or seven-point bipolar adjective scales for attitude (e.g., bad–good), behavior (BHV2: i.e. never–daily), and perceived behavioral control (PBC2: i.e. impossible–possible). The explanation of the constructs and their indicators is as follows.

- *Behavior (BHV)* is measured using these indicators: “I buy agricultural produce at social commerce SFSC regularly (BHV1)” and “How often have you purchased agricultural produce at social commerce SFSC? (BHV2)”.

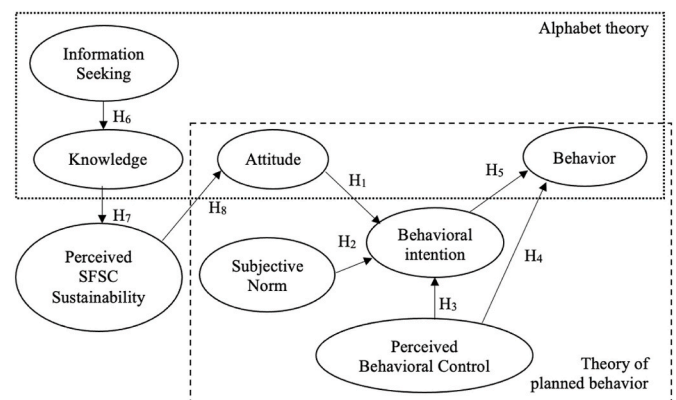


Fig. 1. Conceptual framework.

- *Behavior intention (BI)* is measured using these indicators: “My willingness to purchase agricultural produce at social commerce SFSC within the next two weeks is high (BI1)”, “There is a high chance that I will purchase agricultural produce at social commerce SFSC within the next two weeks (BI2)”, “I am planning to purchase agricultural produce at social commerce SFSC within the next two weeks (BI3)”, and “I will try to purchase agricultural produce at SFSC using social commerce (BI4)”.
- *Attitude (AT)* is measured using these indicators: “For me, purchasing agricultural produce at social commerce SFSC is ...” harmful to beneficial (AT1), unpleasant to pleasant (AT2), bad to good (AT3), worthless to valuable (AT4), and unenjoyable to enjoyable (AT5).
- *Subjective norm (SN)* is measured using these indicators: “Most people who are important to me think that I should buy agricultural produce at social commerce SFSC (SN1)”, “Many people like me buy agricultural produce from social commerce SFSC (SN2)”, “It is expected of me that I buy agricultural produce from social commerce SFSC (SN3)”, and “The people in my life whose opinion I value buy agricultural produce at social commerce SFSC (SN4)”.
- *Perceived behavioral control (PBC)* is measured using these indicators: “If I wanted to, I could easily purchase agricultural produce at social commerce SFSC within the next two weeks (PBC1)”, “For me to purchase agricultural produce at social commerce SFSC within the next two weeks would be ... [impossible to possible] (PBC2)”, and “It is mostly up to me whether or not I purchase agricultural produce at social commerce SFSC (PBC3)”.
- *Information seeking (IS)* is measured using these indicators: “I use social networking sites to seek information related to SFSC (IS1)”, “I read or take part in forums or chat groups online to seek information related to SFSC (IS2)” and “I watch videos online to seek information related to SFSC (IS3)”.
- *Knowledge (KN)* is measured using these indicators: “I have gained much knowledge about agricultural produce from SFSC (KN1)”, “I want to have a deeper insight into the inputs, processes and sustainability impacts of agricultural produce from SFSC before I purchase (KN2)”, and “I would prefer to gain substantial information on agricultural produce from SFSC before I purchase (KN3)”.
- *Perceived SFSC sustainability (PS)* is measured using these indicators: “I can have dialog with the seller or producers (PS1)”, “Sellers or producers can give information about the products (PS2)”, “I trust the sellers or producers (PS3)”, “I can get high-quality agriculture produce at a fair price (PS4)”, “I support the creation of jobs for producers (PS5)”, and “I support the seller’s or producer’s economic conditions (PS6)”.

### 3.2. Sampling and data collection

Indonesia was chosen as the research location because it is a developing country and it has the third-highest number of social media users worldwide (Hootsuite, 2020). WhatsApp is the most widely used social media platform for instant messaging in Indonesia; 84% of the population aged 16–64 use this platform (Hootsuite, 2020). The chosen area is the city of Bandung, an urban area surrounded by the main areas of agricultural production in Indonesia.

This study was conducted at two social commerce SFSCs in Bandung that sell agricultural produce via WhatsApp, which has a chat group feature in which SFSC actors (e.g. producers, intermediary and consumers) are members. Instant messaging affords more accessibility and intimacy among consumers, is more immersive and cost-reducing, and exerts greater social influence (Cao et al., 2020). For a comparison, Drejerska and colleagues find that the social media platform Facebook is primarily used by producers to share information, but the interactions (i.e. comments and sharing) between farmers and consumers are limited (Drejerska et al., 2019). Our research focus is on social commerce SFSC that uses WhatsApp, a private chat group.

A chat group feature allows users to make product offers, place

product orders, obtain delivery information, and engage in discussions. In addition, WhatsApp can be used to share information via text messages, voice messages, audios, photos, videos, status updates and group chat, as well as to make audio and video calls. Furthermore, it can support businesses with features that make it easier for sellers to create catalogs of products offered, including the automated reply to messages.

The population selected for this study is consumers who are members of the respective SFSC chat group and have bought agricultural produce (e.g., vegetables, fruits, spices, pulses, and grains) from the social commerce SFSCs. The population size ( $N$ ) is quite small at 445. This is because the number of social commerce SFSCs is still limited in Indonesia; consequently, the population of consumers who meet the requirements for this research remains small. The sample size ( $n$ ) is 116, which is 26% of the total population size. However, the sample size for this study is higher than the recommended minimum sample size. It meets the minimum size required by the 10-times rule, which is the most cited method (Barclay et al., 1995). In this case, 10-times the largest number of structural paths directed at a particular construct in the structural model would require a sample size of 30. Moreover, based on the minimum 5% significance level and the minimum path coefficient of 0.21 suggested by Hair et al. (2021), the minimum sample size is 69. Another study on consumer SFSCs that employed inferential statistics collected 80 valid responses from a consumer farmers’ market (Maas et al., 2022). Thus our study has a larger sample of valid responses.

The primary data collection method is an online survey. The online questionnaire was created in Typeform, and the link was distributed to the SFSCs’ social commerce chat group. Respondents were informed about the study objective, their voluntary participation, and the anonymous nature of the questionnaire. Data collection was divided into two phases. In January 2020, we received 109 responses from the first SFSC. In July 2022, we received 15 valid responses from the second SFSC. From the total of 445 group members, we obtained 124 responses, 116 of which were valid.

Appendix A show the demographic characteristics of the respondents which are similar to previous related research. The majority of respondents are female and married. Regarding gender behavior associated with the Indonesian culture, women play a significant role in fulfilling the food requirements of their families (Pangaribowo et al., 2019). The age of respondents tends to be younger, similar to the research conducted by Wills and Arundel (2017). They also noticed that online SFSC consumers were younger than offline SFSC consumers. Consumers with a higher level of education prefer to shop at SFSCs (Kiss et al., 2020). The majority of respondents have an education level of at least a Bachelor’s degree. Half of the consumers have jobs, and much of their income is above the regional minimum wage, which shows that SFSC consumers are not struggling financially. This is in line with Kiss et al. (2020). Note that Rupiah (Rp) is the Indonesian’s currency.

### 3.3. Method of analysis

Descriptive and inferential statistics are used in this study. Descriptive statistics of the variables are presented with a frequency distribution using the percentage of each score and the average value of the indicator score.

Inferential statistics are used to test the hypotheses. Data are analyzed using partial least squares structural equation modeling (PLS-SEM). PLS-SEM is used primarily for exploratory research or to study an extension of an existing structural theory. It is suitable for early-stage development of theory testing (Hsu et al., 2006). PLS-SEM offers benefits in situations commonly encountered in social research, such as non-normal data, small sample sizes, and models where many indicators and relationships are estimated (Hair et al., 2013). In terms of robustness, PLS-SEM provides very robust model estimates with data having both normal and highly non-normal distribution properties (i.e. skewness and/or kurtosis) (Hair et al., 2013). The bootstrap procedure in PLS-SEM performs quite strongly when the data are non-normal (Hair

et al., 2013).

In this research, SmartPLS software is used to analyze the conceptual model. The evaluation of measurements and the structural model follow the guidelines and rules of thumb for PLS-SEM. The PLS result is calculated using the maximum number of 300 iterations, and the PLS algorithm stop criterion value is 7 (Hair et al., 2017). This study used bootstrapping of 5000 re-samples to test the hypotheses.

We use reflective indicators in our model. In the first-stage evaluation, we use a reflective measurement model that estimates the convergent validity, internal consistency reliability, and discriminant validity of the model. *First*, convergent validity can be evaluated using a reliability indicator and the average variance extracted (AVE). Hair et al. (2017) suggest that a model's reliability can be measured using outer loading values. Most of the loading should be at least 0.5 (Hulland, 1999; Truong and McColl, 2011), indicating that the construct provides a good explanation of the indicator's variance. Furthermore, an indicator with an outer loading between 0.4 and 0.7 can be used if the AVE and composite reliability values are acceptable (Hair et al., 2013). The AVE shows the ability of constructs to explain the variance of their indicators. Hair et al. (2017) suggest that AVE values should be greater than 0.5. *Second*, internal consistency reliability can be evaluated using composite reliability and Cronbach's alpha values (Hair et al., 2017). Both composite reliability and Cronbach's alpha values should be equal to or higher than 0.6 (Chin, 1998; Nunnally and Bernstein, 1994). *Third*, discriminant validity shows the degree of difference between one construct and others by empirical standards (Hair et al., 2013). We employ HTMT criteria because this approach is more sensitive than cross loading and the Fornell-Larcker criterion in detecting discriminant validity problems (Henseler et al., 2015). The suggested HTMT value should be equal to or lower than 0.9 (Henseler et al., 2015).

The next step is to assess the structural model by measuring the collinearity, coefficients of determination, predictive relevance, and significance of path coefficients. Collinearity assessment is conducted by examining the variance inflation factor (VIF) values. Hair et al. (2019) suggest that the value should ideally be less than three. For the coefficients of determination ( $R^2$ ) evaluation that measures a model's explanatory power, we use the following rule of thumb:  $R^2$  value of 0.75, 0.50, or 0.25 is categorized as substantial, moderate or weak, respectively (Hair et al., 2013). The predictive relevance is measured using the blindfolding-based cross-validated redundancy measure  $Q^2$  (Hair et al., 2017). Hair et al. (2019) suggest that the  $Q^2$  value for an endogenous construct should be higher than zero. Finally, the significance of path coefficients is assessed using two tailed tests with threshold values of 2.57, 1.96, and 1.65 for significance levels of 1%, 5% and 10%, respectively (Hair et al., 2013).

## 4. Results

### 4.1. Descriptive statistics of the variables

Descriptive statistics for the variables are shown in Appendix B. The range of variable consumer purchase behavior scores shows that the frequency with which consumers buy agricultural produce varies. The range of variable behavioral intention scores is from 2 to 7 with the mode at 6; thus, it implies that the intent to buy agricultural produce at social commerce SFSCs is high. The variable attitude score ranges from 4 to 7 with the mode at 7, which indicates that respondents believe that purchasing agricultural produce at social commerce SFSCs is beneficial, pleasant, good, valuable, and enjoyable. The subjective norm, perceived behavioral control, and information-seeking variables have different ranges, which indicates that respondents have diverse opinions. For information-seeking, the highest score is for respondents who seek information through chat groups. For the knowledge variable, the mode is 6 which shows that the respondents' knowledge of product information and product origin is good. The scores for the perceived SFSC sustainability variable range from 3 to 7. The highest score indicates that job

creation and economic condition of producers are highly valued by the respondents.

### 4.2. Measurement model evaluation

The results of the measurement model evaluation show that the values for convergent validity, internal consistency, and discriminant validity obtained meet the established requirements. Convergent validity is evaluated through outer loading values and AVE. The results show that all outer loading values meet the suggested minimum threshold of 0.5 (Hulland, 1999; Truong and McColl, 2011). The AVE values are greater than the suggested minimum threshold of 0.5 (Hair et al., 2017) (see Appendix C). Internal consistency reliability, as set out in Appendix C, shows that all constructs have composite reliability and Cronbach's alpha values greater than the minimum threshold of 0.6 (Chin, 1998; Nunnally and Bernstein, 1994). Regarding discriminant validity, Appendix D shows that the maximum value of HTMT meets the suggested maximum threshold of 0.9 (Henseler et al., 2015).

### 4.3. Structural model evaluations

We have demonstrated that our measurement model meets all the required criteria. Collinearity assessment is conducted by examining VIF values. As shown in Appendix E, the highest VIF value is lower than three, which indicates that collinearity is not an issue in our structural model (Hair et al., 2019). The  $R^2$  values for behavior, behavioral intention, and attitude are moderate (higher than 0.50), while the values for perceived SFSC sustainability and knowledge exhibit weaker power in explaining the model (see Fig. 2).

The predictive relevance measurements using the blindfolding-based cross-validated redundancy measure  $Q^2$  values for all five endogenous constructs are considerably above zero (i.e. BI: 0.328; BHV: 0.320; AT: 0.425; PS: 0.131; KN: 0.198). Hence, the results show that our model has an acceptable predictive relevance (Hair et al., 2019).

Having developed the model's explanatory and predictive power, the next step is to assess the significance of path coefficients. The path coefficients and their  $p$  values are obtained using PLS-SEM bootstrapping. The results are shown in Fig. 2 and Appendix F. All the paths are significant at the 0.01 significance level except for the subjective norm→behavioral intention and perceived behavioral control→behavior paths.

## 5. Discussion

This exploratory research studies SFSC consumer behavior in purchasing agricultural produce through social commerce. The theoretical framework in this study combines the TPB with alphabet theory, and we include an additional construct—i.e. perceived SFSC sustainability. The

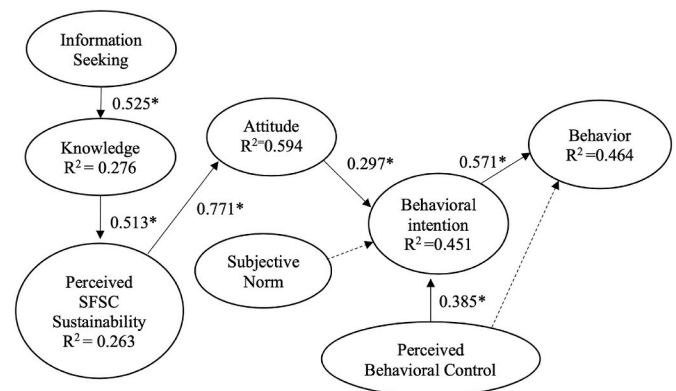


Fig. 2. PLS-SEM estimates

Notes: \* $p < 0.01$ ; dashed lines show non-significant relationships.

study yields new insights into factors that explain consumer behavior when buying agricultural produce from SFSCs through social commerce which we discuss below.

The PLS-SEM results show that SFSC sustainability perception is influenced by information-seeking and mediated by knowledge. This result indicates that individuals who gather more information from many sources tend to have a higher level of knowledge. This aligns with alphabet theory (Zepeda and Deal, 2009) and the findings of Butu et al. (2020), which indicate that SFSC consumers search for information through social networking sites and, similar to Turcotte et al. (2015), that knowledge about various aspects of products increases with high information-seeking. In social commerce SFSCs, information needs to be provided to satisfy consumers looking for information (Elghannam et al., 2017). Chat groups as a forum can be used to share information and gain knowledge (Hajli, 2015). Social commerce SFSC consumers in Indonesia can obtain information provided by producers or sellers on social media in several forms (e.g. text, photos, and videos). In our study, the information includes the products and prices, the origin of the inputs, how the inputs are processed, the cultivation methods, the post-harvest handling methods, the product processing methods, the delivery methods, the number of customers, the number of harvests per month, etc. If consumers need more information, they can request it in group chats easily and quickly without having to go to the location of the producer or the seller. Also, social media provides consumers, producers, and sellers with the ability to communicate in groups, thus enhancing consumer knowledge.

The findings also show that a consumer who has a high level of knowledge tends to have a positive perception of SFSC economic and social sustainability as a value inherent in social commerce SFSCs. This finding is consistent with those of previous research showing that knowledge positively affects perception (Rock, 1985). Also, similar to Zepeda and Deal (2009), knowledge is a determining factor for values (e.g., sustainability). For example, in our study, based on the information listed in the previous paragraph, when buying from SFSC, consumers feel they are buying products at the fair price, as well as contributing to creating jobs and supporting the economic conditions of producers and sellers.

In addition, perceived SFSC sustainability has a positive influence on attitude. This is in line with previous research showing that SFSC sustainability is a determinant of attitude (Kumar et al., 2021; Wang et al., 2021). SFSC sustainability can explain 59.4% of attitude, which means that economic and social sustainability are important in building a positive consumer attitude that purchasing from social commerce SFSCs is beneficial, pleasant, good, valuable, and enjoyable.

Attitudes and perceived behavioral control are factors that explain behavioral intention. This is in accordance with the hypothesis of the original TPB (Ajzen, 1991), the TPB used in the context of SFSCs (Giampietri et al., 2018), and the TPB used in the context of social commerce online group buying (Lin and Wu, 2015). Perceived behavioral control has a greater influence than attitude on purchase intention. The improvement of attitude increases the intention to buy agricultural produce from SFSCs using social commerce. This result is similar to those of previous research into consumer use of Instagram (Herzallah et al., 2022), Facebook (Suraworachet et al., 2012), WeChat (Bilal et al., 2022), and consumer online buying groups (Lin and Wu, 2015). Perceived behavioral control is a predictor of purchase intention in social commerce SFSCs, which aligns with previous research on social commerce (Lin and Wu, 2015; Smith et al., 2013) and SFSCs (Giampietri et al., 2018).

Our study shows that subjective norm is not a predictor of behavioral intention. This differs from previous research that is not specific to the context of SFSCs with social commerce. In general, SFSC consumers who shop at least once a year report that subjective norm has a positive effect on them (Giampietri et al., 2018). Also, non-consumer of CSA shows the relevance of social influence to behavioral intention (Diekmann and Theuvsen, 2019; Lin and Wu, 2015). This conflicts with the findings of

Lin and Wu's (2015) study on social commerce, which shows that subjective norm influences purchase intention. A possible explanation as to why subjective norm is not significantly associated with behavioral intention is as follows. Subjective norm is an individual's perception of others' expectations regarding a certain behavior. Based on prior research on technology adoption, individuals are more likely to comply with other people's expectations when the behavior is mandatory (Venkatesh et al., 2003). Agricultural produce-purchasing from SFSCs is voluntary, particularly for people who have already developed a positive attitude toward SFSCs. Moreover, consumers in our study have enough information from social commerce SFSC, so they do not need encouragement from others. The respondents in this study were chat group members of the online community of an SFSC who received intensive information from the producers or sellers on a daily basis.

Furthermore, perceived behavioral control is not significant in explaining buying behavior. This does not align with previous research on SFSCs (Giampietri et al., 2016, 2018) or research in the context of social commerce (Lin and Wu, 2015). In Indonesia, purchasing agricultural produce is an activity carried out regularly for daily food needs; therefore, perceived behavioral control does not play a role. Common activities with low volitional control make perceived behavioral control less important (Ajzen, 2005).

The last insight that our study reveals is how behavioral intention influences buying behavior. This finding aligns with previous literature (Ajzen, 1991; Giampietri et al., 2016, 2018). It is also similar to the findings of a previous study on social commerce online buying groups (Lin and Wu, 2015). The higher the level of people's intention behavior, the more likely the behavior of buying agricultural produce from SFSCs is.

## 6. Conclusions

Purchase behavior at SFSCs through social commerce was explained using constructs from the theory of planned behavior and alphabet theory, along with an additional factor (i.e. perceived economic and social sustainability). Perceived sustainability as a characteristic of SFSCs affects purchase intention and is mediated by attitude. Perceived sustainability can be increased by improving consumer knowledge. If the producer and seller share information using online platforms (e.g., social networking sites, online forums, and chat groups), consumer knowledge will improve, and perceived sustainability will be indirectly affected. Purchase behavioral control influences purchase behavior mediated by purchase intention. Due to the importance of information about SFSCs and their sustainability characteristics, producers or sellers should emphasize the information which highlights sustainability characteristics to attract more consumers.

An important contribution of this study to the literature is to complement existing research into consumers' purchase behavior in social commerce SFSCs by confirming certain findings (i.e. sustainability perception is influenced by information-seeking and mediated by knowledge; perception of SFSC sustainability impacts consumer attitude toward SFSCs; attitude and perceived behavioral control impact behavioral intention; and behavioral intention and perceived behavioral control influence buying behavior) and revealing discrepancies. *First*, knowledge affects attitude through perceived SFSC sustainability (i.e. economic and social). Hence, a positive attitude toward an SFSC happens after knowledge about the SFSC has developed into a positive perception of its sustainability. *Second*, the perception of SFSC sustainability affects purchase intention through attitude toward an SFSC. Hence, consumers need time for their positive perceptions of SFSC sustainability to develop into a positive attitude toward an SFSC before they have the intention to purchase. *Third*, attitude and perceived behavioral control influence behavioral intention. *Fourth*, behavior is influenced by behavioral intention. *Finally*, the adequacy of regular information updates from producers or sellers and the voluntary nature of purchasing in SFSCs make the subjective norm from TPB non-significant.

Also, perceived behavioral control does not contribute to behavior because the regular activity of purchasing agricultural produce is associated with low volitional control.

Our study further contributes to business management and practice. Understanding the factors that influence purchase behavior in social commerce SFSCs can support producers or sellers in operating their business. Producers or sellers should provide comprehensive information (e.g. product origin, production method, product identity, and sustainability matters) on social commerce and being willing to interact and communicate with consumers. It is important to select a suitable platform which corresponds to the characteristics of SFSC such as a social media with chat groups. Furthermore, producers should provide more sustainability-related information in order to promote positive attitudes that SFSC is beneficial, pleasant, good, enjoyable, and valuable, which should influence consumers to buy at social commerce SFSCs, particularly for consumers who want to know more about everything related to SFSCs. The information provided should include information such as the product origin, production method, product identity, and product sustainability. Such information is necessary to emphasize sustainability—both economic and social—as advantages. Complete information received by consumers will increase knowledge, enhance perceived sustainability, and promote positive attitudes, which will ultimately influence consumers to buy at social commerce SFSCs. In addition, the utilization of social media platforms that offer chat groups is beneficial in maintaining regular discussions with consumers. Social commerce SFSCs present an excellent opportunity for producers or sellers, particularly for Indonesia as a developing country with a high number of social media users.

Finally, this study provides an in-depth understanding of consumers' purchase behavior in social commerce SFSCs. However, this research only explains the behavior of consumers who have purchased agricultural produce from a social commerce SFSC and are members of the social media group of this SFSC. Further research is needed that includes respondents who are non-consumers of social commerce SFSCs to study

the intention to adopt social commerce SFSCs with the aim of providing a reference for sellers or producers to determine strategies in attracting new consumers. Therefore, the business sustainability of producers is maintained by the increasing number of consumers from new consumers who want to buy agricultural produce from a sustainable supply chain—namely, the *short food supply chain*. Furthermore, future studies could apply the same theoretical framework to other SFSC social commerce cases and add new variables to improve the explanation of purchase behavior.

#### Credit authorship contribution statement

**Agriani Hermita Sadeli:** Conceptualization, Methodology, Software, Formal analysis, Investigation, Data curation, Visualization, Writing – original draft, Writing – review & editing. **Tomy Perdana:** Supervision, Resources, Writing – review & editing. **Yosini Deliana:** Supervision, Writing – review & editing. **Bhakti Stephan Onggo:** Supervision, Validation, Writing – review & editing.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Data availability

Data will be made available on request.

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#### Appendix A. Demographic characteristics

Categories		n	%
Gender	Male	5	4.3
	Female	111	95.7
Marital Status	Single	12	10.3
	Married	100	86.2
	Widowed/divorced	4	3.5
Age	20–30	23	19.8
	31–40	52	44.8
	41–50	20	17.2
	51–60	14	12.1
	61–64	7	6
Education Level	High School	11	9.5
	Diploma	11	9.5
	Bachelor	71	61.2
	Master	21	18.1
	Doctoral	2	1.7
Occupation	Student	3	2.6
	Entrepreneur	20	17.2
	Employee	44	37.9
	Retired Worker	1	0.9
	Unemployed	48	41.4
Income	< Rp3,350,000	17	14.7
	Rp 3,350,000-Rp 5,000,000	31	26.7
	Rp. 5,000,000 - Rp10,000,000	37	31.9
	> Rp 10,000,000	31	26.7

## Appendix B. Descriptive statistic variables

Construct	Indicators	Frequency (percentage)							Mean
		1	2	3	4	5	6	7	
Behavior	BHV1	1	3	4	30	27	30	21	5.2
	BHV2		22	25	32	31	5	1	3.8
Behavioral Intention	BI1		2	1	13	21	48	31	5.8
	BI2		2	5	13	23	49	24	5.6
	BI3		2	1	15	26	42	30	5.7
	BI4		1	1	16	26	42	30	5.7
Attitude	AT1				4	11	41	60	6.4
	AT2				4	17	44	51	6.2
	AT3				4	13	45	54	6.3
	AT4				2	11	40	63	6.4
	AT5				4	17	43	52	6.2
Subjective Norm	SN1	2		2	42	26	23	21	5.1
	SN2		2	4	30	29	32	19	5.2
	SN3			2	24	23	40	27	5.6
	SN4	1	1	4	30	25	35	20	5.3
Perceived Behavioral Control	PBC1				13	28	37	38	5.9
	PBC2				13	23	41	39	5.9
	PBC3			1	12	12	38	53	6.1
Information Seeking	IS1	4	1	5	12	22	29	43	5.6
	IS2		1	4	18	24	32	37	5.7
	IS3	5	3	5	35	22	24	22	4.9
Knowledge	KN1			1	17	39	41	18	5.5
	KN2				8	30	44	34	5.9
	KN3				14	26	38	38	5.9
Perceived SFSC Sustainability	PS1				10	15	44	47	6.1
	PS2			1	12	30	41	32	5.8
	PS3				11	17	47	41	6
	PS4			2	13	27	45	29	5.7
	PS5				1	17	37	61	6.4
	PS6				3	9	46	58	6.4

## Appendix C. Convergent validity and internal consistency reliability results

Constructs	Indicators	Convergent Validity		Internal Consistency Reliability	
		Outer Loadings	AVE	Composite Reliability	Cronbach's Alpha
Behavior	BHV1	0.909	0.755	0.860	0.682
	BHV2	0.827			
Behavioral Intention	BI1	0.889	0.773	0.931	0.900
	BI2	0.902			
	BI3	0.939			
	BI4	0.777			
Attitude	AT1	0.787	0.736	0.933	0.910
	AT2	0.842			
	AT3	0.851			
	AT4	0.916			
	AT5	0.889			
Subjective Norm	SN1	0.839	0.581	0.847	0.807
	SN2	0.705			
	SN3	0.765			
	SN4	0.734			
Perceived Behavioral Control	PBC1	0.954	0.722	0.882	0.798
	PBC2	0.957			
	PBC3	0.582			
Information Seeking	IS1	0.788	0.646	0.845	0.728
	IS2	0.844			
	IS3	0.777			
Knowledge	KN1	0.830	0.751	0.900	0.834
	KN2	0.901			
	KN3	0.867			
Perceived SFSC Sustainability	PS1	0.768	0.531	0.870	0.818
	PS2	0.650			
	PS3	0.827			
	PS4	0.551			
	PS5	0.795			
	PS6	0.743			



**Appendix D. Heterotrait-monotrait ratio**

	AT	BHV	BI	IS	KN	PBC	PS	SN
AT								
BHV	0.461							
BI	0.629	0.833						
IS	0.334	0.163	0.119					
KN	0.527	0.517	0.554	0.661				
PBC	0.679	0.650	0.684	0.431	0.691			
PS	0.881	0.479	0.567	0.407	0.614	0.775		
SN	0.511	0.338	0.368	0.567	0.691	0.450	0.667	

**Appendix E. VIF values**

	AT	BHV	BI	IS	KN	PBC	PS	SN
AT								
BHV								
BI								
IS			1.626					
KN					1.000			
PBC								
PS							1.000	
SN	1.000							
								1.345

**Appendix F. Hypotheses testing**

Hypothesis	Relationship	Path Coefficients	t statistics	p values	Results
H <sub>1</sub>	AT → BI	0.297	2.751	0.006*	Significant
H <sub>2</sub>	SN → BI	0.117	1.522	0.128	Not significant
H <sub>3</sub>	PBC → BI	0.385	2.675	0.007*	Significant
H <sub>4</sub>	PBC → BHV	0.162	1.554	0.120	Not Significant
H <sub>5</sub>	BI → BHV	0.571	5.604	0.000*	Significant
H <sub>6</sub>	IS → KN	0.525	8.145	0.000*	Significant
H <sub>7</sub>	KN → PS	0.513	5.468	0.000*	Significant
H <sub>8</sub>	PS → AT	0.771	20.005	0.000*	Significant

Notes: \*p < 0.01.

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