

The Influence of Environmental factors on the use of social media for e-commerce in ornamental plant farmers

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Abstract. Sustainable development goals (SDGs) aim to reduce poverty by providing farmers with the widest possible access to information. Farmers' limited access to information has resulted in poor digital literacy regarding the use of digital technology. The digital literacy gap occurs when the use of digital technology does not provide useful results due to the low skills of digital farmers, resulting in gaps in farmers' participation in development. The results of this study found a solution to overcome the digital literacy gap through a social media approach through social systems. This route connects farmers with the farming community on social media so that it can encourage changes in farmer behavior, namely, willingness to market ornamental plants via social media. This study aims to determine the factors that influence the use of social media for e-commerce on farmers' behavior in using social media for e-commerce. This study used a survey method with a cross-sectional approach (research carried out once at a certain time). Data analysts use PLS-SEM version 3.0, which is supported by interview results. The research sample consisted of 210 randomly selected farmers who had smartphones and sold ornamental plants on social media.

1 Introduction

The Sustainable Development Goals (SDGs) aim to reduce poverty by ensuring farmers have widespread access to information. For a country to achieve robust and autonomous economic growth through sustainable agriculture, access to agricultural information is essential [1, 2]. Enhancing the number of communication channels available to farmers can boost their awareness of agricultural innovations, decrease uncertainty, enhance decision-making quality in addressing agricultural challenges, ensure food security, and improve their livelihoods [3].

Ornamental plants are significant international trade commodities with export potential, contributing to the country's foreign exchange due to their high market value [4, 5]. The demand for these plants continues to rise [6], and they positively affect human physical and mental health [7]. The ornamental plant industry also creates job opportunities, emerging as a rapidly expanding microbusiness sector [8]. These plants hold economic value as trade and business commodities [9], providing farmers with opportunities to increase income through market expansion [10]. Over the past five years, the export value growth of ornamental plants has been substantial, with a high growth rate of 29.64%, outpacing other horticultural commodities such as fruits (7.18%), vegetables (7.16%), and medicinal plants (6%) [4].

Bogor Regency is a region in Indonesia with significant potential for developing ornamental plants [5]. The growing interest among the people of Bogor in cultivating ornamental plants presents new business opportunities in this sector [55]. However, these opportunities are not being fully utilized by farmers as a reliable source of income. One key issue is the unstable pricing of ornamental plants, often manipulated by sellers for higher profits [11, 12]. Additionally, farmers face challenges such as low education levels, limited income, and inadequate skills to leverage business opportunities using technology and social media due to low literacy rates [13, 11, 74]. Other obstacles include the perishable nature of ornamental plants, limited ICT facilities and infrastructure [15], weak collaboration networks among small entrepreneurs, insufficient price information systems, and a less supportive business climate due to intense competition. These issues contribute to the low welfare of farmers, leaving them in poverty [77].

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The government has made various efforts to increase farmers' incomes and address their digital literacy issues, but these efforts have not been entirely successful. Challenges include a lack of extension workers proficient in information technology, limited funds for farmer training, and predominantly linear, top-down programs that render farmers passive, uninitiated, and dependent on extension workers and their groups [15]. Social learning, as an implementation of development communication objectives, aims to educate about technology to drive behavioral change [68, 69] and is seen as a solution to farmers' problems [16]. Observational learning enables individuals to acquire knowledge, rules, skills, strategies, beliefs, and attitudes, think critically about the suitability of modeled behavior and its consequences, and consider potential outcomes before making decisions [17, 16]. Social learning encourages individuals to share knowledge, engage in dialogue and discussions, fostering participatory communication [69 – 71]. It is an approach to disseminate knowledge, accelerate development communication processes, enhance technology adoption, improve product quality, and create jobs [18],[19],[20]. Research indicates that social learning theory is highly relevant for understanding farmers' social learning behaviors in using social media for e-commerce.

Social media enables farmers to connect with one another to share experiences, post harvests, access market information, receive updates, and address problems [21]. It can reach a broader audience [72], transforming daily life [22], learning processes [23], and social interactions [24]. Social media also significantly impacts businesses, driving fundamental changes within organizations [25]. Utilizing social media-based e-commerce offers a solution for farmers to gain economic benefits and business opportunities [26]. This approach effectively narrows the rural-urban divide, aids in rural revitalization [27], and helps farmers market their products [28].

Numerous studies have employed the social learning theory, with the majority focusing on education and health (70%) and other fields (30%). According to SLR research using the PRISMA protocol, seven out of 50 articles, 7 investigate farmers' use of social media as distributors or sellers through social learning theory. Research examining environmental factors that affect farmers' use of social media for e-commerce from this perspective remains limited and underexplored, although it is expected to grow with advancements in information and communication technology. These studies suggest developing social learning theories to address farmers' challenges, such as marketing issues and limited learning resources. This study aims to investigate the effect of environmental factors, specifically, the direct use of social media and its use through social systems, on farmers' behavior in using social media for e-commerce. The objectives are determine which environmental factors have the most influence on farmer behavior in using social media for e-commerce and analyse why these environmental factors influence farmers' behavior in using social media for e-commerce.

Social learning involves behavior that is directly observed by others and interactions between individuals and their environment, leading to changes in socio-economic or ecological conditions that influence further development [29]. This process encompasses not only the transformation of knowledge but also innovation through interaction [30]. Social learning occurs through interaction, fostering both collective learning and joint management [31]. According to social learning theory, this behavior is a process where humans and their environment interact to create collective learning and critical thinking [56]. Based on this conceptual framework, the following hypotheses are suggested:

H1 : Direct pathway use social media impact behavior using social media for e-commerce

Social learning theory posits that environmental factors influence individual behavior [56]. It describes human behavior as the result of ongoing reciprocal interactions among cognitive, behavioral, and environmental determinants. Social media users who engage directly with social media are considered passive users because their learning process relies on prior observations of others and does not involve active communication or feedback interactions [56]. These individuals are passive learners who observe models on social media [56]. When using social media directly, users passively learn from media exposure by paying attention to others' actions and making decisions based on observed behaviors [56], [32].

H2 : Socially mediated pathway of social media use impacts behavior using social media for e-commerce

Social media communities can foster collaborative learning, where community members learn and work together, adopting a group learning attitude and promoting social interaction and teamwork to enhance collective learning [33, 34]. This environment encourages individual involvement [35], leads to improved performance [36], serves as a significant source of motivation [37, 38], and increases interaction among members [39]. Additionally, it helps develop individual emotional maturity and provides better methods to engage individuals in the learning process, accommodating diverse learning styles, including collaborative, participatory, and individual approaches [40].

Social change in society can be driven by the influence of social media. The communication system that fosters social change operates through two channels: direct social media channels and social media channels integrated within social systems. The direct route occurs because social media acts as an information source, facilitator, motivator, and guide for implementing social change. Through social systems, social media connects participants within social networks and community settings, providing ongoing guidance, incentives, and social support for desired changes. The social environment plays a crucial role in the behavior change process, with

assessments promoting behavior within this context. As a product of information and communication technology, social media serves as a platform for social learning processes, enabling many actors to network, Establish trust and capitalize on opportunities based on individual requirements. Platforms such as Facebook enable users to interact through commenting, sharing (statuses, images, and videos), viewing, reading, and collaborating, making them valuable tools for networking and building of capacity

Farmers can engage in a social learning process with their peers either through social media networks or in person. This type of learning, which involves observing and practicing directly, helps address the shortage of instructors and their limited ICT skills. By watching demonstrations on social media for e-commerce and practicing these techniques, farmers can quickly adopt new habits. An informal, interactive learning environment tailored to farmers’ conditions, with minimal theory and a focus on hands-on practice, can effectively motivate them [41]. Utilizing social media-based e-commerce is a practical solution for farmers to gain economic benefits and business opportunities [42]. It is an effective method to bridge the rural-urban divide, promote rural revitalization [43, 44].

2 Method

Social learning offers a solution for farmers to modify their behavior, enabling them to utilize social media for marketing ornamental plants, thereby increasing their income and engaging in the development process. It serves as a solution to address the digital literacy gap among crop farmers concerning the utilization of social media for e-commerce. This study explores environmental factors, particularly the utilization of social media through social systems, which impact the behavior of ornamental plant farmers in employing social media for e-commerce, utilizing a social learning theory framework.

Environmental factors significantly influence how farmers utilize social media for e-commerce. These factors encompass both the direct path of social media use (X1) and the socially mediated pathway of social media use (X2) on the behavior of ornamental plant farmers in adopting social media for e-commerce (Y1). This study's novelty lies in its exploration of environmental factors impacting ornamental plant farmers' behavior in utilizing social media for e-commerce within the framework of social learning theory.

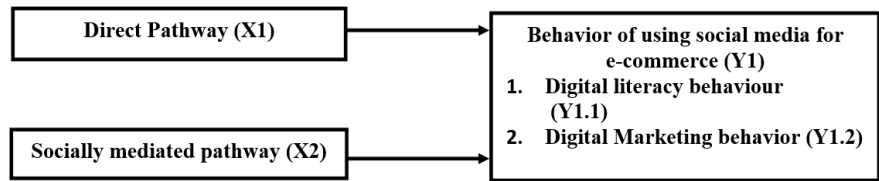


Fig. 1. Framework of research Adopted from : [64], [66]

This study adopts a survey methodology, utilizing interview questionnaires to gather data from 210 farmers, incorporating both quantitative and qualitative data. The research population consists of ornamental plant farmers involved in the trade through social media platforms and possessing Android smartphones. This population includes farmers affiliated with the Department of Agriculture, Food Crops, Horticulture, and Plantations in Bogor Regency, as well as those who are members of Facebook and WhatsApp (WA) groups, and recipients of support from IPB (Bogor Agricultural University), totaling 427 individuals. The research sample size was determined using the Slovin formula, with sampling conducted through simple random sampling, resulting in a sample of 210 farmers. The study is conducted within Bogor Regency, covering the South, North, and East Bogor areas, along with several sub-districts. This selection is based on Bogor Regency's significance as a hub for ornamental plant cultivation in West Java Province, with a notable number of farmers actively utilizing social media for e-commerce. Data collection occurs over four months, from May to August 2023.

The social learning process is influenced by the direct pathway use of social media and the socially mediated pathway channel of social media use as an independent variable of farmers’ behavior in using social media for e-commerce. Behavior is the impact of the learning process, which is influenced by the direct pathway of social media use and socially mediated of social media use. The measurements of direct pathway of social media use and socially mediated of social media use were assessed using a likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always). Direct pathway of social media use are social media channels that are used directly by farmers as a source of information, facilitator, motivator, and guide in getting information on how to use social media for e-commerce. Indikator direct pathway of social social media use (X1) consists of social media as a source of information (X1.1), facilitator (X1.2), motivator (X1.3), and guide (X1.4). Indicators of socially mediated pathway (X2) consist of social media as a link to the network (X2.1) and as a community setting (X2.2) [66]. Questions asked about social media directly: (I got information on how to use social media to sell ornamental plants from social media: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always).

The socially mediated pathway is the influence of social media on behavior change through social systems that connect individuals with groups or communities on social media and act as a link to social networks and community settings [66]. Indicators of socially mediated pathway (X2) consist of social media as a link to networks (X2.1) and community settings (X2.2) [66]. Questions asked about the influence of socially mediated pathway : (I can use social media to sell ornamental plants because of my participation in communities on social media) 1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always).

Table 1. Demographic profile of respondents (n = 210)

No	Category	Characteristic	Frequency	Percentage
1	Gender	Male	191	92,7
		Female	15	7,3
2	Age	< 20 year	5	2,4
		20 – 30 year	49	23,3
		31 – 41 year	83	39,5
		42 – 52 year	58	27,6
		53 – 63 year	14	6,7
		>63 year	1	0,5
3	Edducation	Primary School	15	7,1
		Middle School	31	14,8
		High school	145	69
		Associate Degree	10	4,8
		Bacheloor’s Degree	9	4,3
4	Use social media for e-commerce	Facebook (FB)	25	11,90
		Facebook dan Instagram	30	14,29
		Instagram	11	5,24
		WhatsApp Group	52	24,77
		Instagram dan WhatsApp group	11	5,24
		Facebook dan WhatsApp Group	15	7,14
		Facebook, Instagram dan WhatsApp group	66	31,42

The behavioral of social media use for e-commerce (Y1) shows the respondent's ability to carry out e-commerce activities via social media recorded by a computer, with indicators of digital literacy behavior (Y1.1) and digital marketing behavior (Y1.2). The questions asked to measure behavior were about farmers' ability to use social media for e-commerce (ability to create an account to sell ornamental plants, ability to create advertisements to market ornamental plants on social media). Variable measurement was carried out using a Likert scale (1 = very incompetent, 2 = not competent, 3 = quite competent, 4 = competent, 5 = very competent) [74]. Descriptive analysis was used to describe the distribution of respondents based on various variables, including personal characteristics, factors related to the use of social media directly, factors related to the use of social media through social systems, and the behavior of ornamental plant farmers, namely the ability to use social media for e-commerce direct pathway and socially mediated pathway of social media use as environmental factors on changes in farmer behavior in using social media for e-commerce.

3 Results

3.1. General Description of Research Locations

Bogor Regency, situated in the West Java region, stands out as one of the provinces with considerable potential for ornamental plant cultivation. According to the results of the An agricultural survey conducted by the Central Statistics Agency (BPS) in 2018 between censuses, West Java Province boasted a total of 3,250,825 ornamental plant farmers, owing to its diverse topography featuring highlands and mountainous regions, which offer favorable climatic conditions for cultivation. Ornamental plant cultivation areas in Bogor Regency are distributed across several sub-districts, including Tamansari, Cijeruk, Ciawi, Megamendung, Tajurhalang, Gunung Sindur, Bojonggede, among others. The diverse range of ornamental plant varieties positions Bogor Regency as the primary production and marketing hub for ornamental plants.

3.2. Sociodemography of respondent

The sociodemographic characteristics of the respondents in this study were categorized based on gender, age, education, and use of social media for e-commerce. The average gender of the respondents was male (92.7%), aged 31-41 years (83%), high school education level (69%), and used social media Facebook, Instagram, and WhatsApp groups (66%). The sociodemography of respondents can be seen in Table 1.

Fig. 3 shows that the average age of respondents is at a productive age, namely 31 – 41 years, which is a productive age category and is included in the category of the millennial generation who is productive and actively uses social media for e-commerce. The millennial generation is the generation born between 1980 - 2000 at a time when technological advances were rapidly developing and as many as 35.4% of the millennial generation used social media for marketing activities [56, 57].

Table 1 indicates that the majority of respondents were male. 92.7%, this shows that respondents who use social media for e-commerce are on average male as the head of the family while women are in charge of taking care of the household so that taking decisions in the family are made together. These findings corroborate previous results, showing that men predominantly handle agricultural tasks, while women are more involved in household duties, and men typically serve as heads of households. Nonetheless, both genders equally participate in the social life of the community, with women's involvement and group membership mirroring that of men. Gender equality in agricultural work is more pronounced in poorer families than in wealthier ones. In affluent households, women's roles shift from physical labor to decision-making. Women are vital to family economies across all economic levels, though their roles differ [58]. Men's and women's roles are distinct yet complementary [59]. In Javanese culture, the division of labor is flexible, eliminating strict gender roles in household activities. Women now significantly contribute to productive economic activities, as seen in agricultural communities [60, 61]. This study also highlights that men predominantly handle the marketing of ornamental plants, as they tend to these plants more than women. Therefore, it's crucial to enhance women's knowledge of using social media for e-commerce, aiding men in sustaining the economy. Gender roles are shaped by cultural, economic, and political contexts. Cultural constructions of gender vary, as culture encompasses the learned behaviors, norms, values, and assumptions guiding group behavior, and it influences individual values and beliefs [62, 63].

Most of the respondents had a high school education, 145 people (69%), this shows that the majority of respondents had a fairly good education, namely having taken part in the government program with a minimum education of Middle school. Higher education can help respondents to think systematically in making the right decisions

4 Discussion

4.1. Environmental factors that influence farmers in using social media for e-commerce

The environmental factors in this research consist of two environmental factors, namely the influence of using social media channels directly and using social media channels through social systems on farmers' behavior in using social media for e-commerce. The direct use of social media channels consists using social media as an information source, facilitator, motivator and guide. The influence of socially mediated pathway consists of social media as a link to social networks and social media as a community setting [65]. The direct social media route means that farmers use social media independently to access e-commerce, this is because social media functions as a source of information, providing facilities, motivating and providing guidance to farmers to get information on how to use social media. Meanwhile, the media route through the social system means that farmers who use social media for e-commerce join the social system, namely the community on social media. This community guides farmers so they can actively learn by observing the behavior of selling ornamental plants on social media carried out by other group members. This is in accordance with the opinion of [45], a tool to support individual

involvement in groups for learning purposes [46] and community support, enabling e-learning, increasing professional networks [47].

Testing the validity and reliability of reflective indicators using SEM PLS can be calculated from the outer loading of each indicator. The outer loading value in this study uses an outer loading value > 0.7 [75]. Outer loading values for question items that are less than 0.7 are eliminated, while outer loading values > 0.7 are subjected to data processing. The results of the data processing show that all indicators have an outer loading value of > 0.7 or are declared valid and reliable. Apart from the validity value, measuring the reliability of variables with reflective indicators can be done in two ways, namely with Cronbach Alpha and Composite Reliability whose values are above 0.7 [75], which can be seen in the Table 2

Table 2. Reliability and Validity

Variabel	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	Loading factor
Direct pathway of social media use (X1)	0,853	0,898	0,897	
Information (X1.1)				0,724
Enabling (X1.2)				0,831
Motivating (X1.3)				0,850
Guiding (X1.4)				0,898
Socially mediated pathway (X2)	0,783	0,723	0,861	
Use to link to social networks (X2.1)				0,898
Community Setting (X2.2)				0,909
Behavior use social media for e-commerce (Y1)	0,940	0,950	0,645	
Digital Literacy behavior (Y1.1)				0,808
Digital Marketing Behavior (Y1.2)				0,832

Note: CR, Composite reliability; AVE, average variance extracted. The acceptable limit of Cronbach's Alpha is less than 0.700. The acceptable limit of

Table 2 shows that the Cronbach's Alpha and Composite reliability values are greater than 0.7, while the average variance extracted (AVE) value for each variable is above 0.5, meaning that 50% of the variance of the indicator can be explained, and the reliability and validity requirements have been met for each variable. . The outer loading value of each variable indicator was above 0.7. The requirements for the validity and reliability of a reflective indicator can be seen from the loading factor value, which must be more than 0.7, and the AVE value, which must be greater than 0.5 [76].

Social media can connect participants with social networks and virtual community environments, this refers to the capacity of digital platforms used to connect individuals to various online social networks and virtual community environments [33]. Social media platforms allow users to observe and interact with others, exchange information, and acquire new knowledge and behaviors through the process of observational learning [36],[69]. Social media amplifies the reach and influence of social interactions, providing opportunities for individuals to model, learn, and share experiences with others in the digital world. Social networks and the community environment can shape individual beliefs, values and behavior because there are role models who can provide individuals with the opportunity to follow examples so they can become models and learn from the behavior and

experiences of other people in their social environment. The influence of the direct pathway social media channel (X1) and the influence of the social media channel through the social system (X2) on farmers' behavior in using social media for e-commerce can be seen from Table 3

Table 3. Path Coefficient direct effect

Variabel	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	Loading factor
Direct pathway use social media (X1)	0,853	0,898	0,897	
Information (X1.1)				0,724
Enabling (X1.2)				0,831
Motivating (X1.3)				0,850
Guding (X1.4)				0,899
Socially mediated pathway (X2)	0,783	0,723	0,861	
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Behavior use social media for e-commerce (Y1)	0,940	0,950	0,645	
Digital literacy behavior (Y1.1)				0,808
Digital marketing behavior (Y1.2)				0,832

Table 3 shows that the direct social media channel had no real influence on farmers' behavior in using social media for e-commerce. The results of this study reject hypothesis 1, which states that the direct social media route with social media indicators as a source of information, facilitator, motivator, and guide does not influence farmers' behavior in using social media for e-commerce. The results of this research support previous research, which states that direct use of social media is still limited to seeking market price information and not marketing activities, so farmers need to learn from farmers' social environment to optimize the use of social media [64].

The p-value in Table 3 shows that direct social media channels have no real influence on farmers' behavior in using social media for e-commerce, which is indicated by a significance value of $0.647 > 0.05$, while the use of social media channels through social systems has an influence real impact on farmers' behavior in using social media for e-commerce with a significance value of $0.023 < 0.05$. This significance value shows that there is a real influence of social media channels through the social system on farmer behavior. The behavior of farmers in this research is a change in their skills in using social media for e-commerce after joining a community on social media. This skill improvement is due to farmers learning socially with other farmers through dialogue, discussion, and sharing knowledge with other farmers in the community on social media and observing other farmers who sell ornamental plants using social media for e-commerce. This shows that there is a real influence on the social learning process when farmers are in groups compared to when they are not. The results of research conducted by [55] reveal that social media communities or groups function as a link between individuals, facilitating interaction, requesting information, sharing experiences, and resolving problems within their network. These communities provide opportunities to connect, learn, and create relationships, foster a sense of belonging, and gradually build a supportive learning environment [53]. Online communities can act as social learning spaces and advanced extension systems (e.g., e-farming) that encourage the exchange of information between individuals. Most social media users use groups to connect and interact in virtual communities [55].

4.2 Model of communication behavior of ornamental plant farmers in using social media for e-commerce

Path analysis showed the total influence of the path coefficient of the communication behavior model of ornamental plant farmers in using social media for e-commerce. The results of path analysis show that the variables that have a big influence on behavioral variables are the social media path through the social system

(X2) with a coefficient value of 0.292 and the direct social media path (X1) with a coefficient value of 0.069. The final structural model explaining the whole is seen in Figure 2

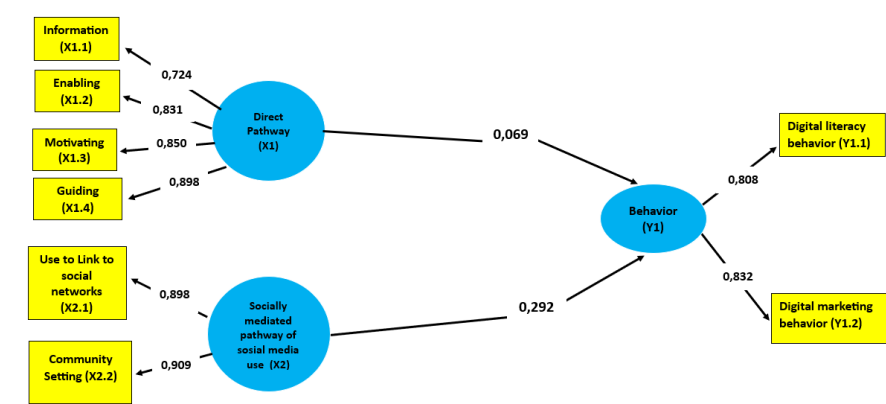


Fig. 2. Communication model of farmer behavior in using social media for e-commerce

Based on Figure 2, the results of the path analysis show that the total influence of the path coefficient on the model of farmer behavior in using social media for e-commerce can be seen in the variable that has the greatest influence on behavior, namely, the socially mediated pathway of social media use (X2) with a path coefficient value of 0.023. From the results of the analysis, the path obtained by the structural equation model is as follows:

$$Y_1 = 0,069 X_1 + 0,292 X_2$$

Y_1 = The behavior of using social media for e-commerce
 X_1 = Direct Pathway
 X_2 = Socially mediated pathway of social media use

Figure 2 shows the coefficient value of the direct social media channel variable at 0.069, meaning that every additional value (+ sign) from using social media through the social system by one unit increases the behavioral value of using social media for e-commerce by 0.069. The path coefficient value of social media through the social system was 0.292, meaning that each additional value (+ sign) from the influence of social media as a community setting increased the behavior of using social media for e-commerce by 0.292. From the above equation, it can be seen that the factor of using social media through social systems is related to farmers' behavior in using social media for e-commerce, with a significance value above 0.05.

The use of social media through social systems has a higher coefficient value than the direct use of social media. Farmers who use social media directly have a lower coefficient value because in the direct social media channel, communication is linear, and there is no dialogue between one farmer and another when the farmer receives information from social media. Farmers are passive and are not active in sharing their experiences with other farmers, whereas farmers who use social media through social systems experience more social change due to social support on social media. Social support has an impact on farmers' beliefs that what they are doing is positive [69]. The use of social media channels in social systems functions as a social network by facilitating the development and maintenance of social relationships, thus encouraging social learning [48]. Social networks on social media play an important role in the agricultural sector which is a determining factor in the application of agricultural technology [49],[50]. Social networking is a manifestation of users' efforts to represent themselves and their interests on social platforms and to increase activity with other people on social media channels. Users have access to meet each other without having to meet face-to-face [51]. Social media has become a valuable tool for farmers to connect and reduce isolation, allowing farmers and various stakeholders in agriculture to share expertise, expand knowledge, and exchange marketing information [52]. Social media also helps crisis communication by increasing transparency through two-way communication. It has been emphasised that social interactions in social networks have a positive impact on technology adoption through social learning [53], [54].

Figure 2 shows that the use of social media channels directly has no real effect on farmers' behaviour in using social media for e-commerce, as indicated by the significance value of $0.647 > 0.05$, whereas the socially mediated pathway of social media use has a real effect on farmers' behaviour in using social media for e-commerce, with a significance value of $0.023 < 0.05$. This significance value shows that there is a real influence of the use of social media through the social system on changes in farmers' behaviour in using social media for e-commerce. Changes

in farmer behaviour, namely farmers' ability to use social media for e-commerce after joining the farming community on social media and observing other farmers selling ornamental plants using social media for e-commerce. This shows that there is a real influence in the social learning process when farmers are in groups rather than not in groups. The results of research conducted by [55] revealed that social media communities or groups function as a link between individuals, facilitating interaction, requests for information, sharing experiences, and solving problems within their network. These communities provide opportunities to connect, learn, and create relationships; foster a sense of belonging; and gradually build supportive learning environments [53]. Online communities can act as social learning spaces and advanced extension systems (e-farming) that encourage the exchange of information between individuals. Most social media users use groups to connect and interact in virtual communities [55].

Figure 2 shows the coefficient value of the direct social media channel variable at 0.069, meaning that every additional value (+ sign) of the influence of the social media channel through the social system by one unit increases the behavioral value of using social media for e-commerce by 0.069. The coefficient value of the social media route through the social system is 0.292, meaning that every additional value (+ sign) from the influence of the social media route through the social system by one unit will increase the farmer's behavioral value in using social media by 0.292. From the equation above, it can be seen that the social media route through the social system has a higher coefficient value than the direct social media route. Farmers who use social media directly have a lower coefficient value because on direct social media channels, communication is linear, and there is no dialogue between one farmer and another when the farmer receives information from social media. Farmers are passive and not active in sharing experiences with other farmers, whereas farmers who use social media through social systems experience more social change because of social support on social media. Social support impacts farmers' beliefs that what they do is positive, facilitating the development and maintenance of social relationships and thereby encouraging social learning [48].

Social networks on social media play an important role in the agricultural sector, which is a determining factor in the application of agricultural technology [49], [50], a manifestation of users' efforts to represent themselves and their interests on social platforms and increase activity with other people on social media channels. Users have access to meet each other without having to meet face-to-face [51].

Social media channels through social systems can connect farmers with stakeholders in the agricultural sector to share expertise, expand knowledge, and exchange marketing information [52], overcome crises with dialogue between farmers in social networks, thereby providing a positive impact on technology adoption through social learning in social media [53], [54].

5 Conclusion

This study obtained the following findings There is a real influence between socially mediated pathway of use social media on the behavior of using social media for e-commerce among ornamental plant farmer respondents. Socially mediated pathway has a higher coefficient value (0.292) than the coefficient value for direct pathway use of social media (0.069), this shows that socially mediated pathway through social systems via a group approach in social media is more effective than an individual approach in encouraging farmers to use social media for e-commerce in an effort to overcome the digital literacy gap. The social learning communication model in using social media for e-commerce consists of the variables social media directly (X1), social media through social systems (X2), and social learning behaviour using social media for e-commerce (Y1).

Socially mediated pathway use of social media via social systems through a group or community approach is a solution to overcome the digital literacy gap among ornamental plant farmers in using social media for e-commerce. The limitations of this research are that it only discusses aspects of the learning process through observation and reinforcement learning among ornamental plant farmers using social learning theory. Further research is expected to examine the learning-by-doing process using experience learning theory and social exchange theory. This research uses a postpositivist paradigm with quantitative data, further research is needed using a constructive paradigm using qualitative data.

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