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Typology of the social learning process of ornamental plant farmers using social media for e-commerce in Bogor Regency

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ABSTRACT

Advancements in information and communication technology (ICT) have created a digital literacy gap among ornamental plant farmers, particularly in utilizing technology to increase income by expanding access to knowledge and market information. This study aims to identify the typology of ornamental plant farmers based on their behavior in using social media for e-commerce, focusing on the social media pathway through social systems within the social learning process. The results of this research are intended to provide recommendations on which stages of the social learning process need improvement to address the digital literacy gap among ornamental plant farmers. The research employs a survey method using questionnaires and qualitative data to support and explain the findings. Data collection was conducted using the simple random sampling method, involving 210 ornamental plant farmers in Bogor Regency. The data were analyzed using index scores: (1) the scores of variables for the social media pathway through social systems and behavior in using social media for e-commerce were summed and transformed into a scale of 0 to 100. The categories were determined based on Bloom's cut-off, with scores < 50 categorized as low, > 50–75 as moderate, and > 75 as high. The results indicate that the typology of farmers based on social media usage consists of two pathways: direct social media usage and social media usage through social systems. The typology of farmers based on the social media pathway through social systems falls into the third type, where their behavior in using social media for e-commerce is high, but their use of the social media pathway through social systems is low. These farmers are at the stage of learning by reproducing results from observations.Ornamental plant farmers using social media directly also fall into the third type, where their behavior in using social media for e-commerce is high, but their use of the direct social media pathway is low. This indicates that farmers have a reasonably good ability to utilize social media for e-commerce activities, such as marketing products, communicating with customers, and seeking market-related information.

Keywords: farmers, behavior, e-commerce, ornamental plants, social mediated pathway of social media

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INTRODUCTION

The Sustainable Development Goals (SDGs) aim to reduce poverty by providing farmers with the widest possible access to information. Agricultural information access is a critical factor for a country in driving strong and self-reliant economic development through sustainable agricultural development (Gebru et al., 2017; Mbanda-Obura, SA, IM Tabu, 2017). An increase in the number of communication channels accessed by farmers can enhance awareness for adopting agricultural innovations, reduce uncertainty, improve the quality of decision-making in addressing agricultural issues, achieve food security, and improve livelihoods (Mugwisi, 2015).

Information is a crucial aspect of socio-economic development in rural areas, influencing the acceptance of new ideas and enabling integration with the outside world (Prayoga, 2018). Limited access to information causes farmers to rely solely on intuition and experience in making farming decisions, without considering up-to-date information related to marketing and technology. Farmers' limited access to information can be attributed to the digital literacy gap in the use of ICT (Information and Communication Technology) (Masyhur, 2016).

The digital divide occurs when the use of digital tools and digital skills ownership fail to yield beneficial outcomes, resulting in knowledge inequality and unequal participation among farmers in various areas, as well as unequal access to the benefits of ICT usage (Scheerder et al., 2017; Jan Van Dijk, 2020). Farmers' ability to use ICT remains limited, with only around 13,43% of farmers in Indonesia having ICT skills (Rahman et al., 2015). Meanwhile, the agricultural sector holds significant potential for development through ICT utilization, particularly with e-commerce, which is a product of ICT. This potential is evident from the high demand for agricultural products, which are among the most frequently purchased items by consumers (APJII, 2021).

Ornamental plants have become one of the commodities in international trade, offering export opportunities to increase national foreign exchange and possessing high market value (Direktorat Jenderal Hortikultura. 2015; Dinas Tanaman Pangan dan Hortikultura. 2020). The demand for ornamental plants continues to rise (Seingu, 2023), creating job opportunities as a rapidly growing microenterprise sector (Dianto, 2020). Bogor Regency is one of the regions in Indonesia with potential for ornamental plant development (Dinas Tanaman Pangan dan Hortikultura, 2020). The increasing interest of the Bogor community in cultivating ornamental plants has opened new business opportunities in this sector (Ariani et al., 2021).

However, these opportunities have not been matched by farmers' ability to develop ornamental plant businesses as a source of income. The instability of ornamental plant prices leads to low farmer incomes and the relatively low educational level of farmers results in limited human resources capable of leveraging social media technology for business opportunities, thus impacting farmers' digital literacy, which remains low (Candrawati et al., 2020). These issues contribute to low farmer welfare, keeping many farmers in poverty (Gandasari, 2014).

Various efforts to increase the income of ornamental plant farmers have been made through extension activities, such as training and mentoring. However, these efforts remain suboptimal due to the limited number of extension agents proficient in digital marketing and government policies that tend to be top-down, causing farmers to be passive, lack initiative, and become dependent on extension agents and their groups (Prayoga, 2017).

Social learning, as an implementation of development communication goals to provide education about technology and induce behavior change (Van de Fliert, 2014; Servaes, 2020), is a solution to address farmers' issues (Dooley, E., 2020). Social media has proven to be an effective medium for social learning, transferring knowledge to farmers by showcasing models that can serve as examples to motivate them to emulate observed behaviors, thus inducing behavior change (Kamal, 2020). Social media has the potential to enhance communication (Zondo and Ndoro, 2023) and make agricultural information more accessible (Kabir et al., 2023).

Through observing others, social learning enables individuals to acquire knowledge, rules, skills, strategies, beliefs, attitudes, and critical thinking by reflecting on the compatibility of a model's behavior and its consequences, considering potential outcomes, and deciding to act (Dooley, E., 2020). Social learning encourages individuals to share knowledge, engage in dialogue and discussions, fostering participatory communication (Wilkins KG et al., 2014; Flor and Cangara, 2018; Servaes, 2020). It facilitates knowledge dissemination, accelerates development communication processes, increases technology adoption, improves product quality, and creates job opportunities (Hamilton and Hudson, 2017).

Social media helps farmers connect with one another to share experiences, post harvests, find market information, stay updated with the latest developments, and solve problems (Riley and Robertson, 2021). Social media can reach a wider audience (Nasrullah, 2018) and provide faster responses (Azahari et al., 2021). Social media-based e-commerce offers a solution to address farmers' challenges by providing economic benefits and business opportunities (Couture et al., 2020). It is an effective method to narrow the rural-urban gap, realize rural revitalization (Lin et al., 2016), and assist farmers in marketing their products (Yuan et al., 2017).

Research utilizing social learning theory among farmers remains limited. A review of articles from 2017–2022 using the PRISMA protocol indicates that most studies focus on education and health (70%), while other fields account for only 30%. Communication models for social learning through social media use in e-commerce for ornamental plant farmers, from the perspective of social learning theory, remain underexplored. This study is part of a dissertation aiming to develop a social learning communication model for using social media in e-commerce. The research findings are expected to provide recommendations for advancing social learning theory to address the digital literacy gap among ornamental plant farmers.

RESEARCH METHOD

This research is a quantitative study (explanatory research) using a positivist paradigm. The research strategy employed is a cross-sectional study (conducted once at a specific point in time). The research method is a survey method using a questionnaire, aiming to analyze the relationships between research variables through hypothesis testing. The research location was selected purposively in Bogor Regency. The population consists of 427 ornamental plant farmers who meet the criteria of owning an Android smartphone and using social media for e-commerce. The sample was determined using simple random sampling, resulting in 210 respondents.

The survey research method is a quantitative study that utilizes structured or systematic questions posed to many individuals, with all responses recorded, processed, and analyzed (Prasetyo dan Jannah 2019). The quantitative approach uses a survey with a cross-sectional study design (research conducted at a specific point in time and performed only once).

This research was conducted in Bogor Regency, covering the areas of Tamansari, Gunung Sindur, Cijeruk, Cisarua, Ciomas, Ciawi, Cibinong, and Tajur Halang. The selection of the research location was done purposively, considering that Bogor is one of the production centers and exporters of ornamental foliage plants in Indonesia (BPS 2016). Bogor Regency's contribution to Indonesia's economic growth was demonstrated during the launch of ornamental plant exports in Sirnagalih Village, Tamansari (Dinas Tanaman Pangan dan Hortikultura 2020).

The respondents' locations were purposively chosen from social media communities of ornamental plant farmers in Bogor Regency, including the WhatsApp groups "WAG Pecinta Tanaman Hias" and "WAG Philodendron Nusantara," farmer groups supported by the Agriculture, Horticulture, and Plantation Office (DISTANHORBUN) of Bogor Regency, and ornamental plant farmer groups supported by IPB University. The validity and reliability of the questionnaire were tested on 30 ornamental plant farmers who shared similar characteristics with the study respondents, namely ornamental plant farmers in Sukaresmi District, Cipanas, Cianjur Regency.

The research location in Sukaresmi was purposively selected for the following reasons: (1) Cianjur Regency is one of the ornamental plant production centers related to Bogor Regency; (2) ornamental plant farmers in this area use smartphones and social media for e-commerce to sell their plants. The study was conducted over six months, from June to November 2023. The research location is illustrated in Figure 1.

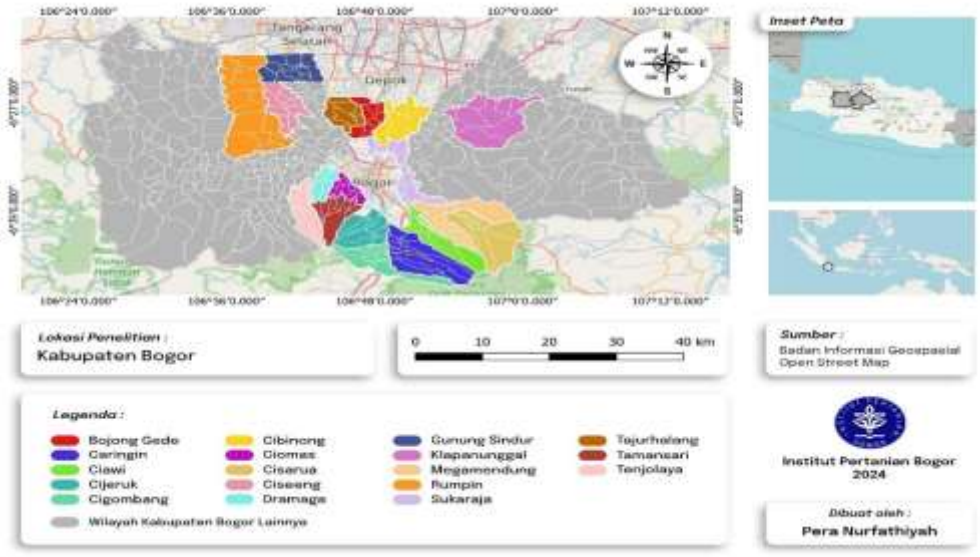

Figure 1 Research location

The research population was determined purposively based on the criteria of ornamental plant farmers who use social media for e-commerce in Bogor Regency, totaling 427 individuals. These farmers include members of the "WAG Pecinta Tanaman Hias" WhatsApp group, the "WAG Philodendron Nusantara" WhatsApp group, farmers in groups supported by the Department of Food Crops, Horticulture, and Plantation (DISTANHORBUN), and farmer groups supported by IPB University.

From the population of 427, the research sample was randomly selected using a simple random sampling method and calculated with the Slovin formula as follows:

$$n = \frac{N}{N.d^2 + 1}$$

Ket. :
n = Sample size
N = Population sixe
d2 = Precision level (set at 10 %)

Based on the Slovin formula, the sample size of ornamental plant farmers in Bogor Regency was determined using a precision level of 10 percent, resulting in 210 farmers, as shown in Table 1.

Table 1 The population and sample size of ornamental plant farmers in Bogor Regency in 2023

No	Komunitas	Populasi (orang)	Sampel (orang)
1	WAG Ornamental plant lovers	26	21
2	WAG Philodendron Nusantara	41	29
3	Farmer Group DISTANHORBUN	179	95
4	Farmer groups fostered by IPB	181	65
Jumlah		427	210

The research sample is a portion of the population selected to be the object of study, with the aim of representing the characteristics or traits of the entire population, so that the research findings can be generalized and provide a valid and accurate representation of the population under study. The sampling technique was conducted using simple random sampling with the help of Microsoft Excel to determine the respondents. Based on the calculation using the Slovin formula, a total of 210 respondents were selected from the 427 ornamental plant farmers in the population. The steps for determining the sample are shown in Figure 2.

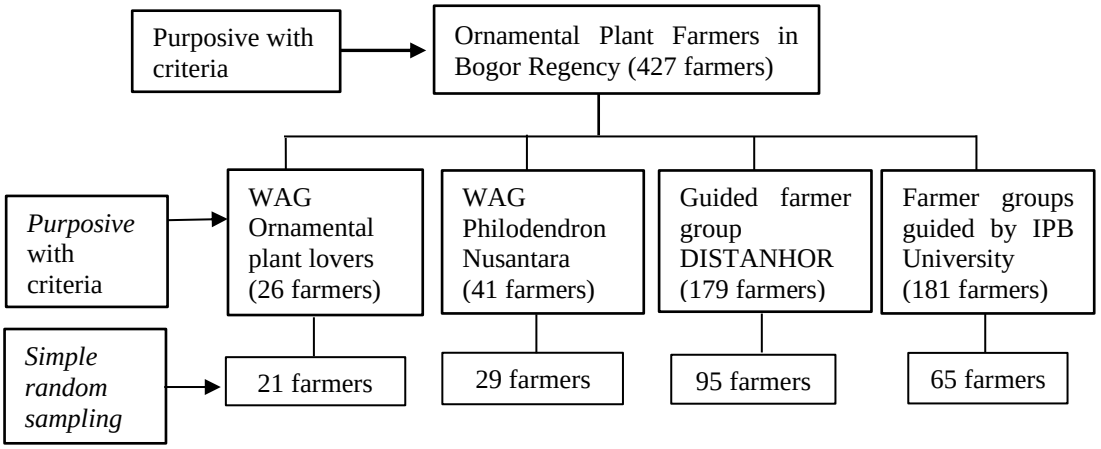

Fig. 2 Stages of determining research samples

Figure 2 illustrates the stages of determining the research sample, starting from identifying the population to the sampling techniques, which include identifying the target population, determining inclusion and exclusion criteria. The selection of sampling methods considers both probability and non-probability approaches to ensure that the chosen sample is representative of the overall population.

The research data was processed using an index scoring method, as follows: (1) the scores of the variables for the social media pathway through the social system and the behavior of using social media for e-commerce were summed and transformed into a scale of 0 to 100. Categories were based on Bloom's cut-off: <50 categorized as low, >50–75 as moderate, and >75 as high (Satpathy, 2002; Alzahrani et al. 2022). (2) Each variable's dimensions were transformed into indices: information, facilitator, motivator, and guidance dimensions for the variable of the direct social media pathway; network linking and community organizing dimensions for the variable of the social media pathway through the social system.

The self-efficacy variable represents farmers' confidence in achieving their goals, consisting of self-efficacy in using social media for e-commerce, overcoming challenges in using social media for e-commerce, and developing various social media platforms for e-commerce. The dimensions of farmers' behavior in using social media for e-commerce include digital literacy skills and digital marketing using social media for e-commerce.

The scores used as an index are grouped into three categories: (1) low category (score ≤ 50.0), (2) medium category (score > 50.0–75.0), and (3) high category (score > 75.0). Secondly, for typology mapping, the index of social media pathways through social systems and behavior in using social media for e-commerce is divided into two parts: medium-low (score < 75.0) and (2) high (score ≥ 75.0). The formula used to calculate the index is as follows:

$$\text{Indeks} = \frac{(Total\ score - score\ minimum)}{(Score\ maksimum - score\ minimum)}\ x\ 100\ \%$$

The direct use of social media pathway (X1) refers to farmers learning directly or independently without intermediaries, such as learning by following educational accounts or engaging in discussions on how to use social media for e-commerce in social media groups, to acquire new knowledge, skills, and behaviors by actively interacting on social media platforms through observation, imitation, and social interaction. The variables assessed in measuring the social media pathway through the social system (X2) include information (X1.1), enabling (X1.2), motivating (X1.3), and guiding (X1.4).

The social media through the social system pathway (X2) refers to a learning process where ornamental plant farmers use social media as the primary tool to acquire knowledge, skills, and behaviors relevant to e-commerce, with support from their social network within their community, which includes: (1) social media as a connection to social networks, and (2) community structuring.

Farmers' behavior in using social media for e-commerce refers to the actions, habits, and patterns of social media use by farmers that support e-commerce activities, such as digital literacy and digital marketing. Digital literacy activities include account creation and the ability to use features, while digital marketing skills include the ability to create content, select the types of plants to sell on social media, set product prices, establish sales bonuses, build marketing networks, create secure transaction systems, predict future product demand, and package ornamental plants.

The index for each respondent in the variables of the social media pathway through the social system and behavior in using social media for e-commerce was coded, with code 1 for the medium-low category and code 2 for the high category. The coded data were then tabulated into the X and Y axes. The X-axis represents behavior in using social media for e-commerce, and the Y-axis represents the social media pathway through the social system, resulting in four typologies. The four typologies are as follows: Type 1**:** High behavior in using social media for e-commerce and high use of the social media pathway. Type 2**:** High behavior in using social media for e-commerce but low use of the social media pathway. Type 3: Low behavior in using social media for e-commerce and low use of the social media pathway. Type 4: Low behavior in using social media for e-commerce but high use of the social media pathway.

Respondent Characteristics

The characteristics of respondents, based on descriptive statistical analysis, indicate that the majority are male, comprising 191 individuals (92.7%), while females account for 15 respondents (7.3%). Most respondents fall within the age range of 31–41 years, totaling 83 individuals (39.5%). The education level of the majority is high school graduates, with 145 respondents (69%), and they demonstrate a variety of social media usage for e-commerce purposes. The most commonly used social media platforms for selling ornamental plants are Facebook, Instagram, and WhatsApp. The average farming experience of respondents in ornamental plant cultivation is 5–7 years, involving 84 individuals (40%). The average experience of respondents using social media for e-commerce is 1–4 years, with 91 individuals (43.3%).

Farmer Typology

The analysis of farmer typology aims to identify the stage of the learning process that farmers reach through the social media pathways they use. There are two social media pathways used by farmers: the direct social media pathway and the social media pathway through the social system. The direct social media pathway (X1) refers to farmers learning socially directly or independently without intermediaries, such as following educational accounts or participating in discussions on how to use social media for e-commerce in social media groups, to acquire new knowledge, skills, and behaviors by actively interacting on social media platforms through observation, imitation, and social interaction. Socially mediated pathway of social media use refers to farmers learning socially through the social system, where they interact and receive collective support from the community on social media, while farmers' behavior refers to their actions in using social media for e-commerce. The typology of farmers is illustrated in Figure 3.

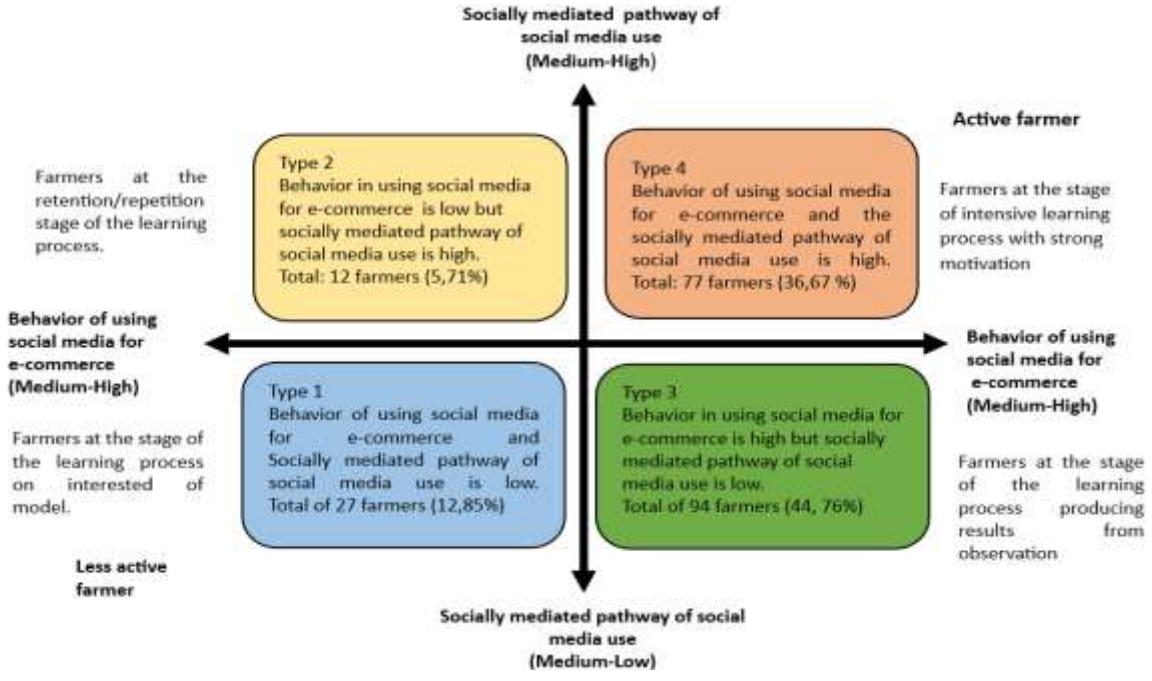

Fig. 2 Social learning typology of ornamental plant farmers through the socially mediated pathway of social media use

Figure 2 illustrates the typology of farmers based on behavior and socially mediated pathways of social media use, consisting of the X-axis and Y-axis. The X-axis represents farmers' behavior in using social media for e-commerce, while the Y-axis represents socially mediated pathways of social media use. Based on the index score percentage calculation, the majority of farmers fall into Type 3, where they exhibit high social media usage behavior for e-commerce but engage with socially mediated pathways of social media use at a low intensity. This category includes 94 farmers (44.76 percent) out of 210 respondents. Additionally, 77 farmers (36.67 percent) belong to Type 1, characterized by high-intensity usage of both social media for e-commerce and socially mediated pathway of social media use. Hasil ini menunjukkan bahwa meskipun petani belum secara aktif menggunakan media sosial secara langsung untuk kegiatan e-commerce, mereka cenderung lebih bergantung pada interaksi sosial dan komunitas untuk memperoleh informasi dan dukungan. Petani pada tipe ini lebih sering berpartisipasi dalam diskusi, berbagi pengalaman, dan saling memberi dukungan dalam kelompok sosial atau komunitas pertanian, baik secara online maupun offline. Kondisi ini mengindikasikan bahwa faktor sosial dan jaringan komunitas berperan penting dalam keputusan mereka untuk menggunakan media sosial, meskipun potensi penggunaan media sosial secara langsung untuk e-commerce belum dimanfaatkan secara maksimal.

The purpose of mapping typology is to identify the stages of the social learning process that farmers go through when using social media for e-commerce, which includes the stages of paying attention, retention, reproduction, and motivation. Type 1 indicates a high level of behavior in using social media for e-commerce and high intensity in using the socially media pathway of soceial media use. Type 2 indicates low behavior in using social media for e-commerce but high intensity in using the socially mediated pathway through the social system. Type 3 shows high behavior in using social media but low intensity in using the socially mediated pathway of social media use. Type 4 indicates low behavior in using social media for e-commerce and low intensity in using the socially mediated pathway of social media use. The number and percentage of farmers based on the typology of socially mediated pathway of social media use are presented in Table 2.

Table 2 Typology of farmer based on socially mediated pathway of social media use

Type	*Levels of Farmers' Behavior in Using Social Media for E-Commerce*	*Levels of Socially Mediated Pathway of Social Media Use*	*Number (farmer)*	*Persentage (%)*	*Stages of The Learning Process*
I	Low	Rendah	27	12,85	Attention process
II	Low	High	12	5,71	Retention process
III	High	Low	94	44,76	Reproduction process
IV	High	High	77	36,67	Strong Motivation

Table 2 shows a tendency for farmers to use social media for e-commerce in groups within a social media community, with a relatively high inclination. In making decisions about whether to use social media for e-commerce, farmers engage in observation, discussions, and dialogues with other farmers, both within online farming communities and offline. The classification of farmers based on the learning process stages through social media channels within the social system consists of four stages: the attention process, the retention process, the reproduction process, and the motivational process, as follows:

1) Type One: Low social media usage for e-commerce, low use of social media channels through the social system, and in the attention process stage. At this stage, farmers tend to pay attention to or show interest in using social media for e-commerce. They have just begun to recognize the benefits of social media in the agricultural business context but still feel uncertain about the potential of e-commerce. As a result, their focus is primarily on observing models or external examples that may spark their interest in learning further.
2) Type Two: Low social media usage for e-commerce, high use of social media channels through the social system, and in the retention process stage. At this stage of the learning process, farmers begin to recall and retain information they have acquired from discussions and knowledge sharing about using social media for e-commerce with peers in social media communities, such as WhatsApp Groups (WAG), Instagram, and Facebook.
3) Type Three: High social media usage for e-commerce, low use of social media channels through the social system, and in the reproduction process stage. At this stage, farmers start to directly apply what they have learned in their e-commerce activities but have not yet fully leveraged their social networks to share experiences or gain further support.
4) Type Four: High social media usage for e-commerce, high use of social media channels through the social system, and in the motivational process stage. At this stage, farmers are not only actively using social media for e-commerce but are also engaged in communities or social networks that support them. They feel motivated by social interactions, share knowledge, and receive feedback that encourages them to continuously develop their skills and strategies in e-commerce.

The behavior of ornamental plant farmers in using social media for e-commerce is influenced by the use of socially mediated of social media use, which provide facilities for continuous personal guidance, support, and incentives for desired changes. The use of media through social systems as an environmental factor cannot directly influence behavior but does so through self-efficacy, which is formed through the social learning process from groups and extension agents (Nurlaela et al., 2020). It connects farmers with social networks, organizes them into communities on social media, and helps them achieve the community's goals (Bandura, 2004).

The typology of farmers based on direct social media use in relation to their behavior in using social media for e-commerce aims to analyze the learning process stage of farmers who use social media directly. This means that farmers interact directly using social media platforms without involving groups or communities. The role of direct social media use includes providing information, enabling, motivation, and guidance, as shown in Figure 4.

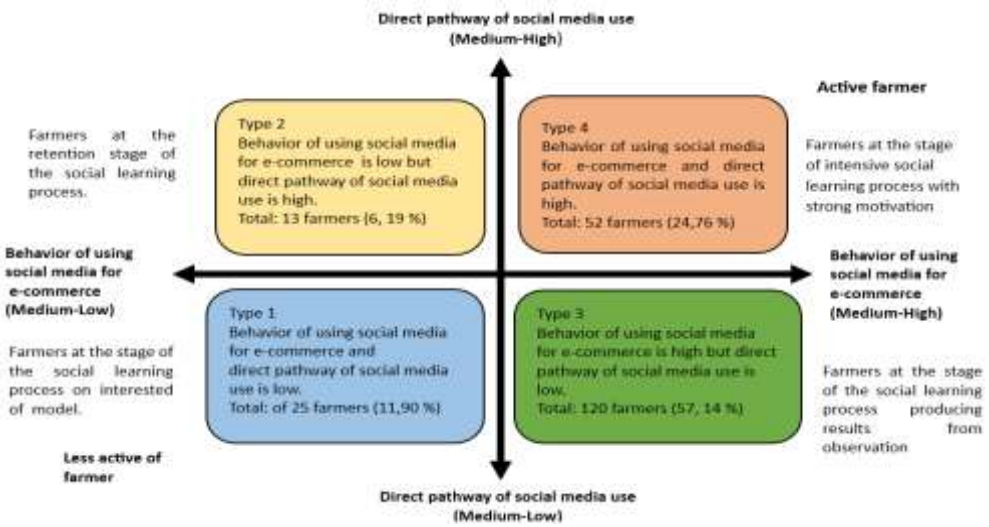

Fig. 4 Social learning typology of ornamental plant farmers through direct pathway of social media use

Based on Figure 4, it is shown that the majority of farmers fall into Type 3 of the learning process stage reproducing observed results (reproduction process) which means they have a high level of social media usage for e-commerce but a low level of direct social media utilization, with a total of 120 farmers (57.14 percent). This indicates that although farmers have a high adoption rate of e-commerce, they tend to underutilize social media directly as a source of information and learning. This condition arises because farmers at this stage reproduce what they have observed and learned into real actions while comparing their mental model process with their mental readiness to take appropriate actions. The number and percentage of farmers using direct social media channels are presented in Table 3.

Table 3. Typology of farmer based on direct pathway of social media use

Type	*Levels of Farmers' Behavior in Using Social Media for E-Commerce*	*Levels of Direct Pathway of Social Media Use*	*Number (farmer)*	*Percentage (%)*	*Stages of The Learning Process*
I	Low	Low	25	11,90	Attention process
II	Low	High	13	6,19	Retention process
III	High	Low	120	57,14	Reproduction process
IV	High	Tinggi	52	24,76	Strong Motivation

Table 3 shows that the majority of farmers fall into the third typology, which is characterized by high social media usage for e-commerce but low direct social media engagement. The classification of farmers is divided into 4 types, adapted to the stages of the social learning process according to Bandura: attention process, retention process, reproduction process, and motivational process. The stages of farmers' learning processes based on the typology of direct social media usage are as follows:

1. Type One: Low social media usage for e-commerce, low direct social media engagement, and at the attention stage (attention process)

In Type 1, both the behavior and direct social media usage are at a low intensity. At this stage, the learning process is passive because farmers only pay attention to the model (attention process), without actively interacting or practicing the use of social media for e-commerce. Farmers only observe how others use social media without direct involvement. The learning process is limited to observation and attention, and farmers have not yet tried or participated in more complex activities, such as creating content or engaging in online transactions. The social learning process is shallow, so at this stage, efforts are made to enhance farmers' self-efficacy through messages that can increase their motivation and interest, encouraging them to actively participate in using social media by providing relevant examples to help them understand the benefits of social media in the context of e-commerce. At this stage, farmers focus on observing how models use social media for e-commerce, paying attention to how they use platforms, market

products, and interact with customers. This attention process is a crucial first step in social learning, as focused attention can move the learning process to the next stage. Without strong attention to the model's behavior, farmers will not be able to replicate or learn new skills required to develop an e-commerce-based ornamental plant business. At this stage, farmers observe the model's behavior in creating accounts, presenting content, using social media features, and interacting with customers. However, they are still in the observation phase and have not yet applied what they have learned directly.

2. Type Two: Low social media usage for e-commerce, high direct social media engagement, and at the retention stage (retention process)

In Type 2, farmers are at the retention process stage in using social media for e-commerce, where they not only observe the model but also begin to store and repeat the information or actions observed from the model. At this stage, farmers try to remember and retain the operational steps taken by the model in running e-commerce, such as how to create an account, manage the account, use features, write product descriptions, and interact with potential buyers on social media. This process is important because it helps farmers internalize the required skills so that when needed, they can reproduce the behavior independently and effectively. During the retention process, farmers need repeated guidance, structured practice, and feedback from mentors within the community, both from social media and farmer groups, to ensure they master the learned skills and can apply them consistently in e-commerce activities. Messages designed for farmers at the retention process stage focus on reinforcing memory and understanding of the information they have obtained from previous observations or experiences. The retention phase is where farmers practice, encode, and connect new knowledge with existing knowledge by storing and internalizing learned knowledge or skills to be used later (Dooley, 2020). Messages delivered come not only from direct media channels but also from communities or groups. Strong cohesiveness within communities or groups is necessary to maintain member motivation in applying learned information, creating a supportive environment for continuous social learning where farmers can actively remind each other, share experiences, and discuss new techniques or knowledge. This cohesiveness also facilitates more effective information exchange, strengthens memory through group discussions, and promotes continuous joint practice.

3) Type Three: High social media usage for e-commerce, low direct social media engagement, and at the reproduction stage (reproduction process)

In Type 3, farmers are at the stage of reproducing results (reproduction process) from observations of the model into concrete actions. However, they tend to be less active in using social media directly as a social learning tool. The reproduction process is the stage in social learning where farmers begin to apply what they have learned through observation, knowledge, and skills into real actions. Farmers at this stage can replicate and apply how to use social media for e-commerce from observations of existing models or examples. However, their intensity in direct social media engagement for learning remains low, as farmers need discussions with other farmers to boost their confidence in applying new skills. Such discussions help farmers strengthen their understanding and validate the knowledge they have gained, making the social learning process more effective.

4) Type Four: High social media usage for e-commerce and high direct social media engagement, at the motivational stage (motivational process)

In Type 4, farmers are at a stage where they have strong motivation to engage in social learning using social media for e-commerce. This is reflected in their active behavior of seeking information directly from various sources, both through social media and offline media, with high intensity in using social media for e-commerce. In the motivational process, farmers decide whether to imitate and continue the behavior they have learned based on rewards, encouragement, or expected outcomes. The motivational process is the stage where individuals are driven to adopt or maintain a behavior because they believe it will result in rewards or positive outcomes. Farmers at this stage are likely to adopt behaviors they believe will lead to positive results or rewards from their efforts (reinforcement). Farmers' motivation is highly influenced by their confidence in the benefits and rewards they receive from using social media, in addition to support and encouragement from family and community groups to continue using social media as part of their efforts. Farmers at the motivational stage experience reinforcement from positive feedback, both from within themselves (internal reinforcement), such as satisfaction when successfully selling products via social media, and from external sources (external reinforcement), such as praise from peers, increased income, or wider market access. These experiences strengthen their desire to continue the behavior due to strong self-efficacy, reward expectations, and social support. Farmers can better overcome barriers and are committed to continuing to use social media to achieve the desired results.

CONCLUSION

The typology of farmers based on social media usage consists of two categories: direct social media channels and social media channels through the social system. The typology of farmers based on social media usage through the social system falls into Type 3, where social media usage for e-commerce is high, but the use of social media through the social system is low. Farmers in this category are in the stage of producing results from observations. This indicates that farmers tend to be more independent in utilizing social media for e-commerce, focusing on observation and direct application of what they see on the platforms. However, the low use of social media through the social system suggests that farmers have not fully leveraged the support potential from social networks or communities, such as sharing experiences, engaging in discussions, or receiving guidance from farmer groups, experts, or other e-commerce practitioners. This condition also reflects that farmers' social learning process through interaction with the social system is not yet optimal, limiting the opportunities to broaden their horizons, share knowledge, and strengthen their skills in using social media for e-commerce. To address this, a social media-based learning curriculum for ornamental plant farmers is

needed, utilizing communities as interaction mediums, along with strengthening digital social networks that allow farmers to communicate and learn from each other.

The typology of farmers based on the use of direct social media channels shows that the majority of farmers fall into the third type, where social media usage for e-commerce is high, but the use of direct social media channels is low. This suggests that farmers have a fairly good ability to use social media for e-commerce activities, such as marketing products, communicating with consumers, and seeking market-related information. However, the low use of direct social media channels indicates that farmers are still not actively utilizing social media as a means of direct learning, such as attending online training, webinars, or engaging in interactive discussions with experts or other entrepreneurs. This condition indicates that although their e-commerce behavior has developed, there is a gap in their ability to utilize social media as a medium for social learning. This could hinder further development, both in terms of technological knowledge and more innovative marketing strategies. Therefore, to improve the effectiveness of social media usage for e-commerce, efforts are needed to integrate both channels by enhancing farmers' digital skills through direct training and building stronger connections between e-commerce practices and interactions within social networks.

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DISCLOSURE

There are no conflicts to declare

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