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PRIMARY RESEARCH

Examining the role of personal innovativeness and hedonic motivation in agricultural technology adoption

Hastirullah Fitrah *

Faculty of Agriculture, Universitas Achmad Yani, Banjarmasin, Indonesia

Keywords

Social capital theory
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Abstract

The farmers in Indonesia's South Kalimantan Province are a narrative deeply rooted in the region's agricultural heritage and socio-economic evolution. Traditionally, before the colonial era, the indigenous communities in this lush province practiced subsistence farming, cultivating staples like rice and various other crops. They lived in harmony with the fertile land, harnessing its resources to sustain their livelihoods. The Dutch colonial period, which commenced in the 17th century, marked a pivotal juncture in the region's agricultural landscape. This paper aims to explore the intricate dynamics of technology adoption among farmers in Indonesia's South Kalimantan Province, with a particular focus on the influences of social capital theory, social influence, and government support and personal innovativeness as mediating variable and hedonic motivation as moderator used in this study. A sample size of 370 farmers participated in this study, and the data was analyzed using the structural equation modeling (SEM) tool, Smart PLS, which is well-suited for complex structural modeling. A convenient sampling method was employed to collect cross-sectional data. Our findings confirm the mediating role of hedonic motivation and the moderating role of personal innovativeness in shaping farmers' willingness to adopt new agricultural technologies. The results shed light on the complex interactions and interdependencies among these variables, providing valuable insights for policymakers, agricultural extension services, and researchers seeking to enhance technology adoption strategies in agricultural contexts.

INTRODUCTION

Increasing agricultural output, enhancing rural livelihoods, and above all, quickening agricultural development depend on the use of agricultural technologies (Elahi, Khalid, & Zhang, 2022). The change in agricultural production modes has been extensively investigated by the Indonesian government (Caffaro, Cremasco, Roccato, & Cavallo, 2020). According to research, adopting and supporting innovative agricultural technology can improve the agricultural production factors (Gao et al., 2020), boost resource utilization efficiency (Caffaro et al., 2020), increase the agricultural productivity factors' effectiveness in allocation (Wang, Lu, & Capareda, 2020), enhance the quality of life (Zheng, Wang, & Wachenheim, 2019), and encourage the shift in agriculture from quantity to quality (Zeng, Zhang, He, & Cheng, 2019). Thus, actively pushing for and encouraging farmers to adopt new technologies, as well as placing a high value on promoting and utilizing innovative agricultural technologies, are crucial steps in accelerating the high-quality growth of agriculture ((Al-Azawei & Alowayr, 2020); (Wang et al., 2020)). The region's Gross Regional Domestic Product distribution shows that South Kalimantan's economy is still mostly based on agriculture. The importance of the agricultural, forestry, and fisheries farms was highlighted in 2017 when it contributed 14.59% of the GRDP (ROZAKI et al., 2022). Interestingly, mining and excavation contributed far more to South Kalimantan's GDP than forestry, agriculture, and fisheries combined. This is primarily because the vast majority of people living in the province work in the agriculture industry, which includes food crops, forestry, horticul-

*corresponding author: Hastirullah Fitrah
†email: hastirullah@uvayabjm.ac.id

ture, and fishing (Suhadi, Irham, Mulyo, et al., 2022). From 2015 onwards, South Kalimantan's economic growth has slowed, from 5.97% in 2012 to 5.33% in the following years. This continued slowdown in growth culminated in 3.82% in 2019. Nonetheless, South Kalimantan's economy showed indications of a resurgence in 2020, as growth rebounded to 4.40%. This encouraging trend persisted in 2021, when growth reached 5.29% (Tri, Kliwon, Yayuk, & Dwi, 2019). The socioeconomic reality that now exists suggests that small farmers (planters, breeders, and fishermen) are the primary players in Indonesia's agricultural development. In order to strengthen their negotiating position, the major players and corporate actors are therefore expected to be able to develop farming that is both sustainable and competitive. As a result, farmer groups' ability and capacity need to be continually increased. One way to do this is by engaging in group-based extension activities ((ROZAKI et al., 2022); (Suhadi et al., 2022); (Tri et al., 2019)).

Examining the elements that influence this topic will help to expand the channels for farmers to adopt technology and to have in-depth conversations about their decision-making (Burg et al., 2021). According to (Gao, Zhao, Yu, & Yang, 2020); Patil, Tamilmani, Rana, and Raghavan (2020); (Wang et al., 2020), farmers' educational attainment, social beliefs, and economic standing all have an impact on how much technology they accept. According to Shi et al. (2022), Zeng et al. (2019), (Zheng et al., 2019), risk attitudes, information gathering, and the advantages and disadvantages of the technology itself may all affect how quickly farmers adopt new technologies. Furthermore, the natural environment, which includes external elements like land types and climatic variations also plays a significant role in influencing farmers' adoption of new technologies ((Burg et al., 2021); (Gao et al., 2020); (Li, Ding, Wang, Zhang, & Zhang, 2021). Prior research has indicated that social influence has a significant role in shaping an individual's behavior decisions (Balzani & Hanlon, 2020). However, little study has been done on the relationship between farmers' adoption of new agricultural technologies and social capital theory, which encompasses social influence and governmental support. Governments may be better able to use social influence's processes of influence to steer the development of public policies and the results of their implementation if they have a better understanding of the impact and direction of social influence on farmers' adoption of new agricultural technology ((Berhane, Haji, Legesse, & Lemma, 2020); (Brown et al., 2021); (Hwang, Choe, Choi, & Kim, 2021)).

However, it has only lately been apparent how farmers' social influence may play a role in agricultural growth (Wang et al., 2020). It is especially helpful in developing nations where there is still a deficiency in the availability of rural training, expansion, and agricultural data resources ((Han et al., 2022); (Prüschenk & Kurscheidt, 2020)). This reflective piece looks at the prevailing worldviews on farmers' social media platforms as a possible planning tool for sustainable agricultural growth. Farmers' development and choice-making processes have traditionally been significantly impacted by social influence (Prüschenk & Kurscheidt, 2020). Numerous studies have shown how interpersonal networks which are created through discussion boards, farmer-to-farmer relationships, and peer-to-peer advising networks help to facilitate learning ((Chaudhuri, Roy, McDonald, & Emendack, 2021); (Han et al., 2022); (Prüschenk & Kurscheidt, 2020); (Thomas & Gupta, 2021)). Moreover, a meta-analysis has demonstrated that farmer networks both among peers and with other actors have a greater impact on information sharing than other well-established variables, such as the age and size of the farm ((Cofré-Bravo, Klerkx, & Engler, 2019); (Khatimah, Susanto, & Abdullah, 2019) (Skaalsveen, Ingram, & Urquhart, 2020)).

Hedonistic motivation encompasses enjoyment, amusement, playfulness, and fun. "Fun or pleasure derived from using technology" is how it is defined (Khatimah et al., 2019). Hedonic motivation, according to the idea of motivation, might be crucial in formalizing users' adoption of technology (Brown et al., 2021). It moved the emphasis from farmers' intrinsic motivation to farmers' technologies' intrinsic motivation. According to several sources (Al-Azawei & Alowayr, 2020; (Bopp, Engler, Poortvliet, & Jara-Rojas, 2019); (Brown et al., 2021); (Hwang et al., 2021); (Tamilmani, Rana, Prakasam, & Dwivedi, 2019); (Van Hecken, Merlet, Lindtner, & Bastiaensen, 2019)). Hedonic motivation is defined as the enjoyment or pleasure experienced from using technology. Hedonic motivation (Van Hecken et al., 2019), perceived enjoyment ((Brown et al., 2021); (Hwang et al., 2021); (Tamilmani et al., 2019)), and perceived playfulness (Al-Azawei & Alowayr, 2020; (Choi & Johnson, 2019)) in previous studies are some examples of similar constructs that are included under the general term of hedonic motivation in this research.

According to (UPAZILA & MIM, 2021), "innovativeness" describes a person's drive to discover something novel and distinctive. Consequently, an individual's level of openness to trying or experiencing anything new is a reflection of their inventiveness or novelty-seeking inclinations. Innovativeness has gained acceptance as a critical predictor of new product or innovation adoption across other disci-

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plines, despite not being included in any well-known theoretical models of technology acceptance ((Berhane et al., 2020); (Hwang et al., 2021); (Vecchio, Francescone, Adinolfi, & De Rosa, 2022)). Personal Innovativeness in farmers' technology adoption is a term Patil et al. (2020) suggested for the domain of information technological area. Personal Innovativeness is described as "the willingness of an individual to try out any new information technology." Additionally, Berhane et al. (2020) defined personal innovativeness as the manifestation of a person's willingness to take risks tendency, which is unique to certain people, and developed and verified criteria for personal innovativeness relevant to the Technological area.

The present study aimed that social influence and governmental support impact farmers' willingness to adopt new agriculture technologies and the mediating role of personal innovativeness and moderating role of hedonic motivation among farmers of to South Kalimantan Province of Indonesia. Social capital theory is involved in this study. According to Prüschenk and Kurscheidt (2020), “the ability of individuals to acquire resources based on social relations or broader social structures” is the basic idea behind the development of social capital theory. "Embedded in a specific social structure, social capital helps individuals obtain the resources they want through targeted activities and exchanges," according to Shi et al. (2022). According to Thomas and Gupta (2021), says that "the ability to leverage the networks of relationships that farmers, families, and other stakeholders progressively build via communication and the means by which they are able to access the resources they require". According to Prüschenk and Kurscheidt (2020), social capital primarily consists of a network of contacts connected by kinship, location, and blood. Most structural social capital is composed of a small number of objectively existing in society, such as networks, organizations, and regulations that influence farmers' behavior. People's sensory perceptions, such as their level of trust, morality, and social standing, are referred to as cognitive social capital. Nevertheless, different academics have defined social capital differently depending on their study areas, and the academic community has not developed a common definition and classification of social capital ((Choi & Johnson, 2019); (Shi et al., 2022)).

LITERATURE REVIEW

Social Influence and Willingness to Adopt New Agriculture Technologies

Social influence is "the degree to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology," according to Balzani and Hanlon (2020). According to earlier studies, people may be quite willing to accept technology if they see others around them using it ((Gao et al., 2020); (Tri et al., 2019)). Khatimah et al. (2019)discovered that social impact in digital learning is a crucial variable that could affect behavioral intention to embrace learning through mobile devices. According to Balzani and Hanlon (2020); Choi and Johnson (2019); Gao et al. (2020), farmers should think about how others may see their use of mobile devices. It is also believed in this study that hedonic motivation can be influenced by social influence. This presumption is supported by the observation that learners become more motivated to adopt technology for learning when they believe that relatives and close companions generally agree with them. A close connection to society that develops over time through intentional contact between people and organizations is known as a social influence ((Khatimah et al., 2019); (Tri et al., 2019)). Farmers use social influence to obtain knowledge, which lowers the learning and adoption costs of new agricultural technologies. Social media platforms are crucial to this procedure. According to Elahi et al. (2022), there are two types of networks in the initial social influence analysis: homogeneity and diversity. Diverse networks, which establish the sharing of knowledge chains, are primarily based on the relationships between industry and location (Li et al., 2021).

In addition to compensating for the shortcomings of homogeneous networks, these networks can help farmers quickly access pertinent information from outside their spheres of expertise. This broadens the scope of farmer interaction, enhances their theoretical understanding, and ultimately influences how they make decisions ((Van Hecken et al., 2019); (Zheng et al., 2019)). Social influence and agricultural technology adoption are mostly influenced by each other, and farmers primarily obtain technical information through these two channels. The emphasis on social impact is on farmers interacting with one another and sharing technical information through their social connections. The use of technology by farmers is a continual process of learning ((Thomas & Gupta, 2021); (Vecchio et al., 2022)). Farmers fix the expected return on technology, decide which technologies to use, and learn technical information through social interaction. Social influence serves to compensate for flaws in the formal system, lower risks, and provide information (Suhadi et al., 2022). Farmers' adoption of technology is significantly influenced by social networks based on the principle of closeness in an area where there are clear social networks with kinship, geographical relation-

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ships, and industry-predestined relationships. Social influence has a complex role in the adoption of new technology, as various studies have shown ((ROZAKI et al., 2022); (Shi et al., 2022)). Stated differently, social influence might be defined as the extent to which individuals perceive that significant others concur with their behavior or technological decisions (Skaalsveen et al., 2020). In particular, social influence has proven to have outstanding predictive power when it comes to smartphone use (Tamilmani et al., 2019), wireless devices, health-related technology use (Suhadi et al., 2022), and mobile diet apps (Suhadi et al., 2022). In the agricultural setting, farmers are inspired to implement smart agricultural technologies when they hear from other farmers, specialists, other people, or persons they follow directly or indirectly suggesting using them. Thus, the following hypothesis is put forward:

H1: Social influence has a significant impact on farmer's willingness to adopt new agriculture technologies.

Government Support and Willingness to Adopt New Agriculture Technologies

By passing laws that benefit investment and providers of services alike, the government's desire to participate in the industry could contribute to the growth of the agricultural sector. According to (Akbar, Fauzi, & Fajeri, 2019), the reduction of uncertainty brought about by government engagement fosters the growth of Fintech. Based on studies on adoption in Indonesia, Al-Azawei and Alowayr (2020) found that the government of Indonesia actively promotes the stand Balzani and Hanlon (2020) there is a positive link between the adoption of novel innovations and government support for them. These laws support the agricultural industry, its infrastructure, and the government's revolutionary role in advancing automation through the growth of the Internet. Furthermore, Berhane et al. (2020) used agricultural new technology as their research subject and discovered that social network instruction and government growth services are mutually beneficial and that the presence of one party increases the efficacy of the other in facilitating the acceptance of new technology. Social media and government advertising are good places to find technical information. Initially, social media platforms primarily highlight how people utilize their networks for business-related communication and collaboration (Bizikova et al., 2020). Farmers can efficiently locate technical knowledge and gain reasonable technical input by using these informal organizations. The government to promote its products typically uses second, individual "agricultural demons" (Bopp et al., 2019).

People interact with one another and gain experience using the technology, enhancing the technical knowledge at their disposal, and offering a specific risk guarantee for farmers' willingness to adopt new technologies as their capacity to implement it grows (Brown et al., 2021). The core tenet of the model known as behavioral intention is people's openness to trying new things. Rather than concentrating on how technology is used, many academics emphasize the intention to use it. In addition to browsing personalized, customized material whenever and whenever they choose, farmers who utilize the new agricultural technology extension mode for technical knowledge can also communicate in real time with online experts to resolve issues arising from using the technology (Burg et al., 2021). Farmers' attitudes towards and intents to adopt newer technologies, such as electric automobiles, renewable heating and cooling systems, and green telecommunications and information technology, have an impact on their willingness to pay extra for goods and services ((Brown et al., 2021); (Channa, Chen, Pina, Ricker-Gilbert, & Stein, 2019)). As a result, the following theory is proposed:

H2: Government support has a significant impact on farmer's willingness to adopt new agriculture technologies.

Mediating Role of Personal Innovativeness

According to Vecchio et al. (2022), "innovativeness" describes a person's drive to discover something novel and distinctive. UPAZILA and MIM (2021) defined personal innovativeness as a person's willingness to experiment with new technologies. The ability to accept a technology's presence is a major factor in the adoption of new technologies. This study characterizes user innovativeness as being willing to try out internet services and keen to learn about new technologies. According to (Tri et al., 2019), service innovation has an impact on customer involvement, loyalty, and total service value evaluation. Previous research has also shown a correlation between user innovativeness and technological adoption Patil et al. (2020). Hwang et al. (2021) found that a customer's trust is predicted by how innovative they consider a website to be. According to Cofré-Bravo et al. (2019), the ideas of uniqueness and usefulness are connected to how innovative a website is considered, and these fundamental qualities inspire users to trust a website. Because of this, farmers who view the internet as a cutting-edge technology are typically more inclined to embrace it. By simplifying farming processes and resulting in lower labor costs and increased output, technological advancements can encourage more astute commercial practises ((Berhane et al., 2020); (Hwang et al., 2021)).

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According to Chaudhuri et al. (2021), social influence is the extent to which a customer feels that significant persons (such as family, friends, coworkers, etc.) think they should utilize a particular technology. In order to increase one's chances of winning a competition in the age of new technology, it is therefore imperative to integrate new technologies into current processes. However, the effective adoption of innovative technology and farmers' desire to use it are not guaranteed without a thorough understanding of their farmers' adoption of the technology ((Skaalsveen et al., 2020); (Wang et al., 2020)). According to Khatimah et al. (2019); Prüschenk and Kurscheidt (2020), farmers view individual difference characteristics like personal innovativeness as a crucial component of their strategy. Since the theories overlooked the significance of different people throughout the adoption process, including this feature is a crucial framework expansion.Han et al. (2022) discovered that the most important factor influencing farmers' inclination to accept new technologies is their level of inventiveness. Apart from additional ways to pay online in terms of technology, it is firmly expected that farmers' individual inventiveness will have a favorable and substantial impact on their "willingness to adopt new technologies". For more than 50 years, models of technology adoption have been utilized to comprehend the diffusion of innovations. It identified a number of characteristics, such as compatibility, relative benefit, complexity, feasibility, and observability, that influence the diffusion of inventions. Chaudhuri et al. (2021) underlined that social networks more especially, human communication are the most direct and efficient means of spreading innovation. Prüschenk and Kurscheidt (2020) also noted the significance of social and community networks. Based on the conversation above, the following theory can be made:

H3: Personal innovativeness has a mediating impact between social influence and farmers' willingness to adopt new agriculture technologies.

H4: Personal innovativeness has a mediating impact between government support and farmers' willingness to adopt new agriculture technologies.

Personal Innovativeness and Willingness to Adopt New Agriculture Technologies

Personal innovativeness plays a pivotal role in shaping "farmers' willingness to adopt new agricultural technologies", a phenomenon that has been extensively examined in the agricultural economics and innovation adoption literature. Patil et al. (2020) provide a solid foundation for understanding how individuals with varying levels of innovativeness engage with novel technologies. Cofré-Bravo et al. (2019) classified adopters into categories, highlighting that innovators and early adopters, characterized by higher personal innovativeness, are more inclined to embrace innovative practices compared to those categorized as late majority or laggards. UPAZILA and MIM (2021) revealed that individuals with greater personal innovativeness tend to exhibit more favorable attitudes toward innovation adoption, translating into a heightened willingness to explore and adopt new agricultural technologies. Further studies, such as Berhane et al. (2020); Hwang et al. (2021), have emphasized that personal innovativeness influences information-seeking behavior, as more innovative farmers actively seek knowledge through various sources, including extension services and peer networks. Additionally, research by Berhane et al. (2020); Tri et al. (2019) has shown that personal innovativeness shapes how individuals perceive the characteristics of innovations, affecting their compatibility, relative advantage, and complexity. Vecchio et al. (2022) emphasized the role of social networks in innovation adoption, demonstrating that innovators and early adopters tend to have broader and more diverse social networks, facilitating the dissemination of information and social support related to new technologies.

Moreover, studies by Zheng et al. (2019) have highlighted the connection between education and personal innovativeness, where higher education levels enhance cognitive skills, making individuals more receptive to novel agricultural practices.Suhadi et al. (2022), suggested consistently underscore the profound impact of personal innovativeness on farmers' willingness to embrace new agricultural technologies, influencing their attitudes, information-seeking behavior, and perceptions of innovation characteristics, ultimately shaping the trajectory of technology adoption in agriculture. Numerous past studies have delved into the factors that influence this willingness ((Thomas & Gupta, 2021); (Wang et al., 2020)). One pivotal concept is the perceived benefits of new technologies. Research, such as that conducted by (Shi et al., 2022), has shown that when farmers perceive these innovations as offering clear advantages, such as increased productivity, reduced labor, or improved crop yields, they are more inclined to adopt them. Tamilmani et al. (2019) have indicated that factors such as income, access to credit, and landholding size can significantly affect a farmer's ability and willingness to invest in new technologies. Moreover, the influence of extension services and farmer-to-farmer networks in disseminating knowledge about these technologies has been emphasized in various research, including that of ROZAKI et al. (2022).

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H5: Personal innovativeness has a significant impact on farmer's willingness to adopt new agriculture technologies.

Moderating Role of Hedonic Motivation

Hedonic Motivation is the degree to which using new technology brings about happiness or pleasure. It has been found that motivation is a key factor in the adoption and use of new technology (Van Hecken et al., 2019). Hedonic Motivation encompasses happiness, enjoyment, amusement, playfulness, and other intangible rewards (usefulness, efficiency, performance, etc.). It is crucial to demonstrate to clients how using new technology would make them happy and joyful in order to get them to embrace it (Hwang et al., 2021). The likelihood of an individual using a mobile application for healthcare services is higher if they find it entertaining, engaging, or enjoyable ((Al-Azawei & Alowayr, 2020); (Khatimah et al., 2019). As a result, a customer's desire for new technologies like the internet using GPS-based mapping or yield control systems may make using them enjoyable, which in turn makes them more likely to embrace new agricultural technology. Motivation as the interaction for material in the study characterizes users' hedonic or enjoyable experience with what they have (Tamilmani et al., 2019). Having fun or being entertained could be a sign of it. Therefore, according to a study by Van Hecken et al. (2019), hedonic motivation directly influences behavioral intentions. Additionally, incentive creates a hedonistic experience for using the technology, which is a crucial aspect in determining the user's adoption and usage of it (Van Hecken et al., 2019). Hedonic motivation has been shown in numerous earlier research to have a direct and significant impact on technological acceptance ((Brown et al., 2021); (Van Hecken et al., 2019)). Few research has examined hedonic aspects as being influenced by users' acceptability ((Hwang et al., 2021); (Khatimah et al., 2019)). As a result, hedonic motivation plays a significant role in predicting users' intentions toward the adoption of technology (Yang, 2010). The enjoyment that consumers derive from shopping has been examined, and it highlights the importance of emotional, multisensory, and fantasy elements in relation to consumers' utilitarian and hedonic values ((Al-Azawei & Alowayr, 2020); (Brown et al., 2021); (Hwang et al., 2021); (Van Hecken et al., 2019)). It suggests that the behavioural intention is significantly influenced by hedonic motives.

Van Hecken et al. (2019) suggested a direct correlation between farmers' behavioral intention to accept technology and their hedonic motivation. Hedonistic motivation encompasses enjoyment, amusement, playfulness, and fun. "Fun or pleasure derived from using technology" is how it is defined by Van Hecken et al. (2019). Hedonic motivation, according to the idea of motivation, might be crucial in formalizing users' adoption of technology (Bopp et al., 2019). In fact, this measure has been regularly employed as a predictor of technology utilization in the information systems literature Choi and Johnson (2019). Strong evidence for the importance of hedonic motivation in formalizing users' decisions to accept mobile technology may be found in earlier research Van Hecken et al. (2019)). Adoption studies for mobile learning have also corroborated this (Brown et al., 2021). Because of the intricacy of their social media profiles, farmers who engage in public activities may exhibit blatant "herd behavior," which converges in the desire to accept the technology. The social contact mechanism is the other part. Farmers can increase their sense of enjoyment and recognize their worth through social work, recreational activities, and other voluntary village-organized events when they take part in these activities. In addition, Van Hecken et al. (2019) thinks that as farmers' pleasure increases, so will their willingness to accept new agricultural technologies in order to meet their expanding social, societal, and financial demands. It is evident that farmers' initial motivation for taking part in this activity was to support their most basic needs. This can aid farmers in accurately locating the necessary networks of relationships during the activity, which in turn helps farmers distribute information about agricultural technology more effectively and increase their "willingness to adopt new agricultural technologies" ((Khatimah et al., 2019); (Tamilmani et al., 2019)). Thus, the following is how the hypothesis is put forth:

H6: Hedonic motivation has a moderating impact on personal innovativeness and farmers' willingness to adopt new agriculture technologies.

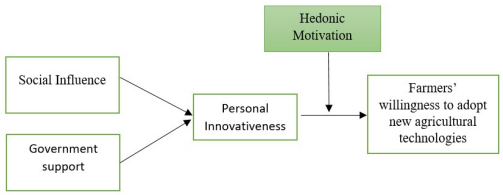

FIGURE 1. Conceptual framework

METHODOLOGY

The methodology employed in this research, conducted in South Kalimantan Province, Indonesia, aimed to investigate the willingness of farmers, particularly those involved in cultivating premium crops, to adopt agricultural technologies. The Kapuas Regency in Central Kalimantan Province

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was the site of this study. Geographically speaking, Kapuas Regency is situated on the equator between 113º2'36" and 114º44'00" South Latitude and between 0º8'48" and 3º27'00" South Latitude. Kapuas Regency experiences tropical, humid climates with minimum temperatures between 21 and 23 degrees Celsius and maximum temperatures of 36 degrees Celsius (Tri et al., 2019). There is always a lot of solar radiation and plenty of water supplies. The administrative center for the research is situated in East Kalimantan Province's East Kutai Regency (Suhadi et al., 2022).

The research's aims and scope were defined through consultations with subject matter experts in agriculture and technology adoption in South Kalimantan. These experts provided valuable insights and guidance to shape the study's objectives. To assess the validity and reliability of the survey constructs and questions, a pilot survey was conducted involving 370 farmers from South Kalimantan Province. This step helped refine the survey instrument and ensured that it effectively captured the relevant data. The final survey was administered to farmers in South Kalimantan, Indonesia. The focus was on growers of premium crops, including strawberries, bananas, mangoes, grapes, and dragon fruits, among others. Specifically, the sample consisted of farm owners and managers who were involved in premium crop cultivation. These individuals were chosen because they possessed significant acreage and revenue, indicating their engagement with farming technologies and their potential influence on technology adoption. The survey utilized a convenience sampling method, targeting farmers who were already using a variety of farming methods and technologies. The selection of this method was based on the practicality of accessing farmers actively engaged in agriculture. The study concentrated on South Kalimantan's districts known for high-quality fruit production, as these regions were primary suppliers to the local market. Before administering the surveys, participants were provided with informative materials and hands-on demonstrations of modern technology-based farming gadgets. These materials and demonstrations were offered in the farmers' local language to ensure a clear understanding of the technologies and to make informed responses. In total, 430 farmers responded to the survey. Out of these, 370 were considered suitable for the study, resulting in an 86% response rate. The final dataset from these respondents was analyzed to address the research objectives. The basic data for this study were collected using a cross-sectional time horizon technique. A survey strategy was employed to collect the data, and the respondents' responses were gathered using a questionnaire. The farmers in the province of South Kalimantan were the respondents. Following the data collection process, statistical analysis using SMART PLS was used to assess the hypotheses (Purwanto, 2021). All necessary statistical tests were run in order to test each direct and indirect link.

The instrument was developed using data from the study, demographics, and items that were modified for each variable. Three items in all were modified for the Shi et al. (2022) social influence measure. Government support, the three elements from the Shi et al. (2022) were modified. Three items were modified to measure the mediating variable, personal innovativeness, using the scale of Shi et al. (2022). Three items were added to the analysis to examine the moderating influence of hedonic motivation in relation to other variables. This analysis was based on the work of Shi et al. (2022). The variable of outcome in order to "farmers' willingness to adopt new agricultural technologies", the five elements from the scale created by Han et al. (2022) were modified. Each item on the "five-point Likert scale" had five as the greatest number, signifying strong agreement, and 1 as the lowest, signifying strong disagreement. The respondents were all given the assurance that the information would be kept private and used exclusively for that purpose. To preserve the data's dependability, each respondent provided a clear explanation of the study's goal. The structural and measurement models were assessed using SmartPLS3 after a preliminary analysis of respondent data. The demographic data and descriptive statistics of the sample (N=370) for the current study are shown in Table 1. Farmers in Indonesia's South Kalimantan Province are influenced by both social influence and governmental support impact on "farmers's willingness to adopt new agriculture technologies" and the mediating role of personal innovativeness and moderating role of hedonic motivation. The model's study revealed the age, gender, size, experience, and era of the farmers as well as the fruit yield.

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TABLE 1. Demographic profile

Demography	Description	No. of Responses	%
Gender	Male	259	70
	Female	111	30
Age	Less than 35 Years	90	24
	35-45	125	34
	45-55	109	29
	Above 55 Years	46	12
Farm size	Below 3 acres	132	36
	4–7 acres	126	34
	8 acres and above	112	30
Fruits Yield	Banana	90	24
	Mango	59	16
	Grapes	68	18
	Dragon	72	19
	Strawberry	44	12
	Others	37	10
Experience	Less than 3 years	123	33
	4-6 years	141	38
	More than 8 year	106	29
Area	East	90	25
	Center	111	30
	West	75	20
	North	94	25

ANALYSIS AND RESULTS

The present study aimed that social influence and governmental support impact "farmers' willingness to adopt new agriculture technologies" and the mediating role of personal innovativeness and moderating role of hedonic motivation among farmers of to South Kalimantan Province of Indonesia and social capital theory involved in this study. Demographic analysis was conducted in order to gain a deeper understanding of the characteristics of the respondents. Following this, the sample's descriptive statistics were collected. Structural Equation Modelling (SEM), which was judged relevant for this study due to its capacity to demonstrate the applicability of willingness to embrace new agriculture technologies in the analysis of IoT adoption trends, was used to test the offered hypotheses. SEM also has the added benefit of correcting measurement errors in object measurements [93]. One SEM study Purwanto (2021) suggested that at every interdependence link, which led to the tendency for the SEM to produce error-free results. This study was classified as a confirmatory one, hence covariance-based SEM was employed to examine the relationship between the variables (Purwanto, 2021). SMART-PLS 3.0 was used to analyze the data.

Measurement Model

In order to find out more about the unique features of the responders, a demographic study was carried out. The sample's descriptive statistics were then gathered. The proposed hypotheses were tested using Structural Equation Modelling (SEM), which was deemed pertinent for this study because of its ability to show how willingness to accept new agricultural technology may be applied in the analysis of innovativeness. Correcting measurement errors in object measurements is an additional benefit of SEM. Every interdependence connection was examined in one SEM study (Purwanto, 2021), which contributed to the SEM's propensity to yield data free of errors. Since this study was categorized as confirmatory, covariance-based structural equation modeling (SEM) was utilized to investigate the correlation between the variables [94]. The data was analyzed using SMART-PLS 3.0. In comparison to the value of correlation between the constructs, the discriminant validity should be greater than AVE ((Cheah, Thurasamy, Memon, Chuah, & Ting, 2020); (Purwanto, 2021); (Purwanto, Asbari, & Santoso, 2021)). The factor loading values are larger than 0.7, as Table 2 demonstrates. It indicates that every question on a questionnaire is trustworthy. If not, AVE has a value greater than 0.05. By accepting the parameter, it is

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meant to be (Fornell & Larcker, 1981). The square roots of the AVE have values greater than the correlation coefficient of a latent variable. Table 2 shows that the three models' average variance extracted (AVE) values were greater than.50, indicating a high degree of convergent validity for all the constructs utilized in this investigation (Fornell & Larcker, 1981). Furthermore, all three models' compo-site reliabilities had values greater than.70, indicating that there was no issue with internal consistency (Purwanto, 2021).

An essential concept in statistical research and methodology, discriminant validity is especially important when discussing structural route analysis. It evaluates how well a scale or questionnaire, for example, can discriminate between different theoretical notions or elements that ought to be separate from one another (Purwanto et al., 2021). Stated differently, it verifies the validity and consistency of the measurement by analyzing whether the latent constructs linked to the observed variables in a measurement model have a stronger correlation with their intended constructions than with other constructs in the model. The Heterotrait-Monotrait (HTMT) ratio is a helpful method for evaluating discriminant validity since it verifies that variables that shouldn't theoretically be connected to one another are, in fact, separate. When HTMT scores are less than 1, the analysis shows that the measurements are successfully differentiating between the targeted constructs, supporting the evidence of discriminant validity (Cheah et al., 2020). In Smart-PLS regression analysis uses one or more independent variables to predict the dependent variable. R-squared shows how much the variability in the dependent variable can be explained by these independent factors. The dependent variable's variance can be fully explained by the independent variables when the R-squared value is 1, while a value of 0 shows that the independent variables have no explanatory power.

TABLE 2. Construct reliability and validity

Constructs/Items	CA	Rho-A	CR	AVE
Farmers' Willingness to Adopt New Agricultural Technologies	0.915	0.923	0.937	0.748
Government Support	0.859	0.863	0.915	0.781
Hedonic Motivation	0.897	0.905	0.936	0.829
Personal Innovativeness	0.919	0.919	0.949	0.860
Social Influence	0.722	0.745	0.844	0.645

Note: CR=composite reliability; AVE=average variance extracted; CA= Cronbach's Alpha

TABLE 3. Discriminant validity

	FMAT	GS	HM	PI	SI
Farmers' Willingness to Adopt New Agricultural Technologies	0.865				
Government Support	0.542	0.884			
Hedonic Motivation	0.750	0.708	0.911		
Personal Innovativeness	0.773	0.637	0.711	0.927	
Social Influence	0.674	0.673	0.639	0.748	0.803

TABLE 4. Assessment of R square

	R^2
Farmers' Willingness to Adopt New Agricultural Technologies	0.678
Personal Innovativeness	0.592

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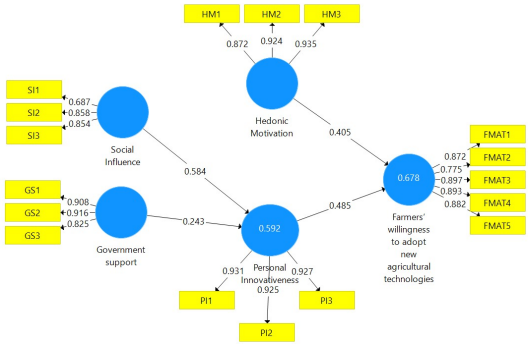

FIGURE 2. Measurement model analysis

Structural Model

The structural model's coefficients were statistically determined using the PLS-SEM bootstrapping technique in order to demonstrate the support for the proposed linkages. SEM, or structural equation modeling, is a potent statistical technique that is used to examine complex relationships between independent and dependent variables. By combining components of route analysis, regression analysis, and factor analysis, it efficiently evaluates both measurement and structural models ((Cheah et al., 2020); (Purwanto, 2021); (Purwanto et al., 2021)). Specifically, one technique used in structural equation modeling (SEM) is direct analysis, which explores the direct correlations between variables as stated in the theoretical model. Without taking into account mediating or indirect effects through intermediary factors, it concentrates on the direct impact of independent variables on dependent variables. The analysis's findings show important and constructive correlations between a number of important variables. Three models of structures, and three structural models are used: the direct relationship structural model, the mediation structural model, and the structural model with moderating variables. The structural model route coefficients that supported the postulated relationships were statistically determined using the PLS-SEM bootstrapping approach. The structural equation model (SEM) is an example of a statistical model that shows the relationships between a set of latent variables and their observable indicators or variables ((Cheah et al., 2020); (Purwanto, 2021); (Purwanto et al., 2021)). A useful and flexible statistical method for evaluating complex theoretical models and hypotheses is the structural equation model. By utilizing factor analysis, regression analysis, and path analysis, structural equation modeling generates a comprehensive model that can account for both the direct and indirect interactions between variables. According to(Purwanto, 2021), the variables in the model are divided into two categories: latent variables, or unobserved elements believed to underlie the observed variables, and observable variables, or the variables that are measured.

When a mediator or intermediary variable intervenes to impact or mediate the link between an independent variable and a dependent variable, this is known as a mediating effect, also known as an indirect influence (Hair, Risher, Sarstedt, & Ringle, 2019). To put it another way, the mediating variable illuminates the underlying mechanisms of the independent variable's influence on the dependent variable by explaining how or why it does so. (Purwanto, 2021) states that when there is a shaky or inconsistent relationship between the independent and dependent variables, a moderator variable usually becomes relevant. Moderating effects can be evaluated using a variety of techniques, such as the three-phase hegemonic regression methodology, which necessitates the manual creation of interaction terms via feature conversion and computation (Hair et al., 2019).

According to (Purwanto, 2021), the main goal of the mediation test was to identify the mediating variable that enhanced the impact of the independent variable on the dependent variable. A variety of techniques have been used for mediation testing, such as the Sobel test (Sobel, 1982), (Baron & Kenny, 1986), and bootstrapping (Hair et al., 2019). As a result, from the standpoint of the current study, the researchers used the bootstrapping, or resampling, mediation strategy to examine the indirect effect of each prospective variable. According to Hair et al. (2019), most researchers also discovered that future researchers were growing increasingly interested in bootstrapping a non-parametric resampling methodology because it is one of the most complete and successful ways to ascertain whether the mediation effect is there. According to Hair et al. (2019), PLS-SEM is the best option for bootstrapping in mediation research, however, it may be utilized with smaller sample sizes as well. When evaluating the

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mediation effects, researchers ought to bootstrap the sampling distribution of the indirect effects that work for simple and numerous models, advise. Cheah et al. (2020); Hair et al. (2019); (Purwanto, 2021); Purwanto et al. (2021) concur with this. This study employs an approach that entails determining the route coefficients using the PLS algorithm first, then obtaining the t-values by bootstrapping and determining whether there are direct relationships between the independent and dependent variables before evaluating the mediation impact. A test of moderation was carried out, according to Hair et al. (2019), to ascertain which moderator variable affects the direction or intensity of the relationship between the independent and dependent variables.

Table 5 shows that "Social influence" has a significant impact on "farmer's willingness to adopt new agriculture technologies" (β = 0.584, t = 12.093, p = 0.000). Government support has a significant impact on "farmer's willingness to adopt new agriculture technologies" (β = 0.243, t = 4.743, p = 0.000). Personal innovativeness has a mediating impact between social influence and "farmer's willingness to adopt new agriculture technologies" (β = 0.368, t = 8.374, p = 0.000). Personal innovativeness has mediating impact between government support and "farmer's willingness to adopt new agriculture technologies" (β = 0.153, t = 4.255, p = 0.000). Personal innovativeness has a significant impact on "farmer's willingness to adopt new agriculture technologies" (β = 0.629, t = 11.845, p = 0.000). Hedonic motivation has a moderating impact on personal innovativeness and "farmer's willingness to adopt new agriculture technologies" (β = -0.182, t = 2.163, p = 0.031). All hypotheses are accepted.

TABLE 5. Direct and indirect relationship

	Relationships	Original Sample	T Statistics	P Values	Decision
H1	Social Influence -> Personal Innovativeness	0.584	12.093	0	Supported
H2	Government support -> Personal Innovativeness	0.243	4.743	0	Supported
H3	Social Influence -> Personal Innovativeness -> Farmers' willingness to adopt new agricultural technologies	0.368	8.374	0	Supported
H4	Government support -> Personal Innovativeness -> Farmers' willingness to adopt new agricultural technologies	0.153	4.255	0	Supported
H5	Personal Innovativeness -> Farmers' willingness to adopt new agricultural technologies	0.629	11.845	0	Supported
H6	Moderating Effect 1 -> Farmers' willingness to adopt new agricultural technologies	-0.182	2.163	0.031	Supported

DISCUSSION

The goal of the current study was to determine how social capital theory, government support, and personal innovativeness among farmers in Indonesia's South Kalimantan Province would affect "farmer's willingness to adopt new agriculture technologies". It also examined the mediating role of hedonic motivation and the moderating role of personal innovativeness.

The first hypothesis was social influence has a significant impact on "farmer's willingness to adopt new agriculture technologies". Current research studies have once again demonstrated the significant impact of external factors, such as social influence from peers and relatives, on an individual's propensity to adopt new agricultural technologies. The environment in which people live serves as a resource and encourages system use. This outcome is consistent with other research Channa et al. (2019), which showed that a stronger social influence in support of agricultural

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technology use will increase the likelihood of adopting them for agriculture. It was also believed that hedonic drive affects an individual's propensity to accept novel agricultural methods. This study provides strong, positive support for the idea. The outcome is consistent with earlier studies Gao et al. (2020); Han et al. (2022), suggesting that a user's level of enjoyment positively influences the system they select. Other than extension workers, farmers are more likely to trust members of their social circles, such as friends, family, and relatives. Farmer preference will undoubtedly go to social influence when both promotional strategies are used simultaneously, particularly if the content of the promotions is inconsistent. Therefore, social influence and extension services have a negative interaction effect, which means that farmers' adoption of new agricultural technologies is impacted less by them. Another hypothesis was government support has significant impact on farmer's willingness to adopt new agriculture technologies. This result is in accordance with previous research Elahi et al. (2022), which found that government policy support can have a significant impact on farmers' willingness to adopt new agricultural technologies. The conclusion obtained is in conflict with other studies and supports earlier research findings ((Gao et al., 2020); (Han et al., 2022)). Since the Internet is the newest technology, it needs infrastructure, which is still out of reach for most farmers. Thus, the likelihood of adopting new agricultural methods increases with the level of facilitating conditions.

The mediating hypothesis was personal innovativeness has a mediating impact between social influence and "farmer's willingness to adopt new agriculture technologies". Personal innovativeness has a mediating impact between government support and farmers' willingness to adopt new agriculture technologies. social influences the propensity to use the Internet as expected, which validates previous studies (Cofré-Bravo et al., 2019). According to Caffaro et al. (2020), innovativeness contracts had the biggest impact on farmers' readiness to accept new agricultural technologies. In a similar vein, the hypothesized association between personal innovativeness and trust proved to be substantial in this investigation. This finding was found to be congruent with the research done by Vecchio et al. (2022), suggesting that the Internet is strengthened by the inventiveness of agricultural technologies. Furthermore, this study supported the hypothesis by showing that creative individuals are more likely to use new technology. This is also consistent with other research Tri et al. (2019), which found a relationship between individual inventive traits and technology adoption. Therefore, a farmer's inclination to embrace new agricultural technologies will increase with their level of innovation. Regarding the moderating role, it was believed that the relationship between farmers' willingness to accept new agricultural technologies, government backing, and societal impact is strongly moderated by the facilitating condition. The current analysis supports the notion that the moderating effect of personal innovativeness is in line with the findings of Patil et al. (2020). The fourth hypothesis was personal innovativeness has a significant impact on "farmer's willingness to adopt new agriculture technologies". Previous findings are satisfied by the strong and positive association between innovativeness and farmers' desire to accept new agricultural technologies, suggesting that innovativeness has a major impact on farmers' willingness to adopt new technologies ((Wang et al., 2020); (Zheng et al., 2019)). More specifically, when a farmer has access to more helping conditions like an Internet connection, helpful pricing support, etc. their readiness to use new agricultural technologies increases.

Lastly, hedonic motivation has a moderating impact on personal innovativeness and "farmer's willingness to adopt new agriculture technologies". Furthermore, hedonic motivation means that successful users who receive immediate benefits, particularly important stakeholders determine the degree of adoption and impact of new technology (Bopp et al., 2019); (Khatimah et al., 2019). Hedonistic incentive, on the other hand, is crucial for accepting and utilizing technology ((Brown et al., 2021); (Van Hecken et al., 2019). Moreover, habits have an impact on one's readiness to accept new agricultural methods. The propensity to accept new agricultural methods is comparable to habit and social influence. The amount of work individuals believe it will take them to embrace new agriculture technology is another factor influencing their willingness to use the new technologies, and this study clearly supports this belief. This is consistent with other literary works and suggests that the likelihood of new agricultural technologies being used by users increases with their ease of adoption (Choi & Johnson, 2019). Our research provided empirical evidence in favor of the roles played by novelty seeking, situation-specific hedonic motivation, and "farmer's willingness to adopt new agriculture technologies". Hedonic motivation's impact on f"farmer's willingness to adopt new agriculture technologies" was not well supported by Al-Azawei and Alowayr (2020). According to Van Hecken et al. (2019), farmers who are interested in implementing new technologies on their property are more likely to be willing to accept these innovations.

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CONCLUSION

The aim of this paper was to investigate the social capital theory and social influence, government support among farmers in Indonesia's South Kalimantan Province would affect "farmer's willingness to adopt new agriculture technologies". The study confirms the mediating role of hedonic motivation and the moderating role of personal innovativeness. Our research confirms that social capital theory plays a crucial role in influencing farmers' decisions to adopt new agricultural technologies. The relationships, mutual trust, and pooled resources in their social networks are critical factors in determining how much technology is adopted. Government support in the form of programs and legislation also has a significant impact because it can help or impede the advancement of technology. Farmers' desire to participate in this transformative process is significantly influenced by the pleasure and satisfaction they gain from adopting new technologies, as indicated by the mediating effect of hedonic motivation. Furthermore, there is a notable positive benefit of social influence on farmers' inclination to embrace novel agricultural technologies. Support from the government has a partial bearing on how likely farmers are to accept new technologies. Moreover, our study reveals the moderating influence of individual inventiveness. Different farmers would react differently to the same enabling environment and government support, highlighting the need for customized approaches to technology adoption based on human traits. This emphasizes how crucial it is to acknowledge the diversity present in the farming community and adjust policies appropriately.

In theoretical terms, this study has made three major contributions: it has created a new framework, a new model with novel elements, and new findings. In the first place, this study offers fresh quantitative insights into the factors that precede farmers' readiness to adopt innovative farming technologies. The adoption research in the social capital theory that Thomas and Gupta (2021) highlighted has been covered in this study, especially concerning farmers' acceptance of new agricultural technologies in agricultural industry research in developing nations like Indonesia. To the best of the investigator's understanding, no empirical studies have been found about farmers' willingness of new agricultural technologies in Indonesia thus far. For example, farmers' desire to adopt new agricultural technologies is considered negligible, unless they are trying to see how inventive they are on a personal level. This is because adopting new technologies requires a private investment by agriculturists. The desire of "farmer's willingness to adopt new agriculture technologies" and their purpose to do so are frequently not linked, and study on the individual's innovativeness about the technology has primarily been done in other industries.

The results of this study have important ramifications for Indonesian politicians as well as other agricultural development organizations. It emphasizes the necessity of focused government assistance in the form of infrastructure and money as well as the establishment of favorable conditions for farmers to build their social capital. Policymakers must prioritize the development and reinforcement of networks and cooperation within farming communities. Programs for technology adoption and agricultural extension services should consider farmers' differing degrees of personal inventiveness. Customized education, knowledge sharing, and assistance systems can boost these initiatives' efficacy and encourage wider use of innovative farming technology. By examining the nuances of technology adoption among farmers, this study provides a foundation for further investigations. Subsequent research endeavors may aim to further explore the particular elements that impact the growth of social capital theory with hedonic motivation, and personal innovativeness in diverse agricultural communities. Greater productivity and economic expansion in rural regions can result from the widespread use of new agricultural technologies. The potential of these technologies to reduce poverty, enhance farmer livelihoods, and improve the socioeconomic environment as a whole should be acknowledged by policymakers.

Limitations and future research include the spatial exclusivity of the research limits how broadly its conclusions can be applied, emphasizing the necessity for comparison studies involving a range of places in order to consider regional inequalities. Furthermore, this study's cross-sectional approach presents a static picture of the adoption process; longitudinal studies could be useful in future research to capture the dynamism of technology adoption across time. Additionally, the lack of causal links and potential measurement and sample biases highlight the significance of adopting experimental designs, representative samples, and more accurate measuring instruments. Future studies in this area could examine the cognitive biases that affect farmers' choices, assess the efficacy of particular government regulations, and investigate how adopting new technologies affects the environment. Furthermore, examining the relationship between social capital theory and the intersections of demographic variables and developing agricultural technologies is a worthwhile line of inquiry that will hopefully lead to a more thorough understanding of farmers' adoption of new technologies.

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