TECHNIUM
SOCIAL SCIENCES JOURNAL

Technium.

46/2023

2023

A new decade for social changes

Technium Social Sciences

Powered by PLUS COMMUNICATION
International Communication & PR

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

Influences of social environment on farmers' behavioural to practice an agricultural technology, screenhouse: An application of social cognitive theory

Nailul Hikmah[1], Sarwiti Sarwoprasodjo[2], Kurnia Suci Indraningsih[3]

[1]Student of the Development Communication Magister Program, Faculty of Human Ecology, IPB, [2] Lecturer at the Faculty of Human Ecology (FEMA), Bogor Agricultural Institute (IPB), Indonesia, [3] Researcher at The Research Center for Social Welfare, Villages and Connectivity, BRIN, Indonesia

Email nay232999nailul@apps.ipb.ac.id, naylataufiq@gmail.com, sarwititi@apps.ipb.ac.id, kurniasuci@yahoo.com

Abstract. Climate change has a high impact on the agricultural sector, especially horticulture farming which aims to increase the welfare of farmers. Screenhouse technology can be a solution to increase the productivity and quality of agricultural products. This study is aimed to analyse the behaviour of farmers in imitating the model of applying the screen house for horticultural crop cultivation (decorative plants and vegetables) and to analyse the factors that influence farmer behaviour in imitating the model of applying the screen house for the cultivation of horticultural crops (decorative plants and vegetables). This study used the Social Cognitive theory by Albert Bandura. The research was conducted using a quantitative approach to the survey method. Data were taken through interviews using a questionnaire to 70 farmers who already knew or did not know screenhouse technology and were analysed using Partial Least Square (PLS) Structural Equation Modeling (SEM). The results showed that the influence of personal factors on the behaviour of applying screen house technology was 0.572, the influence of environmental factors on farmer behaviour was 0.255, personal factors had an influence on environmental factors by 0.595, and personal factors were mediated by environmental factors on farmer behaviour by 0.152. This study concluded that there was a real influence between personal factors on environmental factors, personal factors on farmer behaviour, environmental factors on farmer behaviour, and personal factors on farmer behaviour mediated by environmental factors.

Keywords. Learning Communication, Horticulture, Screenhouse, Social Cognitive Theory

1. Introduction

The agricultural sector plays an important role in Indonesia's development structure. This is supported by the large and diverse potential of natural resources, the share of national income which is quite large, and the large population of Indonesia which depends on the agricultural sector, and places them in the supply of food for the community. Referring to SDGs point 2 to end hunger, achieve food security, improve nutrition and promote sustainable agriculture (Bappenas, 2020), agricultural development and innovation need to be continuously carried out to increase agricultural productivity and quality.

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

The development of the agricultural sector is directed at increasing the production and productivity of agricultural businesses to improve the welfare of the farming community. Horticultural crop agriculture is one of the agricultural commodities that has the potential and opportunity to be developed so that it becomes a superior product that can improve the welfare of farmers in Indonesia, both horticultural products which are classified as fruits, vegetables, medicines and ornamental plants. In the first and second quarters of 2021, the horticulture sub-sector recorded growth of 3.01% and 1.84%. This indicates a very good contribution of the horticulture sub-sector to the structure of the National GDP (KemenkoPerekonomian, 2021)

The agricultural sector on the other hand is experiencing several problems such as a long rainy season, less efficient sunlight (King et al. 2016 Rochdiani et al. 2017 Aditya et al. 2021) and attacks from pests that can increase the risk of crop failure (Ardiansyah et al., 2019). The Food and Agriculture Organization (FAO) in 2021 reported that attacks by plant diseases and pests reduced global crop production by up to 40 per cent. Annually, global economic losses are estimated at more than 220 billion dollars due to plant diseases coupled with losses from invasive insects which reach 70 billion dollars. Moreover, climate change has impacts on food, water, air, infrastructure, agriculture, ecosystems, and livelihoods (Firdaus et al., 2019; Firdaus et al., 2020; Hergenhahn & Olson, 2008). Extreme climate events can cause (a) crop failure, decreased cropping index (IP) which leads to decreased productivity and production, (b) damage to agricultural land resources, (c) increased frequency, area, and weight/intensity of drought, (d) increased humidity, and increased intensity of disturbance of plant pests (OPT) (Sudarma & As-syakur, 2018). As stated by Kemausuor et al. (2011), The impact of climate change on several economic elements is estimated to include decreased crop yields, decreased marginal contribution of gross domestic product (GDP) from agriculture, changes in the geographical distribution of trade regimes, increased numbers of people at risk of hunger and food security, and migration and civil unrest. Research result from Ojo dan Baiyegunhi (2021) further shows that the net income of smallholder agriculture is sensitive to marginal changes in both temperature and rainfall.

Adaptation behaviour to the impacts of climate change needs to be carried out to increase the capacity of farmers so that prosperous and prosperous farmers are created. It's very important to have environmental awareness related to climate change (Amelia & Sudibyo, 2023). The application of climate-smart agriculture will result in a more productive farming system (June & Sarvina, 2023) one of them is by applying simple technologies such as the use of simple shade houses for farming. The use of screenhouses, in addition to protecting plants from attacks by pest-carrying insects, because screenhouse covers in the form of perforated screen nets can also protect plants from the effects of climate change. Precipitation can still enter the plantings, but in fine grains, so as not to damage the plants and the growing media. Several studies in semi-arid areas have shown that plants grown in screenhouses experience a significant increase in production compared to crop cultivation in open fields (Abdel-Mawgoud, El-Abd, Singer, Abou-Hadid, & Hsiao, 1996; El-Gizawy, Abdallah, Gomaa, & Mohamed, 1993; Kitta, Katsoulas, & Savvas, 2012; Kittas, Kat-soulas, Rigakis, Bartzanas, & Kitta, 2012; Leonardi, Baille, & Guichard, 2000 Leyva et al., 2015). Research conducted by Sethi et al. (2009) in India showed an increase in production of 37.6% in eggplants cultivated in screenhouses. The benefits of screenhouse cultivation are also on the quality of crop yields such as the quality of the tomatoes produced by cultivating in the screenhouse which have a strong aroma, a more prominent sweet and sour taste, and larger tomato sizes. (Lee et al., 2019). Screenhouse is an economical plant protection house because it has a simple structure, a

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

framework in the form of wooden or iron pillars for support with walls and a roof in the form of screens (Duhardiyanto, 2009).

The ability to adapt is, of course, inseparable from the factors that influence farmer behaviour, especially those that include farmer characteristics such as age, level of education, number of dependents, length of business, other businesses, income, and other external factors. (Yanfika, Nurmayasari, dan Viantimala, 2020 Suca et al., 2019). A recent meta-analysis suggests that self-efficacy, outcome efficacy, negative affect, and descriptive norms have the strongest relationships with behaviours that individuals can engage in to respond to climate-related hazards (van Valkengoed and Steg, 2019a; Darsini et al., 2019). Recent research surveying the views of development practitioners concerned with climate change adaptation suggests broad agreement that adaptation needs to move beyond a focus on information provision, and instead become embedded in processes that support learning (Ensor & Harvey, 2015). Research that has been carried out by describing the adaptation behavior of climate change impacts that needs to be done one of which is to increase the effect of communication (Carman & Zint, 2020)

Bandura (1977) stated that interpersonal communication can be done as an effort to increase individual knowledge and skills. In his theory of social learning (social learning theory), Bandura shows that a person's behaviour can be influenced through observation and direct experience that is socially mediated. This shows that Albert Bandura's social learning strategy can be applied to increasing the capacity of farmers for climate-smart agriculture, namely being able to adapt to the impacts of climate change.

The process of learning communication carried out by farmers in imitating the behaviour of farmers applying screenhouses, as an adaptation step for horticultural farmers in dealing with climate change, is an interesting thing to study. This study aims to analyze the learning process of farmers in applying the screenhouse for horticultural crop cultivation (ornamental plants and vegetables) and analyze the factors that influence farmer behaviour in imitating the model of applying screenhouse for horticultural crop cultivation (ornamental plants and vegetables).

2. Methodology

This study used a quantitative approach with a survey method which is explanatory research, namely research that aims to describe the observed variables, then evaluate and explain the relationship between research variables through hypothesis testing (Singarimbun & Effendi, 2016) and takes a sample from one population and uses a questionnaire as a data collector (Effendi & Tukiran, 2014). Data were collected through interviews techniques using a structured questionnaire. The research was conducted in Pacet District, Cianjur Regency. Sampling was carried out using a nonprobability sampling technique using an accidental sampling method so that a total sample of 70 farmers was obtained. Data were analyzed using Partial Least Square (PLS) Structural Equation Modeling (SEM) .

The research hypothesis is described as follows:

1. Farmers' personal factors influence farmers' behaviour in imitating the model of applying screenhouses in agriculture.
2. The environmental factors of individual farmers significantly influence the behaviour of farmers in imitating the model of applying screenhouses in agriculture.
3. Farmers' personal factors influence farmers' environmental factors in imitating the model of applying screenhouses in agriculture.

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

4. Result and Discussion

Albert Bandura's Social Cognitive Theory

Social cognitive theory, a theory previously known as social learning theory, developed by a psychologist, Albert Bandura. In his book, "Social Learning Theory" in 1977, Bandura revealed that each individual learns new behavior through an observation and imitation of something that is observed. The occurrence of new behavior changes in this process is behavior is controlled and shaped by personal cognition within a social environment (Bandura, 1997; Cai et al., 2023). Personal factors are individual characteristics that exist in individuals (Bandura, 1977).

Bandura (1986 & 2001; Rasit et al., 2015) explains the personal factor which covers cognition, emotions, perceptions, notions as well as internal knowledge which affect self-efficacy as an intervening factor of behaviour. The environment factor shapes the interaction involving the source of model representation and social norms of the community which may influence other people.The behaviour factor includes all actions, choice of decisions and verbal expressions of an individual through his skills and practice (Bandura, 2001; Antley, 2010; Rasit et al., 2015). Bandura (1986; Rasit et al., 2015) argues that cognition plays a role in determining the level of self-efficacy and shapes individual behaviour which may control the environment. Likewise, environment may also have an influence on behaviour formation. Cognitive social theory emphasizes the role of modeling, that is, individuals learn through observing others and acquire new skills through interaction with the environment and other people. According to social learning theory, the influence of modeling results in learning primarily through their informative function.

Characteristics of Respondents

Respondents in this study amounted to 70 farmers with male sex dominance as many as 67 farmers and 3 female farmers. The most aged respondents were in the adult category, namely 26-45 years as many as 35 farmers, in the old category as many as 28 farmers, in the elderly category as many as 4 farmers, and in the young category as many as 4 farmers. Farmers' arable land area was grouped into 4 categories, namely very narrow (0 – 2500 m2) by 39 farmers, narrow (2501 – 5000 m^2) by 15 farmers, wide (5001 – 7500 m^2) by 8 farmers, and very large (> 7500 m^2) as many as 8 farmers. Commodities planted included 18 farmers of ornamental plants, 47 farmers of leaf vegetables, 30 farmers of fruit vegetables, 24 farmers of root vegetables, 19 farmers of flower vegetables, and 1 farmer of medicinal plants. Types of farming carried out include the production of 63 farmers and the hatchery of 7 farmers. Sales of harvests were carried out through two types, 16 farmers sold directly to the market, 51 farmers took the crops from middlemen, and 3 farmers did both. Agricultural land is cultivated by farmers with 44 ownership rights, 44 leases, 13 profit sharing, and 8 farmers own cultivated land in the form of pawns.

Farmers' Behavior Using Screenhouse Technology

Behaviour is the result in the form of effects/responses produced from the learning process through observation of information/knowledge which is analyzed and managed by individual cognitive functions is influenced by biological factors, genes, and hormones and is motivated by expectations of conditions in the future by considering the strengthening process/reinforcement so that it guides certain actions according to the desired goals (Bandura 1977). In this study, farmer behaviour is in the form of practice and self-efficacy. Behavior is a series of actions made by individuals, organisms, systems or artificial entities in relation to

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

themselves or their environment which includes other systems or organisms in their surroundings as well as the physical environment (Hemakumara & Rainis, 2018). According to Minton dan Khale (2014) Behavior is the computed response of a system or organism to various stimuli or inputs, whether internal or external, conscious or subconscious, overt or covert, and voluntary or involuntary. Individual behavior can change and be influenced by his own behavior which is determined by skills, practice, and self-efficacy (Bandura 1977; Nurkasanah 2022).

Practice is the act of farmers using screenhouses based on their ability and mastery in processing information about screenhouses in the form of frequency of use and sustainable use (Bandura 1977). According to Fitriani et al. (2019) Practice is training in understanding material and then applying it through activities according to the material presented. In this study, the practice in question is the application as a result of the learning process of capturing modeled information.

In the application of information managed by farmers, confidence in doing so is an important attribute. Self-efficacy refers to a person's belief in his personal ability to make changes, which determines what actions individuals will choose, how long they will persist in the face of resistance and their resilience to bounce back following setbacks. (Melkote & Singhal, 2021). High self-efficacy not only leads individuals to increase behavioral goal setting but also makes greater resistance in following their behavior. Therefore, behavior change is possible through a sense of personal control over behavior.

People do not model every behavior they observe but rather need to be motivated to do that behavior. Motivation is influenced by outcome expectations and self-efficacy. Outcome expectation refers to the belief that a particular behavior will lead to the desired result (Littlejohn et al., 2017). The greater their foresight, proficiency, and self-influence, all of which are skills that can be acquired, the greater their progress toward their goal. The stronger the ownership of self-efficacy that is instilled, the bolder the behavior that will be produced (Bandura, 1977).

Table 1 Percentage of Farmer Behavior Using Screenhouse Technology

Rating Category	Practice	Self-Efficacy
	%	%
Very High	13,00	33,00
High	21,00	36,00
Low	7,00	23,00
Very Low	59,00	9,00
Total	100	100

The majority of farmers' practice level in applying screenhouse technology is in the very low category, namely as many as 41 farmers, as many as 5 low farmers, as many as 15 high farmers, and 9 farmers fall into the very high category. 29 farmers have practised or implemented screenhouse technology and 41 farmers have not. The self-efficacy assessment in the very high category was 23 farmers, 25 farmers were high, 16 farmers were low, and 6 farmers were in the very low category.

The personal component includes all the characteristics of the self that have been built from the past to the present. Personal factors play an important role in influencing how a person behaves, including all of Bandura's unique individual expectations, beliefs, and personality characteristics (1986 Abdullah 2019). According to Bandura (1977), personal factors refer to the process of understanding and awareness of the information received and managed with the help of motivation in receiving it such as perception, attention, memory, attitudes and thought

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

processes. Personal factors can determine individual decisions about external influences to be observed, events to be felt, events that have lasting effects, thinking about an event, and information to be used in the future.

Individual beliefs and attitudes can influence their behavior by shaping their goals and expectations. In turn, their behavior can strengthen or challenge their beliefs and attitudes, leading to changes in their cognitive processes over time. Personal factors consisting in the form of cognitive, affective, and biological events can influence the actions produced by individuals (Bandura, 2001). In this study, personal variables have indicators on the level of knowledge, motivation, attitude, and age of farmers in imitating new behaviors. Mubarak (2011 Darsini et al. 2019) defines knowledge as everything that is known based on human experience itself and knowledge will increase according to the process of experience experienced. In line with the definition of knowledge by Bandura (1977) namely symbols that are understood through thought processes about individual events and experiences so that they can be useful in solving problems in the future. Knowledge is associated with information that is known by individuals based on their experiences. This refers to the observation process carried out by farmers in imitating the application of new technology.

Motivation is defined as a person's expectation that a certain behavior will lead to a certain result (Bandura, 1977). Motivation greatly influences individuals in showing certain actions (Bandura 1991 Bandura 2001). Attitudes are defined as feelings and emotional reactions to people, places, things, or things that have been associated with the emotional experiences that are modeled (Bandura, 1977). The environment in reciprocal determinism refers to social situations or conditions around individuals that can influence the production of certain actions in the form of events/experiences that can be analyzed through the five senses (a person's characteristics, social cues, other people's actions, stimuli/models, one's experience, common experience) (Bandura, 1977). The environmental component consists of the physical environment around the individual that has the potential to reinforce stimuli, including the social environment, namely the presence of people (Abdullah, 2019). Factors that can be included are things like the people the individual interacts with, the places they visit, the media they consume, and the social norms and expectations of their community. Menurut Luszczynska and Schwarzer (2005; Shahangian et al., 2021).

Table 2 Percentage of Farmers' Personal Factors in the Application of Screenhouse

Rating Category	Knowledge	Motivation	Attitude
	%	%	%
Very High	3,00	23,00	19,00
High	31,00	29,00	43,00
Low	53,00	26,00	23,00
Very Low	13,00	23,00	16,00
Total	100	100	100

Farmers' knowledge of screenhouse technology with a very high category of 9 farmers, a high category of 37 farmers, a low category of 22 farmers, and a very low category of 2 farmers. Farmers' motivation level was categorized as very high with 16 farmers, high category with 20 farmers, a low category with 18 farmers, and very low with 16 farmers. Assessment of attitude is categorized as very high as many as 13 farmers, as many as 30 farmers as high, as many as 16 farmers as low, and as many as 11 farmers are very low.

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

Environmental factors refer to the barriers and facilitators that exist in living situations, political systems, the environment, or the economy. The model/figure used as an example according to Bandura, (1977) interpreted as the characteristics and actions (gestures and behavior) of other individuals who are used as models/stimuli by observers. In line with this Sarwono 2005 (Nurkasanah, 2022) revealed that to change or educate the public, it is often necessary to influence figures, community leaders or models in society.

Measurements used in assessing the model include social status, competence, intellectuality, and age of the model (Bandura, 1977). Social status is described as the condition of a person or a society in terms of the economy, the picture is like the level of education, income, and employment (Indrawati, 2015). The definition of intellectual ability is contained in an attitude of intelligence (intelligent behavior) which includes introducing knowledge and information to a broader understanding, memory, the precise application of learning from the situation that is taking place, the speed of giving answers in solving and the ability to solve problems, and the overall action of placing everything balanced and efficient (Putri, 2016). Competence concerns the authority of each individual to carry out tasks or make decisions according to their role in the organization that is relevant to their expertise, knowledge and abilities. (Vernia & Sandiar, 2020).

Access to a positive and supportive community can help a person model good behavior and strengthen self-confidence.(Bandura, 1977). The significant impact of community access on expected results shows that positive comments from others about a new technology increase perceptions of the effectiveness and quality of the technology applied (Rana & Dwivedi, 2015). Access in the group includes the frequency of farmers' presence in participating in group activities and the existence of reinforcement within the group.

Table 3 Percentage of Farmers' Environmental Factors in Screenhouse Implementation

Rating Category	Model	Community Access
	%	%
Very High	23,00	24,00
High	31,00	29,00
Low	9,00	26,00
Very Low	37,00	21,00
Total	100	100

Assessment of environmental factors in this study was carried out through farmers' perceptions of models or figures that were emulated and access to the farming community. Perceptions of farmers in the model used as an example include a very high category of 16 farmers, a high category of 22 farmers, a low category of 6 farmers, and a very low category of 26 farmers. The community access level of 17 farmers is categorized as very high, 20 farmers are in the high category, 18 farmers are in the low category, and 15 farmers are in the very low category.

The Influence of Personal and Environmental Factors on Screenhouse Implementation Behavior

Evaluation of the measurement model has several requirements that must be met, including a convergent validity test, model reliability test and discriminant validity test. The convergent validity test can be seen from the value of the indicator factor loading > 0.5 and the AVE value of each latent variable > 0.5. Figure 1 shows that all indicators have a loading factor

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

value of > 0.5, meaning that all of these indicators meet the convergent validity requirements. In addition, Table 1 also shows the AVE value > 0.5 for each latent variable, so it can be concluded that the model meets the convergent validity requirements.

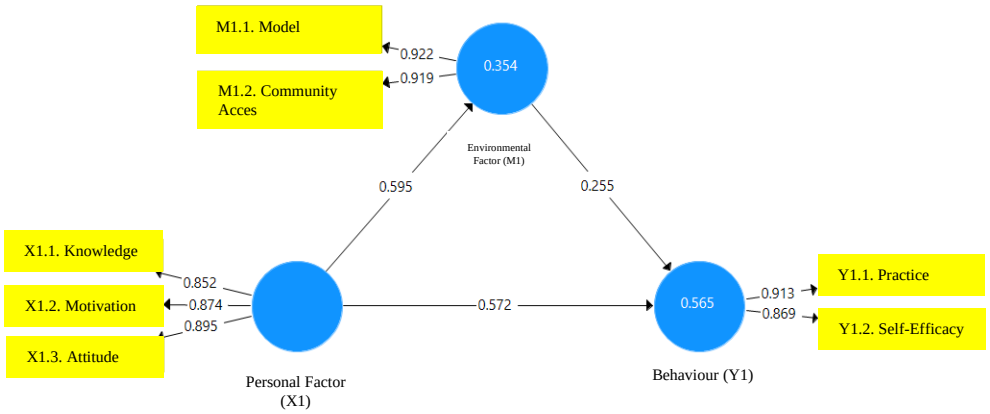

Figure 2 Loading factor in the measurement model

Table 4 Value of Average Variance Extracted (AVE), Composite Reliability and Cronbach's Alpha

	Average Variance Extracted (AVE)	Composite Reliability	Cronbach's Alpha
Environmental factor (M1)	0.847	0.917	0.820
Personal factor (X1)	0.764	0.907	0.847
Behaviour (Y1)	0.794	0.885	0.743

The next measurement is the reliability test of the model used to prove the accuracy, consistency, and precision of the instrument in measuring latent constructs/variables. A reliability test by measuring Composite Reliability and Cronbach's Alpha on latent variables that have a value of more than 0.7 is said to be reliable. The results of the study are based on Table 4, with Composite Reliability and Cronbach's Alpha values for each latent variable of more than 0.7, meaning that all latent variables have good, accurate and consistent reliability.

Discriminant validity testing is carried out on the principle that different latent variable indicators should not be highly correlated (Ghozali, 2014). The discriminant validity test in Table 5 shows that all indicators have a greater cross-loading value on the latent variable compared to the other latent variables. It can be said that the model meets the discriminant validity requirements. In addition, as a whole it can also be seen from the √AVE value > the correlation value between the latent variables, meaning that the model meets discriminant validity (Table 6).

Table 5 Crossloading Value

	Environmental factor (M1)	Personal factor (X1)	Behaviour (Y1)
M1.1.Model/Figure exemplified	**0.922**	0.556	0.547
M1.2.Community Access	**0.919**	0.540	0.549
X1.1.Knowledge	0.412	**0.852**	0.545
X1.2.Motivation	0.507	**0.874**	0.620

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

X1.3.Attitude	0.613	**0.895**	0.710
Y1.1.Practice	0.559	0.710	**0.913**
Y1.2.Self-confidence	0.497	0.568	**0.869**

Table 3 Correlation value between latent variables and √AVE value

	Environmental factor (M1)	Personal factor (X1)	Behaviour (Y1)
Environmental factor (M1)	**0.920**		
Personal factor (X1)	0.595	**0.874**	
Behaviour (Y1)	0.595	0.723	**0.891**

Note: Numbers with the character "Bold" are √AVE values, the others are correlation values between variables

Structural Model Evaluation

The bootstrapping results in Table 4 show that Personal Factors (X1) have a direct influence on Behavior (Y1) because of the t-statistic > t-table (1.96) or the p-value < 0.05 (5% significance level). Environmental factors also have a significant influence on behaviour (Y1) because the t-statistic value > t-table (1.96) or the p-value <0.05 (5% significance level). Likewise, personal factors have a significant effect on environmental factors (M1) because the t-statistic value > t-table (1.96) or the p-value <0.05 (5% significance level).

The influence of the Farmer's Personal Factors on the Farmer's Behavior is 0.572, meaning that if the increase in Farmer's Personal Factors as measured through Knowledge, Attitudes and Motivation is higher, it will further increase Farmer's Behavior. Likewise, the influence of environmental factors on farmer behaviour is 0.255, meaning that the more environmental factors are measured through exemplary models/figures and the higher access in the community, the more farmer behaviour will improve. In addition, personal factors also influence environmental factors by 0.595, meaning that if the increase in the Farmer's Personal Factors as measured through Knowledge, Attitudes and Motivation is higher, the environmental factors will further increase.

Table 7 Path coefficient values and direct effect t-statistics

	Path Coefficient	T Statistics	P Values
Personal factor (X1)→ Behaviour (Y1)	0.572	5.789	0.000*
Environmental factor (M1)→ Behaviour (Y1)	0.255	2.293	0.022*
Personal factor (X1)→ Environmental factor (M1)	0.595	7.211	0.000*

Note: *) significant effect at the 5% level (T-statistics > T-table (1.96))

Based on Table 8, shows that personal factors have an indirect influence on farmer behaviour through environmental factors with a t-statistic value of 2.094 > t-table (1.96) or a p-value of <0.05 (5% significance level). This shows that Environmental Factors become a mediating variable of influence between Personal Factors on Farmer Behavior. The indirect effect coefficient is 0.152, meaning that the more the personal factor of the farmer increases, the environmental factor of the farmer will increase so indirectly the behaviour of the farmer will also increase.

Technium Social Sciences Journal
Vol. 46, 105-116, August, 2023
ISSN: 2668-7798
www.techniumscience.com

Table 8 Value of path coefficient and t-statistic indirect effect

	Path Coefficient	T Statistics	P Values
Personal factor (X1)→ Environmental factor (M1) → Behaviour (Y1)	0.152	2.094	0.037*

Note: *) significant effect at the 5% level (T-statistic > T-table (1.96))

The environmental factor structural model produces an R-square value of 35.4%, meaning that the diversity of environmental factors that the model can explain is 35.4%, while the remaining 64.6% is explained by other factors outside the model (Table 7). The structural model of Farmer Behavior produces an R-square value of 56.5%, meaning that the diversity of Farmer Behavior that can be explained by the model is 56.5% while the remaining 43.5% is explained by other factors outside the model (Table 9).

Tabel 9 Value of R Square

	R Square
Environmental factor (M1)	0.354
Behaviour (Y1)	0.565

This study shows that personal factors influence environmental factors, personal factors and environmental factors have a positive effect on farmer behaviour in applying screenhouse technology. This is also the same as the results of research (Cai et al., 2023) on environmental and cognitive influences on individual behaviour to reduce disaster risk in geological disaster-prone areas showing that social and cognitive environmental factors influence individual behaviour.

5. Conclusion

There is a real influence between personal factors on environmental factors with the most influential factor being the model used as an example or observed by farmers in applying screenhouse technology, while personal factors on farmer behavior are considered to be significantly related to the dominant factor being the farmer's attitude in observing the model, environmental factors are significantly related to farmer behavior, and personal factors to farmer behavior mediated by environmental factors are also significantly related, but are smaller than the influence of personal factors on behavior directly without mediation. This is in accordance with Social Cognitive Theory, Albert Bandura that in the process of social learning, personal factors, environmental factors, and behavior influence one another.

References

[1] Abdullah, S. M. (2019). Social Cognitive Theory : A Bandura Thought Review published in 1982-2012. *Psikodimensia*, *18*(1), 85. https://doi.org/10.24167/psidim.v18i1.1708

[2] Aditya, F., Gusmayanti, E., & Sudrajat, J. (2021). The Effect of Changes in Rainfall on Lowland Rice Productivity in West Kalimantan. Journal of Environmental Science, *19*(2), 237–246. https://doi.org/10.14710/jil.19.2.237-246

[3] Amelia, M., & Sudibyo, Y. A. (2023). The effect of environmental awareness, the role of accountants, and sustainable development on climate change. *Technium Social Sciences Journal*.

[4] Ardiansyah, S., Perdana, T. N. P., & Permana, F. A. (2019). Social Capital of Gemah Ripah Farmer Group Members in Overcoming Plant Pests and Diseases in Wirowongso

Village, Ajung District, Jember Regency. *SOCA: Jurnal Sosial, Ekonomi Pertanian*, *13*(1), 22. https://doi.org/10.24843/soca.2019.v13.i01.p03
[5] Bandura, A. (1977). *Social Learning theory*. Prentice-Hall, Inc.
[6] Bandura, A. (2001). Social Cognitive Theory of Mass Communication. *Media Psychology*, *3*(3), 265–299. https://doi.org/10.1207/S1532785XMEP0303_03
[7] Bappenas. (2020). *Sustainable Development Goals SDGs*.
[8] Cai, J., Hu, S., Que, T., Li, H., Xing, H., & Li, H. (2023). Influences of social environment and psychological cognition on individuals' behavioral intentions to reduce disaster risk in geological hazard-prone areas: An application of social cognitive theory. *International Journal of Disaster Risk Reduction*, *86*(January), 103546. https://doi.org/10.1016/j.ijdrr.2023.103546
[9] Carman, J. P., & Zint, M. T. (2020). Defining and classifying personal and household climate change adaptation behaviors. *Global Environmental Change*, *61*(December 2019), 102062. https://doi.org/10.1016/j.gloenvcha.2020.102062
[10] Darsini, Fahrurrozi, & Cahyono, E. A. (2019). Knowledge ; Article Reviews. Nursing Journal, *12*(1), 97.
[11] Duhardiyanto, H. (2009). *Houseplant Technologies for Wet Tropical Climates*. Bogor: IPB Press.
[12] Effendi, S., & Tukiran. (2014). *Survey Research Methods*. LP3ES.
[13] Ensor, J., & Harvey, B. (2015). Social learning and climate change adaptation: Evidence for international development practice. *Wiley Interdisciplinary Reviews: Climate Change*, *6*(5), 509–522. https://doi.org/10.1002/wcc.348
[14] Fitriani, R. D., Hendrawijaya, A. T., & Ariefianto, L. (2019). The Role of the Practice Method in Mastering English Language Skills for Training Participants at Lkp Andi'S English Course Buduan, Situbondo Regency. *Learning Community : Jurnal Pendidikan Luar Sekolah*, *3*(1), 49. https://doi.org/10.19184/jlc.v3i1.13573
[15] Ghozali, I. (2014). *Structural Equation Modeling Alteratif dengan Partial Least Square (PLS)*. Badan Penerbit UNDIP.
[16] Hemakumara, G., & Rainis, R. (2018). Spatial Behaviour Modelling of Unauthorised Housing in Colombo, Sri Lanka. *Kemanusiaan the Asian Journal of Humanities*, *2*, 91–107. https://doi.org/10.21315/kajh2018.25.2.5
[17] Hergenhahn, B. R., & Olson, M. H. (2008). Theories of Learning. In *Pearson Education, Inc. Published* (ketujuh). https://doi.org/10.4324/9780080461762-10
[18] Indrawati, E. (2015). *SOCIO-ECONOMIC STATUS AND INTENSITY OF FAMILY COMMUNICATION IN HOUSEWIVES IN PANGGUNG KIDUL, NORTH SEMARANG* *14*(1), 52–57.
[19] June, T., & Sarvina, Y. (2023). *Strategies to Maintain Agricultural Production in Facing Climate Change Climate Smart Agriculture (1 ed.).* Bogor: IPB Press.
[20] Kemausuor, F., Dwamena, E., Bart-plange, A., & Kyei-baffour, N. (2011). Farmers ' Perception of Climate Change in the Ejura-Sekyedumase District of Ghana. *Journal of Agricultural and Biological Science*, *6*(10), 26–38.
[21] Kemenko Perekonomian. (2021). *Horticultural Agriculture*.
[22] Lee, J. H. J., Jayaprakasha, G. K., Avila, C. A., & Crosby, K. M. (2019). Metabolomic studies of volatiles from tomatoes grown in net-house and open-field conditions. *Food Chemistry*, *275*(June 2018), 282–291. https://doi.org/10.1016/j.foodchem.2018.09.091
[23] Leyva, R., Constán-Aguilar, C., Sánchez-Rodríguez, E., Romero-Gámez, M., & Soriano, T. (2015). Cooling systems in screenhouses: Effect on microclimate, productivity and

plant response in a tomato crop. *Biosystems Engineering*, *129*, 100–111. https://doi.org/10.1016/j.biosystemseng.2014.09.018

[24] Littlejohn, S. W., Foss, K. A., & Oetzel, J. G. (2017). THEORIES OF HUMAN COMMUNICATION. In *Waveland Press, Inc.* (eleventh e). https://doi.org/10.1017/CBO9781107415324.004

[25] Melkote, S. R., & Singhal, A. (2021). *Handbook of Communication and Development*. https://doi.org/http://dx.doi.org/10.4337/9781789906356

[26] Minton, E. A., & Khale, L. R. (2014). *Belief Systems, Religion, and Behavioral Economics*. Business Expert Press LLC.

[27] Nurkasanah, A. (2022). *FARMERS' ADAPTATION IN FACING CLIMATE CHANGE BASED ON SOCIAL LEARNING THEORY (Case: Farmers Association Responding to Climate Change, Indramayu District, West Java)*. INSTITUT PERTANIAN BOGOR.

[28] Ojo, T. O., & Baiyegunhi, L. J. S. (2021). Climate change perception and its impact on net farm income of smallholder rice farmers in South-West, Nigeria. *Journal of Cleaner Production*, *310*(April), 127373. https://doi.org/10.1016/j.jclepro.2021.127373

[29] Putri, Y. S. (2016). THE EFFECT OF INTELLECTUAL INTELLIGENCE, EMOTIONAL INTELLIGENCE, AND WORK ENVIRONMENT ON EMPLOYEE PERFORMANCE AT PT. PLN PERSERO KLATEN AREA. Management and Organization Studies, *13*.

[30] Rana, N. P., & Dwivedi, Y. K. (2015). Citizen's adoption of an e-government system: Validating extended social cognitive theory (SCT). *Government Information Quarterly*, *32*(2), 172–181. https://doi.org/10.1016/j.giq.2015.02.002

[31] Rasit, R. M., Hamjah, S. H., Tibek, S. R., Sham, F. M., Ashaari, M. F., Samsudin, M. A., & Ismail, A. (2015). Educating Film Audience Through Social Cognitive Theory Reciprocal Model. *Procedia - Social and Behavioral Sciences*, *174*, 1234–1241. https://doi.org/10.1016/j.sbspro.2015.01.742

[32] Sethi, V. P., Dubey, R. K., & Dhath, A. S. (2009). Design and evaluation of modified screen net house for off-season vegetable raising in composite climate. *Energy Conversion and Management*, *50*(12), 3112–3128. https://doi.org/10.1016/j.enconman.2009.08.001

[33] Shahangian, S. A., Tabesh, M., & Yazdanpanah, M. (2021). Psychosocial determinants of household adoption of water-efficiency behaviors in Tehran capital, Iran: Application of the social cognitive theory. *Urban Climate*, *39*(July), 100935. https://doi.org/10.1016/j.uclim.2021.100935

[34] Singarimbun, M., & Effendi, S. (2016). *Survey Research Methods*. LP3S.

[35] Suca, U. A., Fajar, N. A., Idris, H., Program, M., Ilmu, S., Masyarakat, K., & Sriwijaya, U. (2019). *Analisis Aspek Biologis dan Psikologis Ibu terhadap Stunting pada Balita Keluarga Miskin di Kota Palembang*. *4*(2), 65–69.

[36] Sudarma, I. M., & As-syakur, A. R. (2018). Dampak Perubahan Iklim Terhadap Sektor Pertanian Di Provinsi Bali. *SOCA: Jurnal Sosial Ekonomi Pertanian*, *12*(1), 87. https://doi.org/10.24843/soca.2018.v12.i01.p07

[37] Vernia, D. M., & Sandiar, L. (2020) The Role of Work Competence on Job Satisfaction and Performance. Scientific Journal of Educational Forum, *6*(2), 33–46. https://doi.org/10.5281/zenodo.3737979