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Agriculture Product' Sustainable Growth in Thailand Through Top Management Commitment and Organizational Management: Mediating Role of Eco-Innovation Strategies

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Abstract---The current study addressed the sustainable product development in agriculture industry of Thailand. The objective of this study is to examine the role of top management commitment, organizational management and eco innovation strategies in agriculture sustainable product growth. To achieve this objective, the current study considered quantitative research. While using quantitative research approach, this study preferred cross sectional research design. A sample of 210 respondents were used to examine the relationship between variables. Structural equation modelling was used to analyze the data with the help of partial least square (PLS). Results of the study highlighted the top management commitment and organizational management has substantial role to promote sustainable product in agriculture industry of Thailand. According to the results of the current study, top management commitment and

organizational management has significant influence to promote strategies in agriculture industry. For the promotion of eco innovation strategies, it is important to highlight the commitment of management. It has the ability to enhance sustainable product growth in agriculture industry. This study has major practical insights for the practitioners to enhance sustainable product development in Thailand.

Keywords---agriculture sustainable, eco-innovation strategies, organizational management, product growth, top management commitment.

Introduction

Agriculture industry is an important industry globally (Nakamura, Hattori, & Kariya, 2022; Paramati, Apergis, & Ummalla, 2018) because it has major contribution to the nations through several ways. Majorly agriculture is based on the production of various crops which has influential role to make different products. This industry has important because it is the requirement of the population related to the food as well as various other basic necessities. Different nations based on agriculture has major output from agriculture industry for their economy and for their people. The contribution of this industry to the economic development along with the development of community and society is most significant for people. It has major role to promote economic development of several countries (Bashir, Suhel, Atiyatna, & Ichsan Hamidi, 2019; Paramati et al., 2018), most importantly, the Asian countries such as Pakistan, India and Bangladesh are rich in agriculture and these countries are producing agriculture products which is important to the various other countries. This led to the handsome contribution to the economic development through offering livelihood opportunities.

Along with the other agricultural countries, Thailand is also one of the agriculture-based country producing several agriculture products (Klunbut, Mongkolchati, Ussawarujikulchai, Ounsaneha, & Rattanapan, 2017). Thailand is exporting several agriculture products to various nations and generating significant amount of revenue which has major importance for the economy. Along with the contribution to the Thai economy, the agricultural products produced in Thailand also contributing to the society level through several income generating opportunities, therefore, agriculture sector is also most important for Thailand. However, the agriculture performance of Thailand is not very high as compared to the other Asian countries such as Pakistan, India and Bangladesh. The major product of agriculture in Thailand is rice (Ruaykijakarn, Suwanmaneepong, & Kuhaswonvetch, 2018). Thailand is one of the top nations of rice producer and exporting the rice and various rice products to all nations in the world and with significant importance to gross domestic product. Agriculture is not very much established in Thailand in relation to the various other agriculture products, therefore it is needed to make several strategies to enhance agriculture sector of Thailand. There are several opportunities related to the agriculture which may contribute to this industry, consequently it is needed to

explore opportunities and to promote the opportunities to enhance agriculture performance in Thailand.

Especially in Thailand, the sustainable growth at agriculture product is not stable. There is a significant fluctuation in the performance of agricultural products. To improve higher performance in any business or any product, it is important to have sustainability in the performance (Butti Al Shamsi et al., 2019). It is one of the major issues in Thailand agriculture industry. As several product produced by Thailand has significant quality and meeting the criteria of various other nations, however, this product is lacking in sustainable growth. Hence, the sustainable product in Thailand has major influence on the agriculture industry performance which is needed to address. Although several previous studies have considered agricultural products in Thailand (Khaengkhan, Hotrawisaya, Kiranantawat, & Shaharudin, 2019) and investigated agriculture in several dimensions, however, the previous studies have not considered the sustainable growth of agricultural products in Thailand. The problem of sustainable product growth in Thailand in relation to the agriculture industry is ignored by the previous studies, although, it is one of the most significant parts of agriculture industry which may have significant contribution to the overall agriculture industry performance in Thailand. Therefore, this is an important area to address that is the reason the current study considered agriculture product sustainable growth in Thailand.

The current study recommended that there are several ways to promote agriculture product sustainable growth in Thailand. According to the current study, top management commitment (Yusliza et al., 2019) in agriculture sector has the ability to enhance sustainability in various products. The top management engagement to promote and to develop various strategies for the promotion of products can enhance the level of sustainability in various products. Similarly, the organizational management is another important element (Pokrovskaiia, Petrov, & Molodkova, 2018) which can promote sustainability. Actually, the innovation has key importance in any business activity, particularly, in agriculture sector, the innovation can enhance the sustainability as well as performance. Different companies and various nations are moving towards the development of eco innovation in agriculture. As eco innovation has several benefits along with the benefits for the environment as it is environmentally friendly innovation. The whole eco-innovation is an important element which can promote sustainable growth in agriculture products. According to the current study, eco-innovation (Geng, Lai, & Zhu, 2021) can be promoted in agriculture with the help of top management commitment along with the organizational management activities. Therefore, top management commitment, organizational management and eco innovation strategies has the ability to promote sustainable product growth in Thailand. Hence, the objective of the study is to examine the role of top management commitment, organizational management and Eco innovation strategies in agriculture product. Several studies in the literature considered agricultural products in relation to the Thailand along with the other nations, but the previous studies ignored the relationship between top management commitment, organizational management, eco innovation strategies and sustainable growth of agricultural products in Thailand.

Literature review

This section of the study is based on the review of literature in relation to the relationship discussed in the current study and presented in Figure 1 as theoretical framework of the study. Two independent variables namely; top management commitment and organizational management is considered along with eco innovation strategies which is considered as mediating variable and sustainable product development in agriculture industry is considered as dependent variable. All these relationships are highlighted in Figure which is the theoretical framework of the current study. The theoretical framework of the study is based on the literature gaps in the literature. Several literature gaps are considered to develop this framework with the help of various independent variables, mediating variable and dependent variable. As different studies highlighted the product growth sustainability and several other business industries, however, sustainable productivity in agriculture of Thailand is not highlighted through eco innovation strategies and top management along with the organizational management.

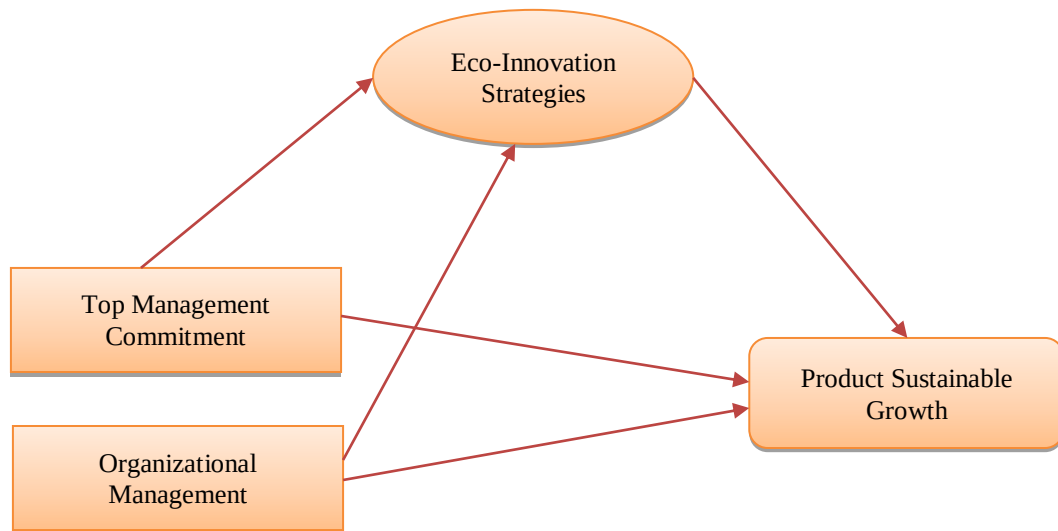


Figure 1. Framework of the study showing the relationship between top management commitment, organizational management, eco innovation strategies and product sustainable growth

Sustainable product growth

Sustainability is one of the major issues among the business activities (Shad, Lai, Fatt, Klemeš, & Bokhari, 2019). The achievement of higher level of sustainability in business activities is most important in the current competitive business environment. The success of any business activity to achieve sustainability is a challenge. In the agriculture industry of Thailand, several products are lacking with sustainability which is one of the major issues. Sustainable product development in agriculture industry of Thailand is key constraint in the way of success. Sustainable products are those products that provide environmental, social as well as economic benefits while defending public health and

environment over their whole life cycle, from the extraction of raw materials until the final disposal. Sustainable products are generally based on the products having no harm to the environment (Moreira et al., 2022) as well as social activities and having significant benefits in relation to the economic activities. Therefore, it can be further described as sustainable products are those products which provide economic benefits to the society without harming the environment.

Eco-innovation strategies

Now a day, the focus of the companies is to promote eco-innovation (Rodríguez-González, Maldonado-Guzman, & Madrid-Guijarro, 2022), as eco-innovation is most important in the current environment because the business activities have negative effect on the environmental health. It has adverse consequences for the living organisms. Therefore, in agriculture the eco innovation is also most important which is focused among the agriculture industry. Eco-innovation strategies are those strategies which are helpful to produce various products as well as services which have no effect on the environment and which promote the sustainability of the environment. In Thailand agriculture industry, the companies are also hoping to promote eco innovation strategies to reduce the effect of agriculture on environment and enhances the sustainable environment. Eco-innovation can be described as eco-innovation is any innovation resulting in significant progress towards the goal of sustainable development, by reducing the impacts of our production modes on the environment, enhancing nature's resilience to environmental pressures, or achieving a more efficient and responsible use of natural resources.

Top management commitment

Top management includes the senior staff of the organization which includes the heads of various divisions along with the heads of various departments (Haldorai, Kim, & Garcia, 2022). It also includes the general manager, chief executive officer and various other manager who control the organization with the help of various decisions and strategies. The commitment is linked with the quality of firm that important to get success in any activity. The top management commitment is the promise of the management towards achievement of any task. The commitment of management towards the business activities has potential to generate better outcomes which has effect on business performance. Therefore, in agriculture industry, top management commitment has significant influence on the business which is related to the specific strategies along with the promotion of business outcomes. The current study has considered the agriculture industry of Thailand in relation to the business growth. In top management, chief executive officers and various heads of departments and divisions are considered.

Organization management

Organizational management is also one of the important elements which has influence on business activities among several business organizations (Turulja & Bajgoric, 2018). Therefore, in addition to the other business Industries, organizational management is also important in agriculture industry. The organizational management is generally based on the organizational activities

(Mouritsen, Hansen, & Hansen, 2001), it is also based on the planning of the business activities and most importantly it is placed on the allocation of resources to the different business operations. As the allocation of resources is most important because the resources are the major strength of any business industry and according to the resource-based view the resources can contribute to the business success. Therefore, in organizations, organizational management can be defined as the procedure of organizing, planning, leading as well as controlling resources within an entity with the general goal of attaining its objectives. The organizational management of a business requires to be able to make various decisions and resolve issues in order to be both effective as well as beneficial.

Top management commitment has important relationship with product growth (Rodríguez, Pérez, & Gutiérrez, 2008) in agriculture. The strategies made by the top management of various organizations related to the agriculture can promote the growth. Among agriculture organizations, the commitment of management towards the development of various activities related to planning and controlling of various resources for sustainable product development is important. Studies related to the significant relationship between management and management commitment has positive effect on various businesses, therefore it also has effect in the development of sustainability in agriculture. The initiatives of top management to promote various green activities to promote environmental sustainability can lead to the eco-innovation. Therefore, top management commitment towards eco innovation or green innovation strategies development (Latan, Jabbour, de Sousa Jabbour, Wamba, & Shahbaz, 2018) has the ability to influence sustainable product growth. As previous studies are also highlighted the significant relationship between top management and green innovation activities or eco-innovation activities. Furthermore, eco-innovation strategies or green innovation also has significant relationship with product growth sustainability which is proved by the previous studies. Therefore, in a direction with the literature, the current study proposed relationships based on the effect of top management commitment, eco innovation and sustainable product growth. This study proposes the effect of top management commitment on sustainable product growth and eco innovation strategies. Furthermore, this study also examined the indirect role of eco innovation strategies between top management commitment and sustainable product growth. Additionally, this study also proposed relationships based on the effect of organizational management. Organizational management also has effect on eco innovation strategies and agriculture business growth. Finally, the current study proposed following hypotheses;

Hypotheses 1. Top management commitment has relationship with sustainable product growth.

Hypotheses 2. Top management commitment has relationship with eco-innovation strategies.

Hypotheses 3. Organizational management has relationship with sustainable product growth.

Hypotheses 4. Organizational management has relationship with eco-innovation strategies.

Hypotheses 5. Eco-innovation strategies have relationship with sustainable product growth.

Hypothesis 6. Eco-innovation strategies mediate the relationship between top management commitment and eco-innovation strategies.

Hypothesis 7. Eco-innovation strategies mediate the relationship between organizational management and eco-innovation strategies.

Methodology

The current study addressed the sustainable product development in agriculture industry of Thailand. The objective of this study is to examine the role of top management commitment, organizational management and eco innovation strategies in agriculture sustainable product growth. To achieve this objective, the current study considered quantitative research. While using quantitative research approach, this study preferred cross sectional research design. A questionnaire is designed to examine the relationship between top management commitment, organizational management, eco innovation strategies and sustainable product growth in agriculture. The questionnaire was designed by adopting scale items from previous studies. Top management commitment is measured with the help of five scale items. The independent variable namely organizational commitment is measured with the help of 5 items adopted from previous studies. Furthermore, the mediating variable; eco innovation strategies are measured by considering the scale items related to the environment and sustainability. This scale items include the scale items related to the green innovation strategies which has influence on the environmental health. Finally, dependent variable; product growth is measured with the help of considering scale items related to the sustainability in agricultural products. The questionnaire was divided into various sections in which the first section of the questionnaire was based on the information related to the profile of respondents. The second section of the questionnaire was based on the scale items related to the independent variables namely; top management commitment and organizational management. The third section of the article represent the scale items related to the mediating variable; eco innovation strategies. The dependent variable namely sustainable product growth is based on the scale items in fourth section of the questionnaire.

This study preferred the respondents from the companies related to the agriculture in Thailand. As the population of the study is based on the agriculture companies working in Thailand and the employees of these companies were selected as the respondents of the study. The employees are selected in this study to respond to the questionnaire because the employees of the agriculture organization have better idea about product growth sustainability in agriculture. Top management commitment and organizational management along with the eco innovation strategies are considered by following previous studies. 500 sample size is selected in this study; therefore, these questionnaires were distributed with the help of self-visit to the agriculture organizations. From total distributed questionnaires, 210 questionnaires were received and used in data analysis with the help of structural equation modelling.

Table 1
Data statistics

	No.	Missing	Mean	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
TMC1	1	0	3.903	4	1	5	0.978	0.274	-0.788
TMC2	2	0	3.71	4	1	5	1.089	-0.36	-0.6
TMC3	3	0	3.572	4	1	5	1.125	-0.639	-0.447
TMC4	4	0	4.014	4	1	5	1.003	0.727	-1.021
OM1	5	0	4.11	4	1	5	0.88	1.786	-1.139
OM2	6	0	3.807	4	1	5	1.065	-0.196	-0.712
OM3	7	0	3.717	4	1	5	1.224	-0.672	-0.627
OM4	8	0	3.628	4	1	5	1.114	-0.776	-0.401
OM5	9	0	3.662	4	1	5	1.128	-0.687	-0.439
OM6	10	0	3.738	4	1	5	1.044	-0.743	-0.374
EIS1	11	0	3.731	4	1	5	1.046	-0.136	-0.575
EIS2	12	0	3.903	4	1	5	0.949	1.088	-1.027
EIS3	13	0	3.917	4	1	5	1.034	-0.122	-0.74
EIS4	14	0	4.034	4	1	5	1.04	0.284	-0.925
PSG1	15	0	3.876	4	1	5	1.036	0.105	-0.799
PSG2	16	0	3.876	4	1	5	1.016	0.2	-0.783
PSG3	17	0	3.593	4	1	5	1	-0.045	-0.49
PSG4	18	0	3.731	4	1	5	1.032	-0.169	-0.618
PSG5	19	0	3.752	4	1	5	1.099	-0.683	-0.533
PSG6	20	0	3.655	4	1	5	1.129	-0.518	-0.567
PSG7	21	0	3.8	4	1	5	1.035	0.65	-0.911
PSG8	22	0	3.759	4	1	5	1.012	0.058	-0.708
PSG9	23	0	3.793	4	1	5	0.909	0.152	-0.579

Data analysis

The current study used PLS measurement model and structural model to analyze the data (Chairatana, 2021; Hair, Hult, Ringle, Sarstedt, & Thiele, 2017; Khan et al., 2019). These two steps are recommended steps in PLS to analyze the data. PLS measurement model is used to examine the factor loading, therefore confirmatory factor analysis is used in this study to examine the factor loading along with the composite reliability (CR), Cronbach Alpha and average variance extracted (AVE). Measurement model results are given in Table 2 and Table 3. Table 2 shows the factor loading which is about 0.5. 0.5 is the minimum threshold level in the current study. Furthermore, this study examined composite liability (CR). Composite liability is also given in Table 2 which is above 0.7. AVE is given in Table 2 which shows that the values for all the variables such as top management commitment, organizational management, eco innovation strategies and sustainable product growth has above 0.5. Composite liability above 0.7 and AVE above 0.5 shows that convergent validity is achieved in the study as stated by previous studies (Hair et al., 2019). In addition to this, discriminant validity is presented in Table 3. Table 3 shows AVE square root. The HTMT is also used to examine the discriminant validity. It is highlighted by the results, none of the value is above 0.9. Therefore, convergent validity and discriminant validity is achieved by the current study which fulfil the initial requirement to proceed to

examine the relationship between variables. Figure 2 shows the measurement model.

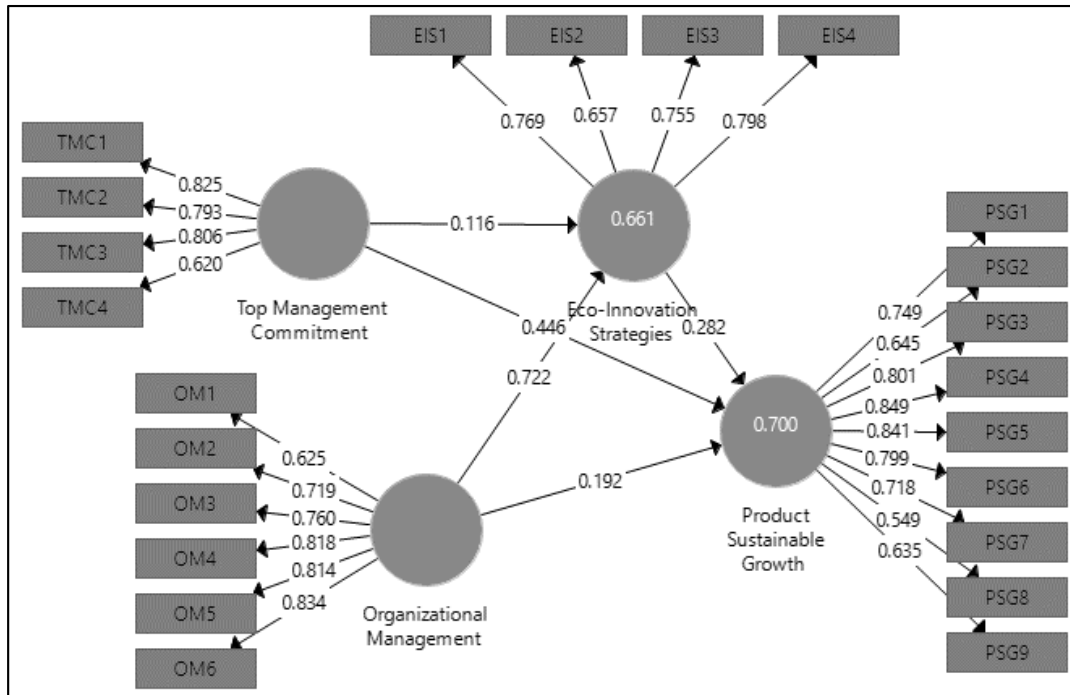


Figure 2. Measurement Model

Table 2
Factor loadings

Variables	Items	Loadings	Alpha	CR	AVE
Eco-Innovation Strategies	EIS1	0.769	0.735	0.834	0.558
	EIS2	0.657			
	EIS3	0.755			
	EIS4	0.798			
Organizational Management	OM1	0.625	0.856	0.858	0.586
	OM2	0.719			
	OM3	0.76			
	OM4	0.818			
	OM5	0.814			
	OM6	0.834			
Product Sustainable Growth	PSG1	0.749	0.893	0.914	0.545
	PSG2	0.645			
	PSG3	0.801			
	PSG4	0.849			
	PSG5	0.841			
	PSG6	0.799			
	PSG7	0.718			

Top Management Commitment	PSG8	0.549			
	PSG9	0.635			
	TMC1	0.825	0.76	0.848	0.585
	TMC2	0.793			
	TMC3	0.806			
	TMC4	0.62			

Table 3
AVE square root

	Eco- Innovation Strategies	Organizational Management	Product Sustainable Growth	Top Management Commitment
Eco-Innovation Strategies	0.747			
Organizational Management	0.61	0.765		
Product Sustainable Growth	0.734	0.759	0.838	
Top Management Commitment	0.664	0.76	0.779	0.865

The relationship between variable is measured in structural model. Structural model is given in Figure 3 (Afthanorhan, 2013; Astrachan, Patel, & Wanzenried, 2014) and all the results are given in Table 4 and Table 5. Table 4 shows the direct effect result in which the effect of top management commitment is considered in relation to the sustainable product growth. The effect of top management commitment is also considered in relation to the eco innovation strategies. Furthermore, organizational management is considered in relation to the sustainable product growth and eco innovation strategies. Finally in direct relationship, the effect of eco-innovation strategies is examined on sustainable product growth. These direct relationship shows that top management commitment has significant effect on sustainable product growth. Top management commitment also has a significant relationship with eco innovation strategies. Finally, it is found that organizational management has significant effect on sustainable product growth and eco innovation strategies the final direct hypothesis identified that eco-innovation strategies has significant relationship with sustainable product. These results show that all the direct hypotheses are supported as the t-value of all the direct hypotheses have achieved the minimum threshold level which is 1.96 for non-directional hypothesis.

The mediation effect of eco-innovation strategies is shown in Table 5. Two mediation hypotheses are tested. The first relationship of eco innovation strategies as mediating variable is examined between top management commitment and sustainable product. The second mediation effect of eco innovation strategies is examined between organizational management and sustainable product. From these indirect effects, one indirect effect is supported, however one indirect effect is not supported. The mediation effect between top management commitment and sustainable product growth is not significant.

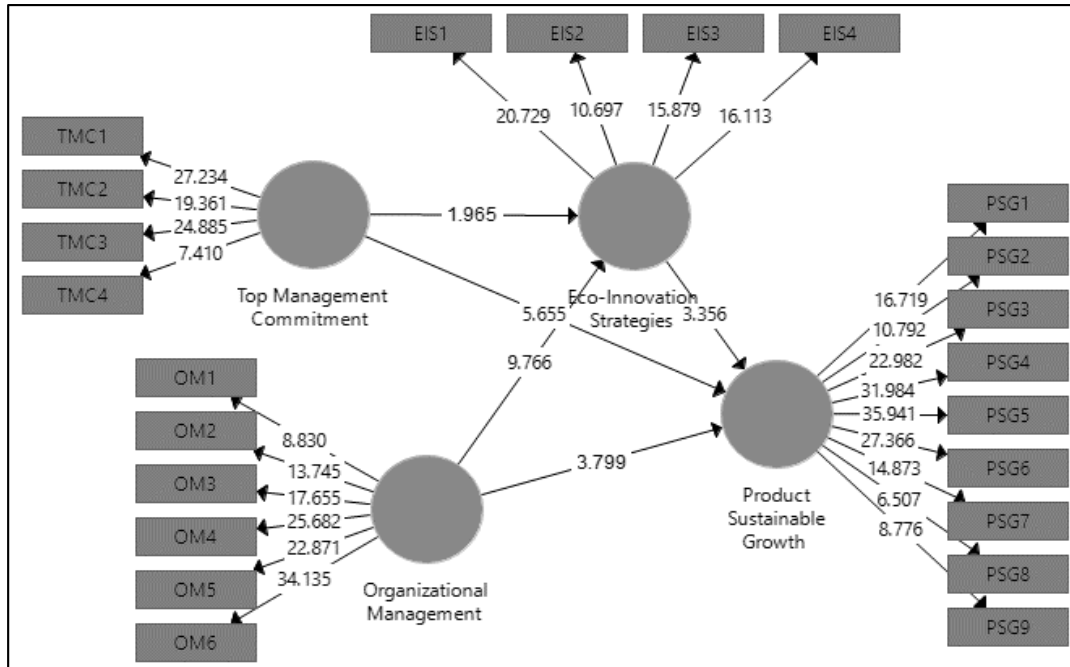


Figure 4. Structural Model

Table 5
Direct effect results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Eco-Innovation Strategies -> Product Sustainable Growth	0.282	0.282	0.084	3.356	0.001
Organizational Management -> Eco-Innovation Strategies	0.722	0.721	0.074	9.766	0
Organizational Management -> Product Sustainable Growth	0.192	0.193	0.05	3.799	0
Top Management Commitment -> Eco-Innovation Strategies	0.116	0.117	0.059	1.965	0.05
Top Management Commitment -> Product Sustainable Growth	0.446	0.444	0.079	5.655	0

Table 6
Indirect effect results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Organizational Management -> Eco-Innovation Strategies -> Product Sustainable Growth	0.204	0.202	0.063	3.235	0.001

> Product Sustainable Growth					
Top Management Commitment -> Eco-Innovation Strategies ->					
Product Sustainable Growth	0.033	0.034	0.027	1.194	0.233

Conclusion and Discussion

To examine the relationship between top management commitment, organizational management, eco-innovation strategies and sustainable product growth, this study addressed hypotheses. The hypotheses of the study are tested with the help of primary data which is collected from the agriculture organization. The hypothesis 1 shows that of management commitment has significant effect on sustainable product growth. According to this hypothesis, the increase in the commitment of top management among the agriculture organizations in Thailand can increase product growth sustainability. It means that to promote sustainable product growth among agriculture organization, it is needed to support by the managers of agriculture organizations such as CEO of agriculture organizations and various other heads of divisions and departments. Furthermore, in hypothesis 2, it is observed that top management commitment also has a significant relationship with eco innovation strategies. It shows that top management commitment has positive effect on eco innovation strategy. With the increase in sustainable product growth with the help of top management commitment, the eco innovation strategies can also be promoted with the help of top management commitment in agriculture organizations. Additionally, hypothesis 3 shows that organizational management is also an important factor to enhance sustainable product growth. It has significant positive effect on sustainable product. The management among the organizations can lead to the sustainable product growth which is proposed by the current study. Additionally, similar with the top management commitment organizational management also has the ability to promote eco innovation strategies, which is proved by hypothesis. Hence, it is proved that of management commitment and organizational management can enhance sustainable product growth in Thailand. These results are consistent with other studies. For instance, various previous studies related to the top management and product growth (Nuscheler, Engelen, & Zahra, 2019) found significant and positive relationship. Furthermore, preceding studies also shows that organization management has positive effect on growth (Sumardi & Fernandes, 2020). Although, several studies are carried out in various other organizations, however these studies also provided the similar results in relation to the current study. The final direct effect in this study is propose in hypothesis 5 between eco innovation strategies and sustainable product development. According to this hypothesis, eco innovation business strategies have positive role to enhance sustainable product growth in Thailand. It indicates that company orientation towards the green Innovation and the strategies to promote environmental sustainability has the ability to promote product growth sustainability in agriculture. Nevertheless, this study examined the indirect effect of Eco innovation Strategies. All the top management commitment and organizational management has direct influence on sustainable product development. This study also reported the indirect effect of eco-

innovation strategies which shows that these factors also have influence directly on sustainable product growth. In this direction, this study highlighted that eco innovation strategies has not the ability to transfer the positive effect of top management commitment on sustainable product, which is proved in hypothesis 6. Hypothesis 7 shows the indirect effect of eco innovation strategies between organizational management and product growth which is significant. Organizational management lead to the eco innovation strategies which has the ability to enhance product growth in agriculture industry of Thailand. Results of the current study shows that top management commitment and organizational management are the most important elements to promote eco innovation strategies and sustainable product group in agriculture organization.

Implication of the study

The relationship between top management commitment, organizational management, eco innovational strategies and agriculture product growth sustainability is one of the unique relationships which is not address by the previous studies in the literature. Although number of studies have addressed the product innovation, product management and product growth of agriculture industry through different aspects, however, literature have ignored the effect of eco-innovation along with the top management and organizational management. Therefore, this study introduced several unique relationships which has significant theoretical implications. First, this study introduced the effect of top management commitment on eco innovation strategies. In rare cases any previous study highlighted the effect of top management commitment on eco innovation strategies in agriculture industry. This study also introduced organizational management effect on eco innovation strategies. This relationship is also not tested by the previous studies. Additionally, eco innovation strategies are examined in relation to the product growth in agriculture. All the number of studies has considered the effect of eco-innovation on product growth or product development, but it is not addressed in relation to the agriculture industry of Thailand. Third, this study introduced the mediating role of eco innovation strategies which is not addressed in previous studies. These theoretical implications have wider potential for the management and practitioners of these companies to promote product growth in agriculture. For example, this study proved that top management commitment and organizational management has influential role to enhance productivity in agriculture. Therefore, management of agriculture companies should promote top management commitment and organizational management. This study also proved that eco-innovation is more environmentally friendly which has significant effect on product for the agriculture, consequently, management should promote eco-innovation in agriculture sector. This could be managed with the help of top management commitment and organizational management to enhance eco-innovation strategies along with the agriculture product growth sustainability.

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