

Role of Farmer's Value Orientations in Relationship between Agricultural Extension services and Environmental Management Accounting

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The purpose of the present research was to examine the role of “Agricultural extension services” (AES) and value orientations in “environmental management accounting” (EMA). To fulfil this purpose, the current study examined the impact of AES on EMA and analyzed the mediating role of value orientations in the relationship between AES and EMA. For this purpose, the current study adopted a quantitative methodological approach in which the data was collected from the agricultural sector of Thailand. The data was collected from 320 Thai farmers who were selected through purposive sampling. The questionnaire-based survey strategy was adopted to collect data and then it was analyzed using key tests including “reliability, discriminant validity, convergent validity, model fitness, confirmatory factor analysis” and “structural equation modelling”. The results of this study are that there is significant effect of AES on EMA because AES significantly positively enhanced the EMA in business. Furthermore, it was found that value orientations (i.e. “biospheric value, altruistic value and egoistic value”) play the significant role of mediator in the association between AES and EMA. The current study and findings will have important implications in agricultural theory and application because farmers will be able to understand the role of AES and value orientations in their EMA.

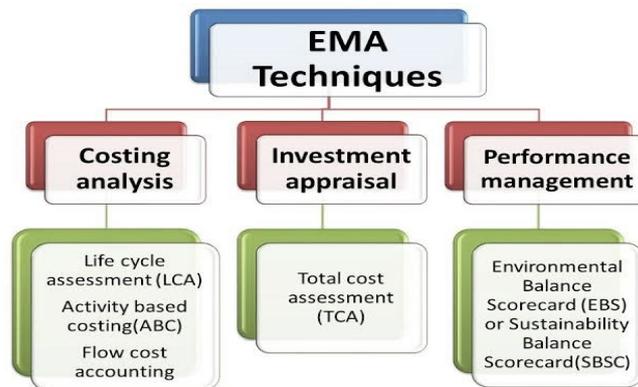
Key words: *Environmental management accounting, agricultural extension services, value orientations.*

Introduction

In current years, the environmental pollution has become a key issue due to several health and life concerns (Somjai & Jermisittiparsert, 2019; Kasayanond, Umam, & Jermisittiparsert, 2019). The depletion of natural resources, industrial revolution, water pollution, air pollution, and similar environmental issues have raised key concerns regarding the environment. The natural environment is being adversely affected due to the increasing depletion of natural resources around the world. Therefore, individuals as well as firms are required to change their behaviors and to adopt appropriate measures in order to cope with these environmental challenges (Jasch, 2003; Kapardis & Setthasakko, 2010; Papagiannakis & Lioukas, 2012; Riwthong, Schreinemachers, Grovermann, & Berger, 2015). The growing concern in this context has attracted numerous research studies in order to address the issues from a range of fields (from business to economics) and their findings have highlighted concerns for consequent antecedents and their nature and implications (Jermisittiparsert, Siriattakul, & Sangperm, 2019; Jermisittiparsert, Siriattakul, & Wattanapongphasuk, 2019).

Similarly, the field of agriculture is also associated with a number of environmental concerns that need to be addressed through formal research. A key domain which is discussed while studying the environmental aspects of businesses is “Environmental management Analysis” (EMA) is the identification, collection, analysis and maintenance of information needed for decision making. The information needed in EMA is of two kinds i.e. “physical information” and “monetary information”. The first type of information, the information about natural resources, use of those resources, their rates and fluctuation is included while the second type of information, the information about environmental costs and yields is encompassed (Sands, Lee, & Gunarathne, 2015). EMA satisfies the environmental as well as accounting concerns of businesses because it goes beyond traditional accounting which is just about the sold and valued items i.e. assets, liabilities, revenues and costs. EMA covers traditional accounting as well as non-marketed items that are not presented in annual firm reports. Globally, firms are finding new techniques and methods that enhance EMA efficiency. The particular importance of EMA in the agricultural sector has led to its adoption by farmers and enhanced effective of EMA in order to meet associated environmental concerns is a focus in this sector. Farmers worldwide are in search of the techniques and ways to enhance their different activities of EMA e.g. costing, investment, performance management and assessments (Vasile & Man, 2012; Yoon, Jang, & Lee, 2016). Figure 1 below shows the classification of EMA techniques that are normally used to assess and manage the environmental costs of businesses.

Figure 1. EMA Techniques (Source: Research Gate)



Three key EMA techniques that have been presented in Figure 1, play an important part in the overall EMA of firms through which the analysis of costing, investment and performance is made. These techniques ultimately enhance the “environmental balance scorecard” of firms or businesses, overall cost assessment and life-cycle assessment. Hence, the great importance of EMA necessitates that researchers perform studies on its different predictors. Past studies have tried to examine different predictors of EMA adoption including knowledge, attitudes, intentions, values, norms and other belief-based factors (Sands et al., 2015; Tashakor, 2019; Vasile & Man, 2012). However, there is limited literature found on the predictors of EMA in the agricultural sector. Despite the great environmental share of the agricultural sector, it has been ignored to some extent in past studies and this needs to be identified in order to explain different factors that influence EMA in agriculture. One of those key factors is value orientation because values are key determinants of behaviors.

It is argued by some past studies that value orientations entail a large importance in determining the attitude and behaviors in ecological economics. In the modern era, the concerns and preferences of consumers fluctuate consistently therefore firms or farmers need to direct their focus on the values of consumers. It has been suggested by past scholars that consumer value orientations determine their environmental concerns and are ultimate predictors of decision making regarding environmental welfare (Papagiannakis & Lioukas, 2012). Among different value orientations, the “biospheric value, altruistic value and egoistic value” are particularly important related to ecological aspect because they are found to have a large influence on human belief and concerns for the environment, their norms and behaviors. Therefore, it is argued that these value orientations are very important in EMA adoption because they determine decision making about the environment (Chua, Quoquab, Mohammad, & Basiruddin, 2016).

However, these value orientations can be affected through different background knowledge, advisory services and other belief-based factors. Awareness about environmental concerns, condition and issues exert significant influence on these value orientations. In agriculture,

these value orientations can be influenced through “agricultural extension services” (AES) which refer to a form of “scientific research and knowledge” through which advisory services are provided to farmers for sake of enhancing their productivity (Benin et al., 2011; Dimelu & Anyaiwe, 2011; Labarthe & Laurent, 2013). Prior studies examined different benefits of AES however the particular contribution of AES in the form of improved EMA and value orientations has not been explained in past studies efficiently. To fill this identified gap in existing literature about AES, value orientations and EMA, the current study purposes to analyze the impact of AES on EMA along with mediating role of value orientations. The remaining part of this paper encompasses the literature review, methodological approach, analysis, results, discussion and conclusion.

Literature Review

Agriculture Extension Services and Biosphere Value

Brown and Ulgiati (2018) explain the biosphere value in relation to Agricultural Environment Services which evaluate the flow of energy and resources that sustain the human economy. A biosphere perspective is one that attains to balance the human behavior with the environment. Humanity control and adjustment (Solár, Janiga, & Markuljaková, 2016) is the second name for the biosphere value in relation to AES. It is an evaluation system free of human bias. Hülber et al., (2017) believe that global economy is driven by biosphere value under the favorable circumstances of AES. The net yield of the profits, involvement of non-renewable and renewable resources also comes under the positive influence of AES. The effect of the environment and the individual’s norms, beliefs, attitudes and behavior have a significant impact on the development of AES. The relationship among value orientation includes the new ecological paradigm (NEP) and pro-environmental personal norm (PPN).

Genovese, Battisti, Ostellino, Larcher, & Battaglini, (2017) suggest that biosphere value positively and significantly affect NEP which further affect PPN as well as AES in the field of agricultural farming. NEP on the other hand plays the role of mediator for the development of three typical personal norms and values. NEP is concerned with the context of agrochemical purchase which will perhaps benefit the business performance and agricultural sector in the long run. Biosphere value is considered one of the important factors in feeding the global population through high rate of cultivation process and also preserving natural resources for future generation. Studies (Carrera, Brown, Brody, & Morello-Frosch, 2018) elaborate that personal or environmental norms and values are further enhanced with the theoretical application of Norm Activation Theory (NAT) as well as Value-Belief-Norm Theory (VBNT) that suggests a link between NEP, PPN, biosphere value, environmental orientation and that has a strong impact on AES.

Although NEP depends on the research context related to NA theory, it also produces significant impact on the agricultural context along with pro-environmental actions. Moral or personal norms depend on such actions and moreover the conditions which act as the function of individual beliefs about environmental conditions. Structural equation modelling is perhaps utilized in different research to determine the empirical evidences which also acts as a key objective playing a significant role in the process of biosphere value. AES faces major challenges due to continuous intervention of human activity such as over consumption of natural resources, expansion of industries and factories, increase in world population, creating water and air pollution. These factors and multiple other interventions which cause disruption in the orientation of resources, fertile land, business performance and economic instability might produce a negative impact on AES and biosphere value. However, there are many determiners that focus on the positive effect of biosphere value which are supported by the orientation of AES. Thus, the following hypothesis is proposed:

Agriculture Extension Services and Altruistic Value

Kuhfuss, Preget, Thoyer, de Vries, & Hanley, (2018) states that AES depends on the function of altruistic value and is the value that is placed on the willingness of humans to pay attention to environmental norms and values while focusing on maintenance or paying for those assets and resources that are not being used or needed by humans. This concept of altruistic values mostly relies on the individual values and are a natural resource building response. Altruistic value becomes a prominent aspect of consideration due to the development of AES (Carrera et al., 2018). AES plays its role in minimizing the destruction of the environment and makes a great effort to influence value orientation which produces attitude influencing technique in ecological economies. Altruistic value greatly summarizes (Carrera et al., 2018) the effect of green consumer behavior and green supply chain under the context of cultural setting and agriculture norms and values.

Like biosphere value, altruistic value is also enhanced by the availability of relevant empirical evidences related to NA theory and VBN theory (Fornara, Pattitoni, Mura, & Strazzer, 2016). NA theory further describes the role of AES on the practices and functions of altruistic norms. Altruistic norms and values also exhibit conscious choice related to consumer era that demonstrate environmentally significant behavior however, awareness of environmental issues signifies the importance of making conscious efforts to modify the current state of the environment. Researchers (Sadeghi, Ahmadi, & Yazdi, 2016) believe that consumer behavior is a part of ethical behavior in relation to better brand reputation which would help in the sustainability of AES and altruistic approaches. AES preserves the environment quality for better crop production using modern techniques and methods that define environmental culture and attract consumer's attention to the conservation of fertile land keeping in view consumer's value orientation. In this case, Fornara et al., (2016)

explain the role of altruistic value that exerts the influence of AES on human belief of the environment. Therefore, value orientation is taken as a general belief as well as an influential factor within the process of AES and altruistic value. Thus, the following hypothesis is proposed that:

Agriculture Extension Services and Egoistic Value

Lincoln and Ardoin (2016) believe that cultivation norms and values like egoistic value sufficiently correlate with AES and with sustainable agriculture practices. Environmental values and sense of egoistic values relates to sustainable farming practices that would increase the perceived crop yield while keeping in view certain farming values and factors like environmental health, ecological system, community engagement, and food security, culture and history, education and literacy and research and economies. AES primarily influences egoistic values (Shin, Moon, Jung, & Severt, 2017) as per NA theory and VBN theory (Blay, Gooden, Mellon, & Stevens, 2018) which shows the overall farm performance in correlation with environmental and education practices to improve the sustainability of farming including agricultural orientation. Author (Jose & Kuriakose, 2016) analyzes the impact of AES on egoistic value that exerts influence on human belief of the environment. However, value orientation also generates environmental belief by initializing the effect of egoistic value according to Value-Belief-Norm Theory. This theory also connects NEP and PPN paradigm with the values and beliefs orientation dependent on agricultural norms. These theories give rise to the subject of social-psychological perspective of individuals. Researchers (Engler, Poortvliet, & Klerkx, 2019) debate about the involvement of the environment significance behavior that acts as a turning point in taking alternative improvement measures. Therefore, it is considered that value orientation including egoistic value NEP and PPN are essential indicators of environmentally significant behavior that promotes (Raymond & Kenter, 2016) the cause of individual's norms, behavior and values towards the management system of AES and its impact on egoistic value. Thus, the following hypothesis is proposed that:

Role of Biosphere, Altruistic and Egoistic Value is significant between AES and EMA

Studies by Schaltegger, Burritt, and Petersen (2017) analyze the role of AES on certain values and norms that further influence environmental management accounting systems (EMA). These norms and values all have a significant impact on EMA and on environmental-ecological management for the sustainability of business performance and agricultural preservation by the individual's effort. Lincoln & Ardoin, (2016) see AES as always striving for stability of economic value while they make efficient progress towards the sustainability of corporate environmental management. All these relevant values that include biosphere value, altruistic value and egoistic value exert effect in the maintenance of environment and

are particularly involved in saving the lands from destruction and further exploitation with the help of AES and environmental values orientation.

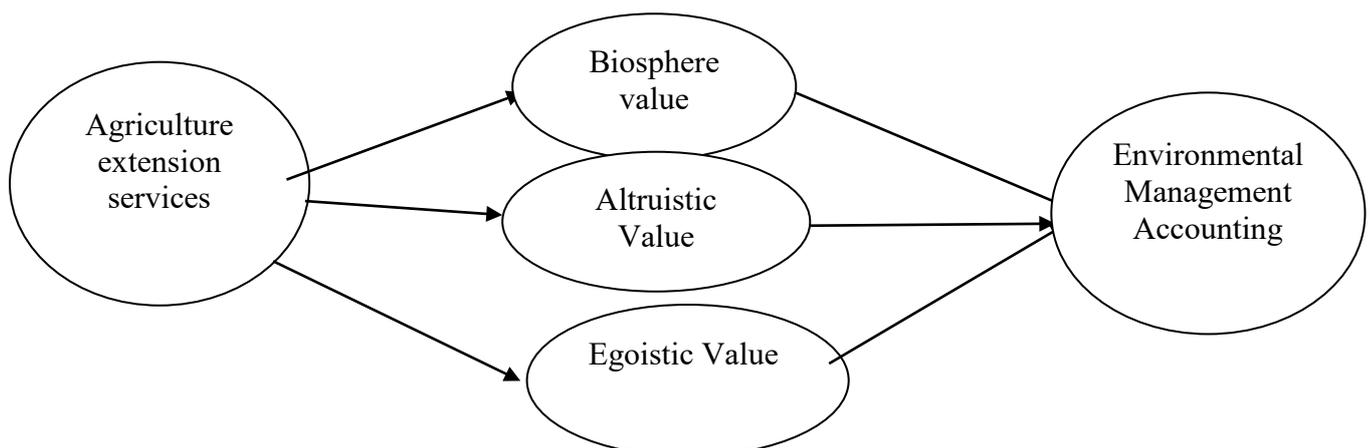
Various research studies (Deegan, 2017) have established a relationship between AES and the positive impact on individuals and environmental values (biosphere, altruistic and egoistic) which further has a significant impact on the performance of EMA. The NA theory and VBN theory indicate the direction of NEP and PPN which act as a vital source of environmentally significant behavior. However, the VBN theory develops a connection between and individual's norms (Kiatkawsin & Han, 2017) and belief that is applied to measure the relationship between human and environment. Certain related studies (Fazzini & Dal Maso, 2016) believe that the agriculture sector is an important contributor to the economical development of various countries like Malaysia, far Eastern Countries and Korea. Therefore, these country's government promote the cultivation of multiple crops which will benefit them at both national and international level. Furthermore, Gallego-Álvarez & Ortas, (2017) state that agrochemical considerations are a key factor in increasing productivity, sustainability and growth in agriculture sector.

Wide use of agrochemical has a significant impact on humans and environmental values. Based on other research, this study aims to investigate the effect of the three dimensions or values (biosphere, altruistic and egoistic) on NEP, PPN and EMA. The accounting of farming and agriculture enhancement will be investigated with the support of three dimensional (Ko & Liu, 2017) value orientation due to increase in finance, farming economies and literacy of the farmers. EMA has been studied from special perspectives in order to produce deeper understanding of its role in elucidation of human behavior with the influence of AES and values orientation. However, more research needs to be conducted to figure out the prominent impact of values, norms AES and EMA on human and individual behavior as well as on different norms. Thus, the following hypothesis is proposed that:

H1: Agricultural extension services have significant impact on EMA.

H2: Biosphere, Altruistic and Egoistic Value mediate the relationship between AES and EMA

Model:



Methodology

Population and Sampling

This study examines the impact of agriculture extension services on environmental management accounting with mediating role of farmer's value orientation. To study the impact of this farmers from the Thailand population were selected because the agriculture industry of Thailand is growing immensely and decisions increasingly need to be made decisions regarding environmental issues. So, farmer value orientation plays a vital role in this regard and that's why farmers have been selected as the respondents. The study employed a purposive sampling technique to selects farmers as respondents because the purpose of this study entails that respondents must be farmers. In sampling, a point of issue is sample size which has to be in accordance with the analyses approach. Hazen et al. (2015) described that sample size should be larger if the researcher uses SEM analyses approach. Klein's (2015) concept has been used to determine sample size which entails that figure obtained through number of items*10 represents sample size. For this study, 320 respondents have been selected and all received the distributed questionnaire. Of 320, only 308 responses were collected and 297 of these were considered valid.

Data Collection and Procedures

The use of a questionnaire as study tool was considered the best suitable option for this research because the outcomes generated through a questionnaire are numeric in nature and can easily be statistically analyzed. A finalized questionnaire must have two characteristics in this context: Thai language must be used for farmers understanding and content validity of scale should be checked. For the convenience of farmers, the survey was conducted through a self-administered questionnaire method. The researcher visited the farmers individually to administer all questionnaires.

Validity, Reliability and Common Bias Method

AMOS and SPSS have been used to assess the validity and reliability by examining different criteria. Reliability has been examined by criteria which elaborate that Cronbach's α larger than 0.7 (Chin, 1998). Convergent validity was examined by three criteria (1) items loading which must larger than 0.70 and statistical significance, (2) composite construct reliability larger than 0.80 and (3) average variance extracted larger than 0.50. Discriminant validity has been examined by different criteria which state that square root of AVE must be larger when correlated with other constructs.

Common bias method has been raised when respondents used same measures for different studies, which are recommended by the common rater (Donaldson & Grant-Vallone, 2002;

Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) for dependable and explanatory variables. Sets of variables are different for each study and in this study are agriculture extension services knowledge, environment management accounting and farmer's value orientation. To assure non-bias, common method bias test has been used and Harman's single factor test which conducted to check whether all constructs were accounted for by single factor. 93% of total variance was accounted for by factor solution and 12% was accounted for by single factor. Hence, inexistence of risk of common bias was ensured when different factors were used for accounting covariance.

Measurement of Variables

The role of Farmer's Value Orientations in the Relationship between Agriculture Extension Services and Environmental Management Accounting can be measured if the measurement of construct is available. For the current study, a self-administered questionnaire was used which was adapted from the previous studies. The first variable is knowledge of agriculture extension which has 15 items that were adapted from Aker, (2011). Three mediators of the study are attitude, subjective norms and perceived behavior control and these have 3 items each and were adapted from the study of Chua et al., (2016). The dependent variable is environmental management accounting whose scale was adapted from the study of (Saeidi, Othman, Saeidi, & Saeidi, 2018) which has 13 items.

Hypothesis Testing

To test the significance of hypotheses relationship, structural equation modelling has been used which runs on AMOS. SEM involves path analysis of hypotheses of this study which are agriculture extension services knowledge, farmer's value orientation and environment management accounting. Two steps have been performed in path analysis, firstly to estimate the standardized path and secondly to estimate the significance of influence path. In the latter, the researcher describes on the basis of significance, which relationship has been accepted or not accepted.

Research Findings

A total of 320 questionnaires were distributed among the respondents out of which 308 were returned and 297 were used for analysis after eliminating rough and incomplete responses. The findings show that 126 males and 171 females participated in the study. The age of the respondents range from 20 years to 30 years, 160 respondents, from 21-40 years, 109 respondents and 41-50 years, 27 respondents. The remaining respondents were of an age greater than 50 years. Further, 23 respondents were undergraduates, 145 were graduates, 118 were masters degree holders and the remaining 10 had other education qualifications.

Factor Analysis and Reliability Test

It is a pre-requisite to confirm and check the reliability of the data before hypothesis testing. The following Table 1 shows the reliability value which is measured with Cronbach alpha;

Table 1: Psychometric Properties

| Constructs | No of items | Cronbach alpha |
|------------|-------------|----------------|
| AES | 3 | 0.966 |
| AV | 3 | 0.899 |
| EV | 3 | 0.727 |
| EMA | 15 | 0.946 |
| BV | 13 | 0.924 |

The above-mentioned Table 1 shows the reliability of each construct which is checked by running the Cronbach Alpha test. Cronbach Alpha presents the internal consistency of each item for each construct. The Cronbach alpha value for all constructs is more than .70 which proves the reliability of the data.

Convergent and Discriminant validity

Convergent validity is the validation of variables items wise which proves the internal consistency of the data whereas discriminant validity shows the discrimination of a variable from others, Statistical tool packages were used to identify the convergent and discriminant validity of the data. Findings are given below in Table 2;

Table 2: Convergent and Discriminant validity

| | CR | AVE | MSV | AES | AV | EV | EMA | BV |
|------------|-------|-------|-------|--------------|--------------|--------------|--------------|--------------|
| AES | 0.976 | 0.731 | 0.349 | 0.855 | | | | |
| AV | 0.899 | 0.748 | 0.362 | 0.545 | 0.865 | | | |
| EV | 0.727 | 0.570 | 0.015 | 0.000 | 0.018 | 0.686 | | |
| EMA | 0.976 | 0.759 | 0.349 | 0.544 | 0.565 | -0.124 | 0.871 | |
| BV | 0.924 | 0.802 | 0.362 | 0.591 | 0.602 | 0.060 | 0.591 | 0.895 |

Value of composite reliability and average variance extracted confirm the issue of convergent validity whereas the remaining column shows the discriminant validity of the data. Composite reliability for each construct has value more than .70 and value of MSV is less than AVE, so it proves the convergent validity. Other remaining column shows that every

construct has more value of AVE for itself rather than others which proved the discriminant validity of the data.

Confirmatory Factor Analysis

The test of confirmatory factor analysis is used to identify whether the model of this study is good fit or not. There are 4 to 5 indicators which proved the model fitness as their threshold and observed values are given below in Table 3;

Table 3: CFA

| Indicators | CMIN/DF | GFI | IFI | CFI | RMSEA |
|------------------------|---------|------|------|------|-------|
| Threshold range | <3 | >.80 | >.90 | >.90 | <.08 |
| Observed values | 2.810 | .800 | .922 | .922 | .078 |

The results of the above-mentioned table present all values as within the threshold range because the value of CMIN/DF for the current data is 2.810 which is less than 3.0, GFI is .80, which is greater than .80, IFI and CFI are .922 which are equal to .922, and last but not the least RMSEA is .078, which is less than .08. This means that the model of the study is a good fit. The following, Table 4 presents CFA in AMOS showing the loading of each item and correlation between variables;

Structural Equation Modeling

In order to test the study hypotheses, structural equation modelling by using AMOS was performed because SEM has a feature of multiple regression and can test the entire model at the same time in one administration. Table 4 below presents the regression weights of each construct on another variable. It indicates the conclusion of the hypothesis;

Table 4: Structural Model Results

| | | | | |
|---------------|---------|---------|--------|-------|
| Total Effect | AES | EV | BV | AV |
| EV | .262** | .000 | .000 | .000 |
| BV | .582*** | .000 | .000 | .000 |
| AV | .514*** | .000 | .000 | .000 |
| EMA | .551*** | .438*** | .261** | .186* |
| Direct Effect | AES | EV | BV | AV |
| EV | .262** | .000 | .000 | .000 |

| Total Effect | AES | EV | BV | AV |
|-----------------|---------|--------|--------|-------|
| BV | .582*** | .000 | .000 | .000 |
| AV | .514*** | .000 | .000 | .000 |
| EMA | .189* | .438** | .261** | .186* |
| Indirect Effect | AES | EV | BV | AV |
| EV | .000 | .000 | .000 | .000 |
| BV | .000 | .000 | .000 | .000 |
| AV | .000 | .000 | .000 | .000 |
| EMA | .362** | .000 | .000 | .000 |

The results of structural equation modeling indicated that knowledge of Agricultural Extension Service has a positive and significant direct impact on environmental management accounting practices and this effect is 19 percent which is presenting that increasing the one unit of knowledge of agriculture Extension Service will bring 19 percent positive change in environmental management accounting practices. The results also indicated that all the mediators in the current study are significant mediators between knowledge of Agricultural Extension Service and environmental management accounting practices. The direct impact of agricultural Extension Service on biopheric value is 58% whereas its direct impact on attrusictic value is 51%. On egoistic value, it has only 26% impact which is significant. The direct impact of biopheric value on environmental management accounting is 26% whereas the direct impact of attruistic value on environmental management accounting practices is 19% and the direct impact of agoistic value is significant on environmental management accounting practices. The picture presented below is the screenshot of structural equation modeling taken from the AMOS during hypotheses testing.

Discussion

The aim of the study was to deeply investigate the relationship between agricultural extension services (AES) and environmental management accounting (EMA) by determining the mediating impacts of farmer's value orientations (FVO), that is: biospheric value (BV), Altruistic value (AV) and egoistic value (EV). So, the first hypothesis proposed in the study was that, "AES has a significant impact on EMA", this hypothesis is accepted as it was proven through study that AES highly impact EMA and cause the values of EMA to change and that AES also have impacts on the ecosystem and cause change to it in return (Yuttitham, Gheewala, & Chidthaisong, 2011). Shamim Tashakor, in her research article published that AES is important for the agricultural sector as these involve giving the farmers the necessary and basic knowledge of farming techniques that are firstly experimented on in scientific

laboratories and then farmers are taught to implement them in their traditional farming (Sangkumchaliang & Huang, 2012).

These techniques help in increase the yield and lower costs. EMA is significantly affected due to the cost fluctuations and changes. The second hypothesis proposed in the study was that “farmer’s value orientations significantly mediate between AES and EMA.” This hypothesis is accepted and according to the previous study of Elena Ojea, it is stated that BV impact the sense where the farmers start to think from the perspective of what the actions cost the environment and what benefit is given in return (Kosolsaksakul, Farmer, Oliver, & Graham, 2014). AV consists of the context of payment for something that is not for one’s own benefit, similarly EV also aligns with the concept that AES will be implemented mostly for the purpose that others gain benefit (Grovermann, Schreinemachers, & Berger, 2013). With these kinds of value orientations, the reason for performing a particular duty, change. The performance of a certain task always depends upon the intentions with which it is being performed. AES works to improve the quality and quantity of the farming and agricultural sector. There exists a strong relationship between AES and farmer orientation values because when this is the case, AES will be implemented in the same way that the minds of the farmers are oriented. More value attached thinking will result in better learning and implementation of concepts of AES that will cause EMA to increase as it also measures the impact, returns and benefits to the ecosystem (Schipmann & Qaim, 2011).

Conclusion

This research was conducted with the aim to know the impact of AES on EMA. This study aimed to determine the impact of farmer's value orientations as a mediator between AES and EMA. The study was conducted by dissecting the agricultural sector of Thailand, a total of 320 farmers were selected as a sample for this research and then the data collected through questionnaires from the farmers of Thailand was exposed to different testing techniques in order to conclude the results that are, AES significantly increases and impacts EMA and FVO plays a significant mediating role between AES and EMA.

Implications of the research

FVO is taken as a mediating variable between AES and EMA, where in the past studies it was rarely taken as a mediator between any two variables. Moreover, FVO’s literature and importance have increased after this study which will also support future research. This study has also highlighted important factors for practical implications regarding how FVO trigger the process of AES and how EMA increases because of that. AES can be added in agricultural policies in order to maintain a good balance between the costs and benefits for the production of maximum yield.

Limitations and future research indications

This study was conducted with only a sample of 320 farmers of Thailand, future researchers could can experiment with and analyze a larger number of samples. This study is oriented towards values only, other studies could be conducted by keeping the farming costs as a mediator between AES and EMA. This study could also be conducted outside of Thailand, keeping in mind that this is a global problem and is occurring in agricultural sectors worldwide.

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