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RESEARCH ARTICLE

AGRICULTURAL MULTIFUNCTIONALITY FOR SUSTAINABLE DEVELOPMENT IN MALAYSIA: A CONTINGENT VALUATION METHOD APPROACH

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ABSTRACT

Agriculture multifunctionality highlights the importance of non-food benefits as joint products of agriculture. A study on the non-food benefits of agriculture is important to explore the potential of innovating the agricultural industry for sustainable development. The societal influence of agriculture multifunctionality (AMF), for instance job opportunities, more environmental-friendly crop-production methods and food security, is not much known, especially in Malaysia. Thus, the objectives of this study are to estimate the economic value and the factors influencing willingness-to-pay (WTP) for AMF. Additionally, there are vast potentials in AMF to support the UN Sustainable Development Goals 2, 8 and 12. A contingent valuation (CV) with two payment solicitation formats was commissioned on respondents in Kuala Lumpur to study the WTP an agricultural premium of the purchase values of agricultural products to support AMF. The findings support the direction of innovating the agricultural industry through AMF as one of the forerunners of sustainable growth for developing countries like Malaysia. Although only half of the respondents vowed their WTP for AMF, it is observed that households, which spend more on agricultural products such like vegetables, fruits and related goods are having higher odds ratio of WTP for AMF. The odds ratios change to values of more than 1.00 with spending, which was three times the mean value. And that payment card format begets higher odds ratio of WTP for AMF compared to open-ended CV method format. The findings encourage entrepreneurs, especially the youth to venture into the innovative non-food benefits of agriculture for more responsible usage of our natural resources and decent economic growth.

KEYWORDS

agricultural multifunctionality, sustainable development goals, non-food benefits

1. INTRODUCTION

Agriculture is an industry that could survive financial crisis as evident in the 1997 Malaysian economic crisis. Agriculture provides both food produces and also non-food benefits such like food security, environmental protection, landscape and cultural preservation and rural employment, known as agricultural multifunctionality (AMF). This term was first shared at the earth Summit in Rio de Janeiro in 1992 and was referring to the provision of a framework to understanding and addressing various developments and changes in global agriculture activities. The Organisation for Economic Co-operation and Development (OECD) has long worked on the non-commodity output of agriculture mentioned earlier. AMF refers to the fact that an agriculture activity may have multiple outputs and, by virtue of this, may contribute to several societal objectives at once (OECD, 2001). This articulates well that agriculture as an industry has rich contributions to the United Nations (UN) Sustainable Development (SD) Goals (SDGs), especially Goal 2- Zero Hunger, Goal 8- Decent Work and Economic Growth and Goal 12- Responsible Consumption and Production.

The SD Goal 2 aims at ending hunger, achieve food security and promote sustainable agriculture. The first target of this goal is to enhance agricultural productivity and getting more diverse group of the community to be involved to create this economic value. In order to attract more participation, especially the youth, the concept of AMF as complementary benefits of agriculture helps. One of the main non-trade benefits of AMF is food security and the main indicator of the said target is to counter severe food insecurity occurrences. It is also the aim of this target of expanding agricultural yields to protect reasonable agricultural area for sustainable agriculture. With a healthy agriculture industry, the country can promote sustained, inclusive, and sustainable economic growth and decent work for all. This helps to create more job opportunities for both women and men, young and people with special needs and worthy to be mentioned single mothers and refugees residing in the country. Annual growth rate and unemployment rates, especially among the youth can be improved for social balance and cohesion. SD Goal 8 covers these concerns and AMF plays a role in supporting those targets of the goal.

Agriculture, like all other industries involves consumption and production of their respective goods and services. SD Goal 12 looks into ensuring sustainable consumption and production patterns in the country. It is the targets of the goal that sustainable management, efficient use of natural resources and halving global food waste are achieved by 2030. AMF encourages reduction of pollutants as it promotes more environmental-friendly crop production methods and better consumption habits of the people through the appreciation of the non-food based invaluable positive externalities. AMF provides positive externalities in terms of non-food

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benefits with significant economic impacts and, also social and cultural benefits, which are crucial information for policy makers to consider (Weersink, 2002; Wilson, 2007). However, AMF is a very broad concept, and its societal importance is little known (Heringa et al., 2013). As such, an economic valuation exercise would help inform the policy makers the value of these positive externalities, which support the SDGs mentioned earlier.

1.1 Objectives of study

The main objective of this study is to estimate the economic value of AMF as a catalyst of sustainable development (SD) using the contingent valuation method (CVM), which elicits the willingness-to-pay (WTP) of Malaysians using two different payment solicitation formats. The secondary objectives are to identify the factors influencing WTP for AMF and understand the perspectives of the public on AMF. Although AMF is not a new enhanced alternative, the awareness and understanding of Malaysian about it is rather low. This paper showcases a fundamental study of AMF, adding to the limited literature of such work in Malaysia. The agriculture industry contributes to around 7.1 percent of the gross domestic product (GDP) of the country in 2019. The trend has been falling since 2012 and there is a need to rejuvenate this industry, which has a great potential ahead.

This study monetises the non-food benefits of agriculture and opens wider perspectives to agriculturalists in both the public and private sectors. There are several scientific contributions of AMF, and two of the more significant are lower temperature and air pollution in the areas surrounded by paddy fields. With climate change, the average temperature is rising and affecting crop yields. AMF may be a catalyst to start the planters, public and policy makers to see the importance of reviving the agriculture industry in Malaysia. The findings may be useful to the relevant authorities like the Ministry of Agriculture and Agro-based Industries, Ministry of Natural Resources and Environment, Ministry of International Trade and Industry, and other related agencies.

1.2 Literature review on agricultural multifunctionality

Continuous works on agricultural multifunctionality (AMF) are observed globally. However, not many current studies have been added into the stock of literature as evident also by the work of Tohidyan and Rezaei-Moghaddam (2019), which cited literatures older than five years or more. The work of Tohidyan and Rezaei-Moghaddam reported multifunctional agriculture as an approach for entrepreneurship development for the industry and is one of the closest to the research focus of this paper. The study of the authors also lists the characteristics of AMF. The philosophy of AMF entails multiple progress and sustainability through social innovation and take a more holistic agricultural point of view. AMF focuses on a balance between food security and self-sufficiency through increasing production of farm yields and environmental protection. Farmers should be entrepreneurial, and farms can be managed alike a multifunctional-rural companies.

These characteristics converge to show that agricultural growth for economic development through AMF supports sustainable development especially SD Goal 8. Most of the literature record works on policies related to AMF, the appropriate AMF framework and valuing the output of AMF (Randall, 2002; Heringa et al., 2013; Dominguez-Torrero and Solino, 2011; Moxey et al., 1999; Paarlberg et al., 2002; Bjorkhaug and Richards, 2008; Cairol et al., 2009; Caron et. al., 2008). A group researcher looked at how AMF is reflected in policies, made a comparative analysis of AMF between Norway and Australia, a studied how AMF affects agricultural trade negotiations, and considered the efficient design for agri-environmental policies (Cairol et al., 2009; Bjorkhaug and Richards, 2008; Paarlberg et al., 2002; Moxey et al., 1999).

Some researchers argued the need to refocus the concept in addressing AMF (Caron et al., 2008). Heringa, van der Heide & Heijman looked at the economic impact of AMF in the Netherlands using an input-output model, a studied the implications for valuing outputs of AMF using different status quo in choice experiments, and valued the outputs of AMF (Heringa, van der Heide and Heijman, 2013; Dominguez-Torrero and Solino, 2011; Randall, 2002). In addition, a group researcher works on promoting agricultural multifunctionality in Germany as a new approach as they see this as an area of great benefits to the economy (Lehmann et al., 2009). Some researchers works on the tools and impact assessment of agricultural multifunctionality (Zander et al., 2007). In the more recent works such like care farming was studied as having roles in multifunctional agriculture and recommended politicians to mandate an economic environment, which supports the care farms (Custance et al., 2015). In the local context, work on AMF is very minimal. This study adds into the local AMF literature, especially into looking ways the non-trade benefits of agriculture can play a significant role in sustainable development in Malaysia.

2. METHODOLOGY

Contingent valuation method (CVM) is an economic and environmental valuation technique, which uses a surrogate market by directly eliciting consumers' preferences and willingness-to-pay (WTP) for some proposed market conditions, which offer potential improvements or avoid potential damages to the environment and/or society. It is grouped under the family of non-market environmental valuation stated preference technique, which aims to quantify the environmental goods or services of non-market attributes into monetary or market values. CVM elicits the maximum WTP of individual respondent to obtain improvement or avoid damages on environmental goods and services in a hypothetical market (Sellar et al., 1985; Bergstrom and Stoll, 1989). In this study respondents were asked their WTP to pay for agricultural multifunctionality (AMF) in order to preserve the non-food benefits of agriculture. As such the framework of compensating surplus (CpS) is employed. The CpS of a price increase (in the context of higher prices of agricultural products) is the amount of income, when taken away from the consumer, will leave him/her as well off as without the price change as if it had occurred. This will keep the consumer on his/her post-change utility level. The following is the expenditure function to illustrate the CpS:

$$U(x_i'', x_j' - WTP\ gain_{ji}[x_i', x_i'', x_j']) = U(x_i', x_j')$$

The public's WTP, socio-economic and attitudinal variables can be specified as:

$$WTP_i = X_i'\beta + e_i$$

where X_i = vector of explanatory variables and β = vector of coefficients. The e_i term is assumed to be independent, identically normally distributed random variable with zero mean and variance σ^2, i = 1, 2, …, n denotes respondents in the sample. The conditional distribution of the WTP is given by:

$$WTP_i \mid X_i \sim N(X_i'\beta, \sigma^2), \qquad i = 1, 2, \ldots, n$$

The CVM technique has been widely used to estimate WTP due to its flexibility in application, allowing it to value almost everything. It can even value goods and services with no observable behaviour but are easily understood and identified by respondents. Its direct approach of eliciting the WTP to obtain improvement or abstain from degradation of environmental goods and services provides defensible estimates and are easy to analyse and describe. CVM is famously used to value total economic value, including the use and non-use values of an environmental good or service. Although CVM has been widely used in economic valuation, critiques are sceptical of its ability to accurately and adequately measuring the WTP for any environmental goods or services (Diamond and Hausman, 1994). However, the CVM results can be reliable if the recommendations reported by The National Oceanic and Atmospheric Administration's (NOAA) Panel, are closely followed. The validity and accuracy of CVM can be further enhanced by respondents' familiarity with the issues through detailed explanation and interviewed by well-trained interviewers (Yoo and Kwak, 2009). This paper follows those conditions as closely as possible to ensure reliability of the findings.

2.1 Survey instrument

The CVM questionnaire was designed to elicit the value of the proposed policy of improving agricultural sustainability through multifunctionality. The respondents were asked their WTP an agricultural premium for supporting agricultural sustainability projects lead by a hypothetical Malaysian Agricultural Multifunctionality Board (MAMB) and endorsed and monitored by the Ministry of Agriculture and Agro-based Industry. A total of 800 households were interviewed in the Klang Valley, an area in Malaysia comprising Kuala Lumpur and its suburbs, and adjoining cities and towns in the state of Selangor. It is also known as the Greater Kuala Lumpur. The survey was undertaken between July to December of 2019. This sample size is comfortable for use in surveys on environmental valuation studies in the Malaysian context as shown in the works (Pek and Jamal, 2010; 2011).

The survey was conducted on head of households, normally the 'father' but in the absence of this person, the 'mother' was interviewed. Otherwise, the household will be skipped. The finalisation of the questionnaires was done after a pre-test and a pilot study. These served to check and ensured if the ideas and questions were understood and acceptable to the public. After taking into consideration the comments from these exercises,

improvements were made on the questionnaires before were used in the actual survey. The survey was conducted by face-to-face interviewing as the other methods such like mail or telephone interviews could not allow the interviewers to explain the actual issue in a detailed and clear manner to the interviewees. Face-to-face interview is expected to obtain more accurate and complete responses. The average time to complete the questionnaires was about 30 to 45 minutes.

The interviewers were properly trained through mock interviews in the training workshop organised. Some innovations to present the green market to help respondents better understand AMF was applied into the traditional open-ended and payment card CVM format question respectively. Before the CVM questions were presented to the respondents, a description of agricultural sustainability was explained. The respondents were asked introductory questions like 'are they concerned about agricultural sustainability' and 'are they member(s) of (any) environmental organisations'. They were also asked to rank their concern, based on importance, on a series of environmental issues like agricultural sustainability, environmental sustainability, food security and climate change. Next, the proposed state with improvements were presented in terms of the non-marketable roles of agriculture such like contribution to employment growth, provision of healthy products and food security.

2.2 Hypothetical market and choice set

The hypothetical market for AMF is presented to the respondents in the following narrative. "A Malaysian Agricultural Multifunctionality Board (MAMB) will be established, and agriculture and agro-based companies will be required to register themselves. The members will have to identify and existing or launch a new agricultural product line to participate in MAMB's efforts in the country. These identified agricultural goods must be their top quality green products and be sold at a higher price to the consumers. The prices of all non-participating produces will remain unchanged. The selected agricultural products will be identified by a hologram sticker tagged onto them. When you purchase any of these participating agricultural products, it would mean that you are supporting the 'buy agricultural multifunctionality products' by paying an extra price, known as the agri-premium, which is denominated in percentages. Suppose the price of a participating good is RM10.00 and your agri-premium is 2 percent, this would mean you are willing to pay 20 sen more to support agricultural multifunctionality. All agri-premium collected by the companies as MAMB members must be used to fund agricultural sustainability projects endorsed and monitored by the Ministry of Agriculture and Agro-based Industry of Malaysia." The respondents were then explained the improvements on the roles of AMF such like the contribution to employment growth from current state of -1 percent to a proposed improved state of 1 percent, provision of healthy products by conventional agriculture to more environmental-friendly organic farming, alike the care farming, and reduction of the country's rice reliance on imports from 33 percent to 25 percent. The choice set of the CVM question is shown as Figure 1 (Custance et. al., 2015).

Suppose by supporting the *'buy agricultural multifunctionality products'*, the followings can be attained, what is your ***willingness-to-pay (WTP) for the agri-premium for every RM10.00*** of agricultural products you purchase?
*[Agri-premium is the extra price charged in **percentage (%)** of total expenditure used to buy agricultural produces such like vegetables, fruits, rice, grains and nuts]*

Non-marketable roles of agriculture	Current state	Proposed state
Contribution to employment growth	Negative growth (-1%)	Positive growth (1%)
Provision of healthy products	Conventional agriculture	Organic agriculture
Food security	33% of rice is imported	25% of rice is imported
Agri-premium for every RM10.00 of agriculture products	Nil	Your WTP [X%]

Figure 1: Choice set of CVM question

The solicitation of respondents' WTP was done using two sets of payment formats; the open-ended and payment card. In the open-ended format CVM question (see Figure 2), respondents were asked for their WTP directly and followed by a next question for confirmatory purpose.

Based on the proposed state, what is the *agri-premium* that you are willing to pay?
[Agri-premium is in percentage of your total spending on agricultural products. Please remember that any agri-premium will reduce your disposable income]

My agri-premium is: _____ %

Figure 2: Open-ended CVM question

The respondents surveyed using the payment card method (see Figure 3) were first shown a payment card with ranges of WTP for selection and then followed by the next question confirming the actual WTP value within the selected range.

Based on the proposed state, what is the range of *agri-premium* that you are willing to pay?
[Agri-premium is in percentage of your total spending on agricultural products. Please remember that any agri-premium will reduce your disposable income]

Please indicate the range of your Agri-premium:
[ ] A. 1 - 4%
[ ] B. 5 – 9%
[ ] C. 10-14%
[ ] D. 15-19%
[ ] E. More than 20%

Please indicate your **exact agri-premium** (in percentage of your total spending on agricultural products) within the range chosen in Question 10.

My exact agri-premium is : _____ %

Figure 3: Payment card CVM question

Following the key WTP questions, socio-demographic information about the household was recorded. These include asking questions like their age, gender, income, qualification, type of profession and ownership of the house they are residing. The open-ended CVM format was used in this study, and it allows respondents the full autonomy to state their maximum WTP. Critics on the wide range of WTP replies can be rebuked by the use of payment card with reasonable ranges of WTP obtained through focus group discussions. Enumerators are reminded not to influence the respondents in choosing the values of WTP to minimise "starting-point" bias. The respondents were told explicitly that if they decided to choose the improved plan, they would need to pay an agri-premium, which is a percentage of the price of agriculture products purchased. Supposed the participating good, identified by a hologram sticker tagged onto it, is RM10.00 and the agri-premium WTP is 2 percent, the respondent will have to pay 20 sen more in support of AMF. They were also being informed that agreeing to pay the extra cost would mean reducing their disposal income.

It is recognised that the open-ended CVM would put pressures on the respondents to state their WTP and this gives rise to high level of protest bids (Yoo and Kwak, 2009). However, to minimise this concern, then payment card format was used on a different group of respondents to check the validity of this claim. Enumerators were also told to give sufficient time and space for the respondents to think and reconsider carefully of the issue and their WTP. This study is fully aware of the several concerns of using CVM. Respondents may not be familiar with the environmental goods posed to them for WTP elicitation. This information bias would influence their stating of the true monetary values. Besides, these respondents may have just revealed their opinions on the scenario given to them than expressing value for the good. Respondents may state agreement to WTP to show their support for sustainable agriculture, but not the monetary values they give to the environmental good itself. Hypothetical bias occurs when the actual payments by the respondents are lower than the hypothetical values pledged (List and Gallet, 2011). Strategic bias occurs when CVM respondents supply biased answers in order to influence some outcomes in line with their personal agenda.

2.3 Model specification

The Binary Logistics Regression (BLR) was used for estimation to predict the probability of the outcome of a categorical (non-numerical) dependent variable influenced by the change(s) in one or more independent variables. The odd ratios were then estimated from the log of odds ratios and predicted probabilities.

The BLR is based on a linear model for the natural logarithm of the odds (known as log-odds) in favour of Y=1:

$$Log_e\left[\frac{P\left(Y=1|\,X_1,\ldots,X_p\right)}{1-P\left(Y=1|\,X_1,\ldots,X_p\right)}\right]=Log_e\left[\frac{\pi}{1-\pi}\right]$$

$$=\alpha+\beta_1X_1+\ldots+\beta_pX_p=\alpha+\sum_{j=1}^{p}\beta_jX_j$$

π is a conditional probability of the form $P(Y=1|\ X_1,\ldots,X_p\ )$. That is, it is

assumed that "success" is more or less likely depending on combinations of values of the predictor variables. The log-odd, as defined above, is also known as the logit transformation of π and the analytical approach described here is sometimes known as logit analysis.

The logistic function takes the form of:

$$P\left(Y=1|\ X_1,...,X_p\right)=\frac{e^{\alpha+\sum_{j=1}^{p}\beta_j X_j}}{1+e^{\alpha+\sum_{j=1}^{p}\beta_j X_j}}$$

which can also be transformed into:

$$P\left(Y=1|\ X_1,...,X_p\right)=\frac{1}{1+e^{-\alpha-\sum_{j=1}^{p}\beta_j X_j}}$$

The non-response probability is:

$$P\left(Y=0|\ X_1,...,X_p\right)=1-P\left(Y=1|\ X_1,...,X_p\right)=\frac{1}{1+e^{\alpha+\sum_{j=1}^{p}\beta_j X_j}}$$

Using the set of predictors, the BLR equation for the log-odds in favour of the dependent variable is estimated to be:

$$\log\left[\frac{p_i}{1-p_i}\right]=b_0+b_i\times X_i$$

with the partial coefficients, b_i, informing the change to log odds of agreeing to the dependent variable.

3. Findings and Discussion

The statistical analysis of the socio-economic profile of the respondents is shown in Table 1. The parameter values like the mean, standard deviation, minimum and maximum of each variable are listed.

Table 1: Statistical analysis of respondents' socio-economic profile

Variables	Mean	Standard deviation	Minimum	Maximum
Age	37.62	11.42	19	69
Spending on agricultural products per week (MYR)	178.45	86.31	15	480
Number of households	4.14	1.75	1	9
Agri-premium (%)	2.99	4.80	0	30
Number of kids	0.73	1.03	0	4
Household income (mid-range values)	6,200.00	2,143.00	1,501.00	10,001.00
Number of households working	2.03	0.85	1	6

**Exchange rate MYR4.04 : USD1.00 (December 2019)*

The preliminary results from the just completed survey exercise reveal a mixed response to agricultural multifunctionality (AMF) by the respondents. It is surprising to see that on average, agricultural sustainability is the least concerned socioeconomic issue ranked by the respondents. However, they have given a high importance (second placing) to food security in the following question asking for their preference of areas within agricultural sustainability. This may mean that the public is still uncertain about what AMF is and that food security may be joint-product of agriculture. This outcome is less expected as enumerators had explained the concept of AMF thoroughly to the respondents before they were asked to rank their preferences. This pattern of response may also be due to the fact that Malaysians have never experienced food shortages.

When the respondents were asked of their willingness-to-pay (WTF) an agri-premium for AMF, a 50:50 response was received. This is rather similar to the finding of Pek et. al (2014) on the WTP of Malaysians for a reduction of rice subsidy to fund more climate change mitigation projects. This may mean that more effort to create awareness of AMF is much needed. The respondents on the average are willing to pay an agri-premium of 3 percent. On average a household spends about RM720.00 per month for vegetables, fruits, nuts, grains and rice. Hence, a household is willing to pay RM22 per month to support AMF, a decent figure. The WTP in terms of agri-premium (%) of the respondents are shown in Table 2. Majority of those who are WTP stated their agri-premium between one to five percent (28.2 percent of the total respondents), low but reasonable as the level of awareness and acceptance of AMF is still low in the country.

Table 2: WTP in agri-premium (%) for AMF

Agri-premium (%)	0	1 to 5	6 to 10	11 to 15	16 to 20	21 to 25	26 to 30
Count	423	226	103	28	14	4	2
Percentage	52.9	28.2	12.9	3.5	1.8	0.5	0.2

Based on the BLR category prediction result, the model correctly predicted 66.3 percent of cases (0 = not WTP, 1 = WTP for AMF), where the predictions are correct 530 times out of 800 times. The Nagelkerke R square value is 0.152. The results of the BLR model is shown in Table 3.

Table 3: Results of the binary logistic regression model

	B	S.E.	Wald	df	Sig.	Exp(B)
Format	.400	.158	6.454	1	.011	1.492
CareAgri	-.093	.227	.167	1	.683	.911
MbrEnv	-.517	.358	2.085	1	.149	.596
SpdWk	.004	.002	5.452	1	.020	1.004
NoHH	-.075	.084	.799	1	.372	.928
Age	.015	.007	4.036	1	.045	1.015
Gender	-.665	.153	18.987	1	.000	.514
Kids	-.397	.088	20.180	1	.000	.672
JobHH	-.285	.138	4.298	1	.038	.752
Constant	-.594	.479	1.534	1	.216	.552

The results show that format of the CV questions; open-ended vs payment card has a significant influence on the respondents' WTP for AMF, with a 1.5 times higher probability if the payment solicitation format is payment card with all other factors held constant. Female has a 0.5 lower probability than male in their significance in affecting WTP for AMF from the gender perspective (male n= 392; female n= 408). The household spending on agricultural products per week (SpdWk) and age have positive and significant influence in WTP for AMF. The number of kids in the household (Kids) and number of working household members (JobHH) are negatively related to WTP of AMF and the parameters are significant. The other factors like care for agricultural sustainability (CareAgri: n= 107 do not care; n= 693 care), member of environmental organisations (MbrEnv: n= 760 non-member; n= 40 member) and number of members in the household (NoHH) do not have any significant influence on the probability of WTP for AMF. The significance level for all interpretations of the parameters and variables is 0.05.

The results from the BLR are used to make predictions on the probability of WTP for AMF focusing on the different payment solicitation formats with changes in the amount of spending on agricultural products by households per week. The amount of SpdWk changes from one mean value to five mean values. All the continuous dependent variables (NoHH, Age, Kids and JobHH) are assigned their fixed mean values in the computations of the odd ratios. For the categorical dependent variables, Gender- male, CareAgri- Yes and MbrEnv- Non were the observed category in the respective dummy variables. Table 4 and 5 report the changes in odds ratios of WTP for AMF when the weekly spending on agricultural products

by households change under the two payment solicitation formats. The interpretation of odds ratio 3, for example, is that there is a 3 to 1 chance of WTP for AMF.

Table 4: Predicted probability and odds ratios with open-ended format

SpdWk (MYR)	178.45	356.9	535.35	713.8	892.25
Log of odds ratio	-1.253	-0.539	0.175	0.889	1.602
Predicted probability	0.222	0.368	0.544	0.709	0.832
Odds ratio	0.288	0.583	1.191	2.431	4.965

Table 5: Predicted probability and odds ratios with payment card format

SpdWk (MYR)	178.45	356.9	535.35	713.8	892.25
Log of odds ratio	-0.853	-0.139	0.575	1.289	2.002
Predicted probability	0.299	0.465	0.640	0.784	0.881
Odds ratio	0.426	0.870	1.777	3.628	7.407

In both the payment formats, the log of odds ratios changes from negative to positive values, and the odds ratios are greater than 1.000 when the amount of SpdWk is three mean values. Hence, when SpdWk takes the amount of MYR535.35, there is a 1.2 to 1 chance of WTP for AMF under the open-ended format versus 1.8 to 1 under the payment card format. A more significant difference is observed when the SpdWk is five mean values with 5 to 1 versus 7.5 to 1 chance respectively under the two different payment solicitation formats.

4. Conclusion

The results from the study are rather encouraging although half the respondents did not vow their support in WTP for AMF. This may reflect that the respondents are generally less educated and aware of AMF and the benefits it can bring economically, socially and culturally. The non-food benefits of agriculture such like employment opportunities, organic farming production method and food security are crucial for AMF to be preserved and given substantial policy priorities in Malaysia. The findings from household spending on agricultural products per week (SpdWk) show possible opportunities to encourage higher public participation in AMF. The observation that higher weekly spending on agricultural products increases the odds ratio of WTP AMF shows that households, who spend more on agricultural products notice the importance of keeping the core function and non-trade benefits of agriculture.

The characteristics of AMF in this study, contribution to employment growth, provision of healthy products using greener method and food security fit well into SD Goals 2, 8 and 12. And with the observed potential to get more Malaysians to participate in AMF, it is hoped that the agricultural can be sustainable and continue to support the economic growth of the country. The policy makers such like the Ministry of Agriculture and Agro-based Industries, Ministry of Natural Resources and Environment, Ministry of International Trade and Industry, and other related agencies can strategise more balanced agriculture policies to support AMF such like tax incentives and enhancing the framework of sustainable agriculture. Malaysia is a country with abundant land and agriculture can be reinstated with its glory of the early 70s being the major contributor to the GDP of the country.

There are green movements such like MyHijau and interested youths to promote and venture into eco-tourism and green start-ups with vegetable and organic crop plantations in small and medium scales. In order to understand this niche group of people, this study presents some revelation of their preferences. With some revelation of the attitude and behaviour of the respondents towards AMF in Malaysia, the government would need to educate the public with more AMF awareness creation campaigns and projects. One of the fruitful places to start with is at the school and university levels. The United Nations' SDG 2030 is a timely framework for institutions of learning to promote, implement and achieve sustainable development goals. AMF awareness promotion efforts are necessary as Malaysia needs to move into sustainable development with agriculture sustainability as one of the main pillars of green growth.

The findings support the direction of innovating the agricultural industry through AMF as one of the forerunners of sustainable growth for developing countries like Malaysia. Although only half of the respondents vowed their WTP for AMF, it is observed that households, which spend more on agricultural products such like vegetables, fruits and related goods are having higher odds ratio of WTP for AMF. The findings encourage entrepreneurs, especially the youth to venture into the innovative non-food benefits of agriculture for more responsible usage of our natural resources and decent economic growth. Malaysia is on the right track to achieve the SDG indicators and agricultural multifunctionality is a viable option for the government to achieve SDG 2, 8 and 12 come 2030.

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