The mediating effect of personal values on the relationships between attitudes, subjective norms, perceived behavioral control and intention to use

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CHRONICLE	ABSTRACT
	In recent years, the issue of food packaging waste has become a vital environmental concern in the society which revolves around waste management practices particularly among food hawkers. The problem has been highlighted by many researchers and numerous suggestions have been made in order to improve sustainability with regard to green environment. Food packaging waste ranks the highest contributor to waste. Thus, environmentally friendly food packaging (EFFP) has been introduced in the market to ensure good management practices could be promoted among food hawkers so that environmental pollution can be reduced. However, even though many environmental programs have been implemented, the usage of EFFP among food hawkers has not improved. Hence, this paper aims to propose a specific actual behavior model to determine the usage of EFFP among food hawkers with personal value as a mediator. The development of the model used data that were collected from local food hawkers. Structural equation modeling was used to test related hypotheses. The findings indicated that personal values were a suitable mediator construct. Furthermore, attitudes, subjective norm, and perceived behavioral were all found to have had significant effects on the intention to use and the actual behavior. Finally, this paper also discusses the limitations of the present study and the contribution it has made.

1. Introduction

The use of environmentally friendly food packaging (EFFP) on the market has become highly important for business as well as for sustainability of the environment. It has been noted that the awareness of the use of EFFP has rapidly increased as efforts have been made to ensure it would be widely spread among business food operators and more importantly reach the street food hawkers. Moreover, the number of EFFP product suppliers has also increased in order to fulfill the market demand of using EFFP. In addition, the government has also introduced awareness campaigns and implemented relevant education programs. The growing concern about the use of EFFP has been linked to the issue of environmental degradation which is a global critical issue. Meanwhile, in Malaysia, food packaging wastes have been identified as one of the causes of the acute environmental mess contributing to the deterioration of the quality of the environment. In 2018, Malaysia's population was estimated at 32.4 million with the annual growth

rate of 1.1 percent as compared with its rate in 2017 (Department of Statistics, Malaysia, 2018). Along with the increment of population rate, the economic growth and industrial development also accelerated the amount of wastes produced in Malaysia. In this regard, the impact of the population growth can be seen from the statistics obtained from the National Solid Waste Management Corporation (Yahaya, 2012). Over 30,000 metric tons wastes are produced each day in Malaysia. From this amount, 13% or 4,000 metric tons comes from the plastic stream.

Food packaging has always been noted to be one of the major contributions to environmental degradation. Therefore, EFFP has great potential to minimize the negative impacts on the sustainability of the environment. In response to this issue, the Malaysian government has launched the initiative to promote the recycling program; nevertheless, the current practice of recycling among Malaysians is still at low with the rate aggregating at 17.5 %. Moreover, food waste has also become the highest contributing factor in waste management composition. According to the Department of Solid Waste Management, the number of food waste generated daily is approximately 500kg per 100 hawkers (Manaf et al., 2009). Additionally, to boost the usage of EFFP on the market, the Malaysian government has introduced a tax incentive and tax exemption scheme. As the Malaysian government agenda to drive the growth its green economy market and to strengthen the development of its green technology (MyHijau, 2013). Accordingly, this initiative objective is also aimed at widening the coverage across green technology and support service activities mainly in food packaging. It is expected that the fruitful impact to reduce 45% carbon emission and reduce non-EFFP product usage for the nation can be achieved by 2030. MyHijau is the government alternative agency to move the sustainability practices and processes not only on cut-down life-cycle cost, but also to educate public awareness and the perceptions of the members of the public as well as attract environmentally-conscious customers, sellers, business operators, industry players, and talents.

To ensure the target can be achieved by 2030, numerous campaigns, awareness programs, incentives have been conducted continuously by the government. Additionally, non-governmental organizations (NGOs) have also contributed to awareness movement, rapid development, and become suppliers of EFFP products in the market by industry. All these activities cover the wide range of business aspects including at hawkers' centers or night markets, as well as food hawkers themselves. Nevertheless, the rate of EFFP usage among the food hawkers in their business activities is still low at 17.5 %. This low rate usage of EFFP affects 500 kg contribution of food waste among food hawkers daily, and only 5% of waste has been properly recycled each year (Global Environment Centre, 2017; Manaf et al., 2009). Eventually, the wastes end up in the drains, causing drainage blockage which often leads to flash floods.

Meanwhile, it has been reported in Malaysia that the highest proportion of waste disposal is generated from municipal solid waste at 64%, followed by industrial waste and commercial waste at 25% and 8% each, respectively (Jayaraman et al., 2011). Thus, it can be concluded that the municipal areas produce the highest amount of solid waste. Commonly, solid waste from the municipal sources is caused by individuals and small business activities such as street hawkers and nigh market food sellers. This has raised some concerns: doesn't the food hawkers' behavior take advantage or burdened with government initiative, program, or incentive that do not reflect much using EFFP? Or is the availability of the EFFP still not enough to cater to the demand of the market in terms of affordability and ease of use? Furthermore, is the issue related to the food hawkers' behavior itself? In other words, are the food hawkers reluctant to change or do they not have the intention to use EFFP in their business operations? On top of that, the personal values of food hawkers might arguably be part of the cause in the decision they make or their intention to use EFFP. The main focus of this scenario has remained unresolved in spite of many initiatives to address this particular issue. Hence, the actual behavior among food hawkers can be determined by examining their intention to use EFFP through subjective norm, attitudes, and perceived behavioral with personal values as a covarying factor.

Thus, the objective of this study is to examine the effects of attitudes, subjective norm, perceived behavioral control, and personal values on the intention to use EFFP and its relationship with the actual behavior among food hawkers. In addition, it also aimed to analyze the mediating effect of personal values on the relationships between three factors; namely, attitudes, subjective norm, and perceived behavioral control, and the intention to use EFFP with regard to the actual behavior among food hawkers. Finally, the paper aims to propose the actual behavior model (ABM) in the context of the usage of EFFP among food hawkers.

2. Actual Behavior of Environmentally Friendly Food Packaging

There are three main factors that are concerned with the actual behavior among food hawkers. These factors will be briefly discussed in this section. First, food hawkers' actual behavior reacting towards abiding government policy (Tyler & Darley, 1999), willingness to use EFFP (Horváth et al., 2018), involvement in recycle activity program (Chen et al., 2018; Jansson et al., 2011; Ohtomo & Hirose, 2007), encourage others (Clark-Hitt et al., 2012; Dunhill, 2018), and use of EFFP in daily life (Kahneman et al., 2004) and business activity (Han et al., 2009; McLachlan et al., 2018). These issues revolve around the actual behavior determination of the use of EFFP among food hawkers.

Second, the food hawkers' actual behavior is concerned with the intention to use EFFP in their business activities. It has been observed that the food hawkers' reluctance to use of EFFP is because they lack the readiness in their minds (Arli et al., 2018; Han et al., 2011). The environment (De Hoop & Jehlička, 2017) and the intrinsic factor (Giffin & Lombrozo, 2018; Van der Werff et al., 2013) have also affected the factor intention to use of EFFP among the food hawkers. Furthermore, the morality factor causes the changes in the intention to use EFFP.

Third, the integral factors of attitudes, subjective norm, and perceived behavior control of the food hawkers have outlined part of the issue of this study (Hoxmeier et al., 2018; Rhodes & Courneya, 2003). These factors form part of the main reasons for determining the intention to use of EFFP in actual behavior as these factors can make a different point of decision for any judgment in the decision-making process, evaluation, and actual behavior form. Thus, it is crucial to understand and examine these integral factors (i.e., attitudes, subjective norm, perceived behavioral control) associated with the intention to use EFFP such as perceived risks (Perelman et al., 2018), confidence level (Boukouvalas et al., 2018), and knowledge level (Burns et al., 2017; Chesney et al., 2018). By having these dimensions of measures for attitudes, the integration of the issue to be determined would be more comprehensive.

Meanwhile, subjective norm becomes an issue in the relationship of the problem toward intention. As it always refers to a weak relationship or non-existence in a test of relationship for intention to use the variable (Ham et al., 2015). Thus, it is important to further examine the role of subjective norm among the food hawker as it could also form part of the causal effect toward the intention to use of EFFP (Ham et al., 2015). Moreover, it has been noted that that the influence of customer (Albrecht et al., 2017), influence of media (Md Husin et al., 2016), and moral obligation (Shin & Hancer, 2016) are also crucial to thoroughly examine the issue.

Additionally, perceived behavioral control lies in the gap of the relationship issue of the study. This occurs in view of the market condition (Arli et al., 2018), ability (Hansen et al., 2018), and information of the sources (Hajli & Lin, 2016) that remain the paradox of the situation among food hawkers. Thus, the vision of that issue would substantiate for the matter for intention to use EFFP among food hawkers.

In summary, there is a need to propose and integrate a model of actual behavior as this would properly justify the framework the intention to use EFFP in relation to actual behavior among food hawkers. However, there is also a need to examine to what extent this model would accommodate the current situation of food hawkers in using the EFFP. Clearly, there is a void in substantiating integrated model

for actual behavior among food hawkers using EFFP. Theoretically, such investigation would also determine the most dominant factor(s) affecting the relationship between the intention to use EFFP and actual behavior. More importantly, the mediating effect of personal values on the relationships between the three identified factors, namely, attitudes, subjective norm, and perceived behavioral control, and intention to use of EFFP in its relationship with actual behavior can be determined. Furthermore, from managerial viewpoint, the findings of such an analysis of needs and such model would arguably be significant to stakeholders. Moreover, in practice, the results may drive the changes in EFFP usage in the market in general and among food hawkers in particular.

3. Methodology

The primary objective of this study is to determine whether attitudes, subjective norm, and perceived behavioral control predict antecedents towards the relationship between intention to use and actual behavior. A total of 320 respondents were sampled from the total population of 1,900 food hawkers, which was the minimum sample size as suggested by Krejcie and Morgan (1970). Simple random sampling was implemented to acquire the probability of the data (Afthanorhan et al., 2019; Aziz et al., 2016) which is recommended for parametric analysis. A questionnaire was used to collect data. Each question was measured by a 10-point Likert-scale (Aziz et al., 2016) to determine the level of agreement among the respondents which measured how strongly subjects agreed or disagreed with each item on a 10-point scale. The scale used not only ranked the results but also measured the ranks and ensured the accuracy and sensitivity of the data.

Reliability was examined using the Cronbach's alpha values of the constructs which yielded in all the values having achieved above the value of 0.6 (Afthanorhan et al., 2019; Awang et al., 2015; Aziz et al., 2016). The IBM Statistics SPSS software was used to analyze descriptive of the respondents and the response score of the measuring items. SPSS was also employed to run an exploratory factor analysis (EFA) to reduce and manage the number of many variables that might belong together and have overlapping measurement characteristic(s). Structural equation modelling (SEM) was performed using the Analysis of Moments Structures (AMOS) software version 21.0. SEM is a second-generation method of statistical analysis developed to cater for limitations in the traditional ordinary least square regression especially when dealing with latent constructs in a model (Zainol et al., 2019; Aziz et al., 2016; Aimran et al., 2016). The AMOS software was used to perform the confirmatory factor analysis (CFA) to validate the measurement model of a construct and to test the hypotheses in the path model.

4. Findings

In the SEM method, the assessment of measurement model has been required to determine the reliability, validity and fitness of each construct in the research model. The fitness of a measurement model can be inspected by using the global fitness indexes as comparative fit index (CFI), incremental fit index (IFI), Tucker-Lewis index (TLI), Chi-square to degrees of freedom ratio (χ^2/df) and root mean squared error of approximation (RMSEA) followed by the reliability and validity. The fitness indexes can actually be categorized as follows: incremental, parsimonious and absolute. These fitness indexes should be fulfilled before executing the structural model. In this case, the CFI, IFI, TLI, χ^2/df and RMSEA were selected as suggested by Afthanorhan et al. (2019). Hair et al. (2017) have made the following recommendations: CFI, IFI and TLI > 0.90, χ^2/df < 3.0, and RMSEA < 0.08. To fulfill these assumptions in CFA, factor loadings below 0.60 were dropped from the model to improve the value of reliability and validity in the construct. The reliability assessment is assessed by Composite Reliability (CR) and validity is determined by Average Variance Extracted (AVE).

Table 1 presents the results for CR and AVE which would be necessary for consideration in CFA. The acceptable value for CR and AVE should be 0.70 and 0.50, respectively (Awang et al., 2015; Hair et al.,

2017). The higher the value of CR and AVE, the more reliable and valid of the construct to be tested. In this study, all constructs satisfactorily fulfilled the requirements since the values of CR and AVE were greater than the recommended values. Specifically, the range value for CR was between 0.863 and 0.958, and the value of AVE for each construct was between 0.570 and 0.884. The next step would be to determine the construct correlation by performing discriminant validity analysis.

Table 1
The Composite Reliability (CR) and Average Variance Extracted (AVE), and Discriminant Validity Index Summary for all Constructs

Construct	Attitudes	Subjective Norm	Perceived Behavioral	Personal Values	Intention to Use	Actual Behavior	CR	AVE
Attitudes	**0.940**						0.958	0.884
Subjective Norm	0.55	**0.940**					0.956	0.884
Perceived Behavioral Control	0.58	0.62	**0.772**				0.881	0.596
Personal Values	0.54	0.56	0.48	**0.773**			0.899	0.597
Intention to Use	0.56	0.56	0.52	0.58	**0.755**		0.888	0.570
Actual Behavior	0.60	0.58	0.51	0.55	0.55	**0.794**	0.895	0.631

The results of Table 1 above show the value of construct correlations and square root average variance extracted (SQAVE). The discriminant validity is considered to be satisfactorily fulfilled when the value of SQAVE (in **bold**) is greater than the value of construct correlation as recommended by Hair et al. (2017). Apart from that, the value of construct correlations must be below 0.85. Therefore, this discriminant validity requirement was satisfactorily fulfilled before proceeding to the testing of the hypotheses.

4.1. Normality Assessment

Before executing SEM to validate the structural model, normality distribution must first be examined to assess all items in measuring the construct. As SEM utilizes the statistically parametric modelling approach, all accepted items in the study would need to be assessed in terms of the normality distribution of the constructs measured. This would require the skewness value for each accepted item to be within the acceptable normality range (Kashif et al., 2015, 2016; Awang et al., 2015). In the present study, the multivariate kurtosis was 2.988 (-2.988), which would be considered as normal because the acceptable range for this value is between -1.96 and +1.96 (Hair et al., 2010) and that the multivariate kurtosis value should be below 50 (Awang, 2015). Thus, all the values for the skewness and multivariate kurtosis has been satisfied and able to proceed to the path analysis.

4.2. Structural Model
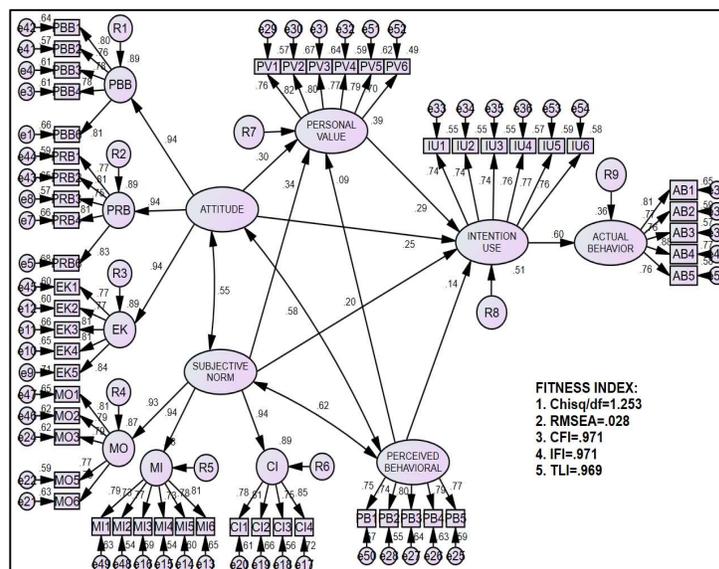
Fig. 1. Standardized Estimates for Actual behavior usage of EFFP

The structural model Fig. 1 shows the standardized result and squared multiple correlations (R^2). It can be seen that 39% of the personal values construct was explained by attitudes (belief in perceived benefit, belief in perceived risk, and environment knowledge), subjective norm (moral obligation, media influence, and consumer influence), and perceived behavioral control. Further, 51% of the intention to use construct was explained by attitudes (belief in perceived benefit, belief in perceived risk, and environment knowledge), subjective norm (moral obligation, media influence, and consumer influence), perceived behavioral control, and personal values. In addition, 36% of the actual behavior construct was explained by intention to use. In other words, 64% of the total variance was explained by other constructs that may fit with this study. It has been recommended that R^2 value that exceeds 26% is considered to have a large effect towards the causal model (Aziz et al., 2019). Thus, it can be concluded that the structural model measuring the actual behavior has been validated since it contributes highly to the research on the usage of EFFP among food hawkers in Malaysia.

4.3. Testing of Mediation Effect

Table 3, Table 4 and Table 5 present the results for the direct and indirect effects for the testing of the significance of the mediator construct. In this study, personal values were predicted as the mediator construct. The output obtained from the AMOS software yielded the results for bootstrapping estimates and *p*-values. These results will be discussed in this section. Attitudes and intention to use were examined as the exogenous and endogenous constructs, respectively. The regression weight estimate for the indirect effect was 0.087. The probability of obtaining the bootstrap *p*-value for the indirect effect was 0.001. It can be understood that the regression weight for personal values as the mediator construct was significant at the level of 0.05. Hence, the hypothesis that personal values mediated the relationship between attitudes and intention to use was highly supported (see Table 3).

Table 3
The Results of Direct and Indirect Effects (Attitudes = A, Personal Values = PV, and Intention to Use = IU)

	Indirect Effect	Direct Effect
Bootstrapping Estimate	0.087	0.247
Bootstrapping *p*-Value	0.001	0.001
Result	Significant	Significant
Type of Mediation	Partial Mediation	

Meanwhile, subjective norm and intention to use were also examined as the exogenous and endogenous constructs, respectively. The regression weight estimate for the indirect effect was 0.100. The probability of obtaining the bootstrap *p*-value for the indirect effect was 0.001. In other words, the regression weight for personal values as the mediator construct was significant at the level of 0.05. Hence, the hypothesis that personal values mediated the relationship between subjective norm and intention to use was highly supported (see Table 4).

Table 4
The Results of Direct and Indirect Effects (Subjective Norm = SN, Personal Values = PV, and Intention to Use = IU)

	Indirect Effect	Direct Effect
Bootstrapping Estimate	0.100	0.199
Bootstrapping *p*-value	0.001	0.014
Result	Significant	Significant
Type of Mediation	Partial Mediation	

Similarly, perceived behavioral control and intention to use were examined as the exogenous and endogenous constructs, respectively. The regression weight estimate for the indirect effect was 0.027. The probability of obtaining the bootstrap p-value for the indirect effect was 0.178. It can be concluded that the regression weight for personal values as the mediator construct was not significant at the level of 0.05. Hence, the hypothesis that personal values mediated the relationship between personal behavioral control and intention to use was not supported (see Table 5).

Table 5
The Results of Direct and Indirect Effects (Perceived Behavioral Control = PB, Personal Values = PV, and Intention to Use = IU)

	Indirect Effect	Direct Effect
Bootstrapping Estimate	0.027	0.136
Bootstrapping p-value	0.178	0.038
Result	Not Significant	Significant
Type of Mediation	Non-mediation	

To further explain the type of mediation, the results for the direct effect were examined. The regression weight for each of the direct effects was 0.199 for SN → PV → IU and 0.247 for A → PV → IU, respectively. The probability of obtaining the bootstrap p-value for the direct effect in each case was 0.014 and 0.001 (p-value < 0.05), respectively. Meanwhile, in the case of PB → PV → IU, results indicated non-mediation because the regression weight for the direct effect was 0.136 and the probability of obtaining the bootstrap p-value for the direct effect was 0.0038 (p-value < 0.05). Overall, it can be concluded that the type of mediation that existed for this model was partial mediation because of the significant effects that existed in the direct effects.

5. Discussion

The findings of the present study and the development of the model have shown the significant result of the variables that were involved with each other. Data analysis has indicated that attitudes, subjective norm, perceived behavioral control were significantly correlated and regressed towards actual behavior of the food hawkers. Meanwhile, in the case of the relationship between personal values and intention to use, perceived behavior control did not yield significant result. In other words, these variables did not have direct effect on the relationship examined in the model development. This was in contrast with the literature which seemed to indicate a significant relationship between personal values and intention to use. Nevertheless, the present study yielded different result. Hence, other measurements of the variable should be included to enhance the contribution of the study.

The mediating effect of personal values on the relationships between attitudes, subjective norm, and perceived behavioral control, and intention to Use EFFP with regard to actual behavior among food hawkers was examined. Overall, it can be concluded that partial mediation occurred in this model. In this regard, personal values did covary or act as the mediator factor.

The Actual Behavior Model (ABM) in the usage of EFFP among food hawkers was tested in the present study. In line with the fitness indicators, all values indicated that the model was able to be generalized and confirmatory. Therefore, this paper argues that this validated model (i.e., ABM) has fulfilled validation requirements and the present study has thus met its objectives.

6. Conclusion

The present study aimed to examine and propose the Actual Behavior Model (ABM) for EFFP usage among food hawkers. During the course of the study, three limitations were identified. First, the respondents sampled in this study were only limited to food hawkers. Second, as the respondents were sampled

from a population of food hawkers, the actual behavior construct was also limited to the food hawkers' dimension. Third, although the total number of respondents ($n = 320$) was relatively suitable from statistical viewpoints, the sample size should be extended because a larger sample size would yield better results for solid generalization of the findings of the study.

The present study has resulted in some implications for further research. It is recommended that future study should examine different unit of analysis that may have been untapped such as food providers, especially those who operate in large scale because such respondents may contribute to more rigor. In addition, government support in terms of encouragement of the usage of EFFP among food providers can also be seen as a new exploration of the research study that may contradict the findings of the present study.

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