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# Entomotourism Potential In Malaysia: Youth's Perspective

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## Abstract

***Background***

Tourists who travel to a certain location specifically to attend food festivals sample the local cuisine are said to be engaging in food tourism. Entomotourism is a developing sector of the culinary and eco-tourism sectors that embraces all the traditional values associated to contemporary travel trends, such as authenticity, sustainability, and respect for tradition and culture. Purpose - The study's objective is to investigate the motivational factors which affect the domestic tourists engage in. To fill knowledge gaps in the specific area of edible insect consumption acceptance and motivation among youths to promote entomotourism as a form of distinctive gastronomic experience, this study's academic significance is given by the fact that there is still a dearth of empirical research on edible insects, targeted at domestic youth tourists. Design/methodology/approach - To accomplish the research's goals, quantitative analysis was used to gather data from 205 youths (18 to 24 years old) in Klang Valley, Malaysia. The elements influencing the behavior of youths were then discovered using the structural equation method, which was utilized to validate each construct. Finding - The study offers a review of the key factors such as perceived risk, perceived benefits, and food neophobia influencing youth's desire for insect-based cuisine when travelling. As a possible tourist attraction and new marketing platform for food tourism in Malaysia, the study outcome will assist the Agri-

entrepreneur in manufacturing and marketing edible insect-based products. Originality/Value - The research was conducted during the Covid-19 pandemic focus in developing nation with imbedded Islamic concept, in which provides a unique setting to determine resilience learning. Paper type - Research paper.

**Keywords:** Ecotourism, Edible insects, Entomotourism, Entomophagy, Food tourism

# Introduction

Prior to the pandemic, one of the economic areas with the fastest growth and serve as a major source of employment was tourism. The travel and tourism sector increased by 3.5 percent in 2019, adding 8.9 trillion dollars to the global GDP, 330 million jobs, and US$ 1.7 trillion in tourist exports (WTTC Economic Impact report, 2020). Given what was seen before COVID-19, governments must recommence tourism because it was unmistakably generating income, fostering regional development, and improving the quality of life for the communities. According to the World Travel and Tourism Council (2020), the tourism and hospitality industries were expected to take between 10 and 35 months to recover. The impact of COVID-19 on travel and tourism has been the subject of several studies, including market-specific research and analyses of potential tourist behavior (Wachyuni and Kusumaningrum, 2020).

The variables that motivate individual to travel alter over time as circumstances, including family, the economy, interests, health, and individual experience (Mahika, 2011). The COVID-19 outbreak has severely impacted on tourist's confidence, perceptions, and motivation, which has reduced mobility and, as a result, caused a sizable decline in tourism revenue (Kunwar, 2016). There could be both internal and external threats to the business, politics, society, culture, environment, and economics.

The performance of domestic tourism in Malaysia for 2020 decreased dramatically in terms of visitor arrivals and total expenditure, with decreases of -44.9 percent and -60.8 percent, respectively, according to the Department of Statistics Malaysia (2021). Performance for all states was under contract in terms of volume and value because of the COVID-19 lockdown. Domestic tourists spending in Selangor decreased by 52.8% from the prior year to RM7.1 billion in 2020. RM5.3 billion was reported by W.P. Kuala Lumpur, a decline of -57.8%. Sarawak experienced a huge decline as well, falling 61.0% to RM3.4 billion. Other states with notable declines were Perak (61.5%) (RM3.3 billion) and Pahang (64.1%) (RM2.7 billion). Selangor experienced 19.7 million domestic tourist arrivals, a -41.3 percent decrease from the previous year. Perak and W.P. Kuala Lumpur experienced declines of 37.5% and 45.1%, respectively. Sabah and Kedah experienced significant drops of 53.1% and 31.8% as well, registering 10.3 million and 10.1 million domestic tourists respectively in 2020.

Today, when tourism restarts, destinations are gradually getting ready to welcome visitors; if there are any changes to travel incentives, being aware of them will help destinations resume operations much faster. The study's objective was to ascertain how motivating factors in the field of entomotourism altered over time, notably as a result of COVID-19.

People visiting a place solely to partake in food festivals or sample the local cuisine are simply referred to as engaging in food tourism (Hall and Mitchell 2001). Food tourism has never been well-known, but it is rapidly growing in popularity thanks to new technology, improved accessibility, and greater knowledge. According to Yeo (2021), ecotourism is one of the sustainable forms of travel that allows visitors to experience and comprehend the natural

beauty and rich biodiversity of the area, as well as create socioeconomic benefits for rural and remote communities that live close to the natural environment.

Entomotourism, a developing sector of the food tourism and eco-tourism industries, embraces all the traditional values connected to emerging travel trends, such as cultural and traditional respect, authenticity, and sustainability. The idea of entomotourism can achieve the goal of Malaysia's national ecotourism strategy since the Malaysian government has been seriously promoting ecotourism since 1996, when it first unveiled the National Ecotourism Plan (Salman et. al., 2021). Ecotourism was also mentioned in the Eighth Malaysia Plan, where 20 ecotourism initiatives costing RM 14.2 million were started by the government (Salman et. al., 2021). Now that a new National Ecotourism Plan (2016–2025) is in place, the nation's ecotourism industry is growing. The Malaysian Ecotourism Association (MEA) in 2007, a group of stakeholders including travel companies, academic institutions, and private citizens that are interested in promoting ecotourism development in Malaysia. Malaysia has become a well-known ecotourism destination as a result of the government's and citizens' ongoing efforts (Salman et. al., 2021). Travelers can experience a range of regional foods and drinks because Malaysia is a multi-cultural nation. As a result, entomotourism is a popular new attraction for many tourists and bug enthusiasts (Lemelin, 2013). Numerous insect-related leisure activities, such as photography, observation, entomophagy, and others, are included in the ecotourism subsector (Lemelin, 2013). Eating edible insects in replacement of other foods is known as entomophagy (Anankware et al., 2015). Insects that can be eaten are essential for the long-term growth of regional food tourism (Wang, 2016).

Previous studies on entomophagy have mostly focused on the benefits and risks of eating insects as food in Western nations (Rumpold and Schlüter, 2013). In fact, it was discovered that by reducing the appearance of insects and incorporating them into existing food products such as burger or chocolate, it may enhance consumers' perception towards edible insect (Mishyna and chen et. al., 2019). Additionally, studies on consumer behavior related to the consumption of insect-based products tend to place more emphasis on consumers' openness (Myers and Pettigrew, 2018) and readiness (Verbeke, 2015) rather than on individuals' experiences with consumption acceptance and the factors that influence the development of these intents. Some past studies focused on the properties and palatability of the end product or the effect of insect addition on the products' processing behavior (Meshulam-Pascoviche, et. al., 2022). Many initiatives aim to use insects as viable replacements for animal products, particularly in the meat industry such as A. Diaperinus beetle protein concentrate as a substitute for soy (Smetana et al., 2018). In addition, insects face a number of obstacles on their path to influence the modern plate, including the legislative and market approval that differs across different nations (Piha, et al., 2018).

Another misconception is that although existing research acknowledges that entomophagy is widespread throughout Asia, individual nations have not been thoroughly examined. In fact, very little is known regarding the current consumption intentions of visitors toward edible insects. In Asian societies, where there is little to no culture of eating insects, people naturally feel disgusted or hatred toward insects as a potential food source, despite all of these advantages of producing and consuming edible insects (Jensen and Lieberoth, 2019). To close the knowledge gaps in the specific area of edible insect consumption acceptance among tourists and to promote entomotourism as a form of distinctive gastronomic experience, there is still a dearth of empirical research on edible insects.

In order to promote entomotourism as a type of unique gastronomic experience, the goal of this study is to investigate the consumption acceptance of consuming edible insects

among youths while travelling. Instead of solely focusing on the levels of acceptance among general populations, the research will examine the variables influencing the uptake of insects as food among those willing to include them in their diets while travelling. This requires attention to a number of variables that are not fully taken into account by existing research or by current commercial efforts to market insect-based foods.

# Materials and Methods

### *2.1 Overview of the Proposed Research Model*

There is no single theory can adequately explain why consumers choose to buy or reject a product since consumer behavior is a vast notion (Lensvelt and Steenbekkers, 2014). According to Siegrist (2008), consumer behavior may be used to a wide range of industries; in this case, it is applied to cutting-edge food technologies and food products. Although consuming insects might be seen as an unique or revolutionary type of cuisine in Malaysia, it should be emphasized that a wide range of products can be made using insects or insect-based materials. While they are common in Borneo cultures like Sabah and Sarawak, eating insects as food is re-emerging throughout most of Malaysia. The enhanced model for comprehending how youth travel and engage in the consumption of edible insects is presented in Figure 1.

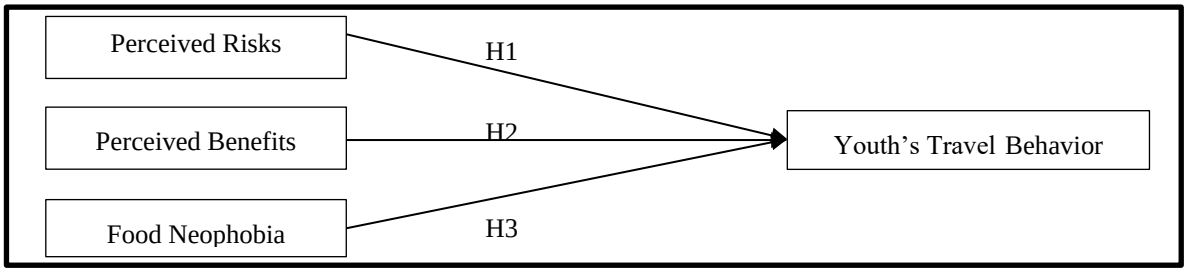


**Figure 1.** *The modified model explaining the youth's travel behavior.*
**(Source:** *Siegrist and Hartmann, 2020; Siegrist, 2008)*

### *2.2 Hypothesis Testing*

This research aims to examine the relationship between food phobia, perceived benefits, and perceived risks that affect young people's travel behavior. Three hypotheses have been developed to examine the relationship between the four constructs and travel behavior from numerous perspectives,

#### *2.2.1 Perceived Risks*

One of the reasons individual reject edible insects is the amount of potentially dangerous tonic foods consumed (Cinar et al, 2021). Due to some food product-induced illnesses like stomachaches and diarrhea, consumers' perceptions of food aversions can develop (Siegrist and Hartmann, 2020; Cinar et al, 2021). Due to human conservatism, people are reluctant to explore potentially dangerous food products (Mouithys-Mickalad et al., 2020).

**$H_1$.** Perceived risks have a positive influence on youth' travel behavior.

#### *2.2.2 Food Neophobia*

Food neophobia is a fear-based behavior in which an individual shuns unfamiliar foods and any sources of food that might be dangerous or life-threatening (Guidetti et al., 2018). Given that it can negatively affect a person's diet diversity and quality, food neophobia is an important factor (Wassmann et al., 2020). Individual rejection of familiar food is primarily motivated by three factors: distaste for its sensory qualities, risk fear of harmful effects, and

revulsion at the thought of food's natural origin (Fallon and Rozin, 1983). However, studies on the factors that contribute to the rejection of entomophagy food have also been conducted (Pliner and Hobden, 1992). It has been discovered that food neophobia has a favorable impact on the feelings of revulsion that are triggered by culture meat (Siegrist and Hartmann, 2020).

**$H_2$.** The food neophobia has a negative influence on youth' travel behavior.

### *2.2.3 Perceived Benefits*

For most European citizens, knowledge about the naturalness and advantages of the food product is crucial when it comes to insect-based foods, according to Barsics et al., (2017). Along with being a tasty food source, insects' nutritional profile has attracted the attention of health specialists including nutritionists and doctors (FAO, 2010). According to Sogari et al. (2017), those who are more concerned about their diet may find great motivation in this positive assessment of the health advantages of eating insects.

**$H_3$.** The perceived benefits have a positive influence on youth' travel behavior.

### *2.2 Data Collection*

This research is cross-sectional and quantitative where four main constructs were adopted and modified from Siegrist and Hartmann (2020) to match the parameters of this study. The 11-items questionnaire measurement scale were provided by Lensvelt and Steenbekkers (2014) and rated on a Likert scale of 1 (strongly disagree) to 5 (strongly agree). The three components survey was written in English and contained three sections. The final category of the questionnaire's comprised the sociodemographic data of the respondents.

Data were gathered from youth who live in Klang Valley, Malaysia's who are between the ages of 18 and 24 using a structured questionnaire. This study was conducted utilizing a non-probability purposive sampling strategy, in which the respondent must be between the ages of 18 and 24, as there is no documented list of sample frames for youths to utilize a probability sampling methodology. The respondent was asked if they were between the ages of 18 and 24 before being given the questionnaire to complete. They won't be invited to take the survey if they answered "no." A total of 300 youths were approached, however only 205 gave comprehensive and complete survey. Surveys that were left unfinished were disregarded because the respondents lacked sufficient knowledge and experience with entomophagy.

## Results

The study's findings led to the development of a modified model of youth's travel behavior that considers three key constructs: food neophobia, perceived risk and perceived benefits. Then, using AMOS, confirmatory factor analysis (CFA) and structural equation modelling (SEM) with a sample size of 205 are investigated to assess the hypotheses of current theories. These studies are performed to ascertain the method of measurement for each construct, the factor structure, and the relationship between each construct and the others (Hair et al., 2013).

### *3.1 Descriptive Analysis*

Table 1 shows that the percentages of male and female responders were 27.8 percent and 72.2 percent, respectively. Surprisingly, 50.2 percent of youth are willing to travel to a destination that serve edible insects, 42.4 percent of youth are more comfortable eating bugs if they were hidden in the food. Furthermore, 56.1 percent of youth never eat any kind if insect and 22.9 percent are interested to try it.

**Table 1:** *Summary of Demographic Profile of Respondents (n=205)*

| Characteristic | Percentage (%) |
|---|---|
| **Gender** | |
| Male | 27.8 |
| Female | 72.2 |
| **Are you willing to travel to a destination that serve edible insects?** | |
| Yes | 50.2 |
| No | 49.8 |
| **Would you feel more at ease consuming bugs if they were concealed in the food in some other way—for example, mashed up or covered in chocolate?** | |
| If I couldn't see the bug in the food, that could make me feel more at ease. | 42.4 |
| No, even the thought of eating a bug would freak me out. | |
| I wouldn't care if the bug was visible or not; I'd still eat it. | 48.3 |
| | 9.3 |
| **Would you ever eat any kind of insect/bug?** | |
| Never | 56.1 |
| If it were the only way to avoid starvation. | 7.8 |
| I might try it. | 22.9 |
| I would like to try it. | 8.8 |
| I have tried at least one kind of insects | 4.4 |

### *3.2 Measurement Model Assessment and CFA*

#### *3.2.1 Model Fi Indicators*

Table 2 lists three categories of goodness-of-fit indicators for the measurement model which are parsimonious fit, incremental fit, and absolute fit. According to the absolute fit indices, the RMSEA and SRMR coefficients are both 0.078 and 0.041; GFI and AGFI coefficients are 0.930 and 0.878 indicating a good fit. On the other hand, all four tests in incremental fit indices indicate a good fit as the NFI and CFI computed are 0.927 and 0.956 followed by TLI (0.937) and IFI (0.957). Finally, parsimony fit indices also indicate fit, since $x^2$/df value is fit (2.321), while PGFI (0.535) and PNFI (0.640) values are acceptable, indicating that the model fits well.

**Table 2.** *Goodness-of-Fit Indices for the Measurement Model*

| Name of Category | Name of Index | Adequate of Model Fit | Result | Fit (yes/no) |
|---|---|---|---|---|
| Absolute Fit Measure | GFI | > 0.90 | 0.930 | Yes |
| | AGFI | > 0.80 | 0.878 | Yes |
| | RMSEA | < 0.08 | 0.078 | Yes |
| | SRMR | < 0.08 | 0.041 | Yes |
| Incremental Fit Measure | NFI | > 0.80 | 0.927 | Yes |
| | CFI | > 0.90 | 0.956 | Yes |
| | TLI | > 0.90 | 0.937 | Yes |
| | IFI | > 0.90 | 0.957 | Yes |
| Parsimonious Fit Measure | Chisq/df | 1.00-5.00 | 2.321 | Yes |
| | PGFI | > 0.50 | 0.535 | Yes |
| | PNFI | > 0.50 | 0.640 | Yes |

Notes: df, degree of freedom; CFI, comparative-fit-index; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual; GFI, goodness-of-fit; NFI, normed fit index; AGFI, adjusted goodness-of-fit index; IFI, the increment fit index; TLI, Tucker-Lewis coefficient index; PNFI, parsimony normed fit index. The indexes in italic are recommended since they are frequently reported in literature (Awang, 2014)

### *3.2.2 Construct Reliability*

The four main latent variables' individual Cronbach's coefficients all exceeded the desirable level of 0.60. (Range: 0.669–0.883) (Kannana and Tan, 2005; Nunnally and Bernstein, 1994). Additionally, all composite reliability (CR) values (varying from 0.731 to 0.939) demonstrated construct dependability by being higher than the suggested cutoff point of 0.6 (Fornell and Larcker, 1981). As a result, Cronbach's alpha and CR for all structures were determined to be sufficiently error-free (see Table 3).

### *3.2.3 Indicator Reliability*

According to Hair et. al., 2013, loadings of 0.4 to 0.7 should only be removed from the scale if doing so able to enhances the CR or the average variance extracted (AVE) value. On the other hand, indicators with loadings of less than 0.40 must be removed from the scale (Hair et al., 2011). The items in this study all met the requirements without being eliminated from the scale and have loadings more than 0.4 (Hair et al., 2010), ranging from 0.431 to 0.741.

### *3.2.4 Convergent Validity*

Table 3 displays the convergent validity via AVE outcome. The loadings ranged from 0.504 to 0.658, exceeding the suggested value of 0.5 (Hair et al., 2010), suggesting that the entire model construct is met and the construct accounts for more than half of the variance in its indicators.

**Table 3.** *Loading, Cronbach's Alpha, CR, and AVE for the Full Model*

| Construct | Items | Cronbach Alpha (>0.6) | Factor Loading (>0.5) | CR (>0.7) | AVE (>0.5) | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| Food Neophobia | NEO1 | 0.689 | 0.613 | 0.731 | 0.559 | -0.460 | -0.711 |
| | NEO2 | | 0.505 | | | -0.378 | -0.669 |
| Perceive Risk | PR1 | 0.669 | 0.504 | 0.805 | 0.504 | 0.088 | -0.618 |
| | PR2 | | 0.505 | | | -0.376 | 0.186 |
| Perceived Benefits | PB1 | 0.883 | 0.729 | 0.894 | 0.658 | 0.345 | -0.538 |
| | PB2 | | 0.741 | | | 0.353 | -0.617 |
| | PB3 | | 0.505 | | | 0.377 | -0.424 |
| Youths' Travel Behaviour | ACCP1 | 0.830 | 0.431 | 0.939 | 0.571 | -0.033 | -0.816 |
| | ACCP2 | | 0.519 | | | 0.025 | -0.970 |
| | ACCP3 | | 0.637 | | | 0.554 | -0.209 |
| | ACCP4 | | 0.698 | | | 0.462 | -0.405 |

### *3.2.5 Discriminant Validity*

The next step is to analyze discriminant validity to determine which constructs are distinct from one another according to empirical standards. This is because proving discriminant validity implies that a construct is distinct and captures phenomena that are not represented by other constructs in the model (Hair et al., 2013). Discriminant validity was evaluated by using Fornell and Larcker's (1981) criterion. As shown in Tables 4, the

correlations between the four basic structures are less than the square root of the AVE estimates. The constructs are significantly connected to their respective indicators when compared to other model constructs, demonstrating excellent discriminant validity (Hair et al, 2013).

**Table 4.** *Results of Discriminant Validity by Fornell-Lacker Criterion*

| | PR | NEO | PB | ACCP |
|---|---|---|---|---|
| PR | 0.709 | | | |
| NEO | -0.116 | 0.747 | | |
| PB | 0.383 | -0.343 | 0.811 | |
| ACCP | 0.401 | -0.420 | 0.761 | 0.755 |

Notes: ACCP, youth's travel behavior; PB, perceived benefits; NEO, food neophobia; PR, perceived risk

### *3.3 Structural Model Assessment*

The structural model can be expressed by explaining the relationships between the constructs after the measurement model has been validated. The structural model illustrates the details of the relationships between the variables by describing the relationship between exogenous and endogenous variables (Hair et al., 2010; Ho, 2006). To determine whether the theory has been empirically proven and how well the empirical facts support the theory, the structural model can be evaluated (Hair et al., 2013). The results of the research structural model are presented graphically in Figure 2 using AMOS (version 21).

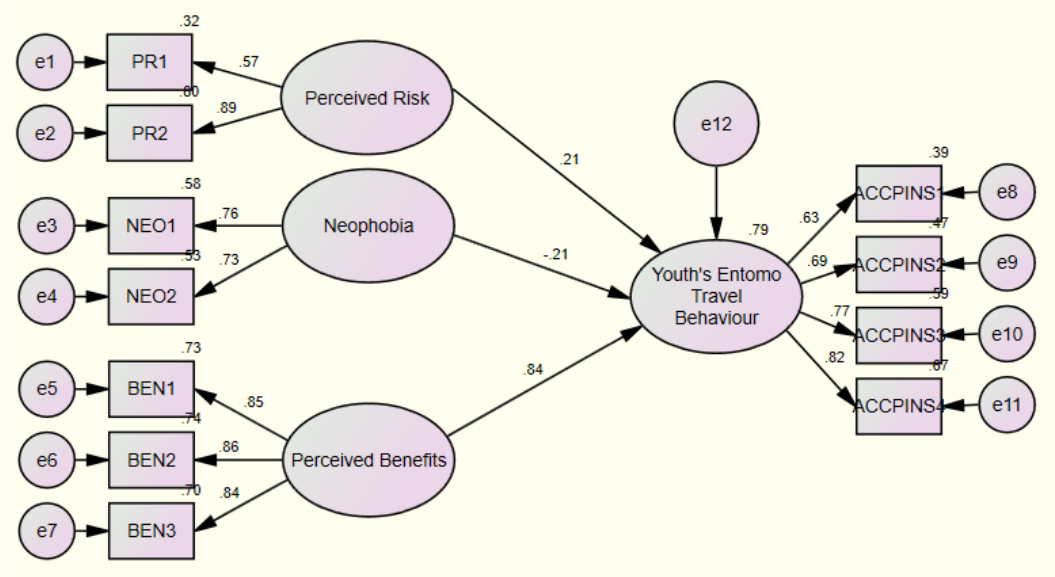


**Figure 2.** *Research Structural Model Results*

### *3.4.1 Hypothesis Tests*

As illustrated in Figure 2, the study's hypotheses are tested using SEM, and Table 5 indicates the structural path analysis result. The analysis showed that all paths to the latent variables were significant at the level of 0.01 and 0.05. In others word, there is significant relationship between perceived risks, perceived benefits, food neophobia and youth's travel behavior.

Table 5 demonstrates that the perceived benefits ($\beta = 0.672$, $p= 0.01$) were the key factors impacting youth's travel behavior. If youths are aware of the advantages of eating insects, they are more likely to do so (Siegrist, 2008). Additionally, research shown that eating

insects may improve immunological function, gut health, bacterial infection risk, and give antioxidant and anti-inflammatory characteristics in addition to other health advantages (Tang et al., 2019; Imathiu, 2020; Nowakowski et al., 2022). From a psychological standpoint, perceived benefits help people examine their motivation for their health and become aware of the benefits of consuming the products (Santeramo et al., 2018; Phuah et al., 2020). Youth's travel behavior is positively impacted by perceived risk (p=0.05, =0.171). The result is similar with the research done by Siegrist (2008) where customers' willingness to buy a product is greatly impacted by perceived risk.

Additionally, there was a negative correlation between food neophobia and youth's travel behavior (β =-0.167, p=0.01). This indicates that youths are more likely to visit a destination that sells edible insects if they don't feel afraid, repulsed, or reject to eat unfamiliar foods and steer clear of any potentially lethal and dangerous food sources. The findings are consistent with Wassmann et. al., (2020) where the findings shows that respondents who have lower levels of food neophobia and who are always looking for novel and inventive food products, including edible insects, are more likely to search for edible insects while travelling.

Next, the amount of variance in the dependent variables that is thus explained by the independent variables is shown by the coefficient of determination, or $R^2$. According to Hair et al. (2013), $R^2$ must be greater than 0.75 and have an acceptable power over 0.25 to be considered substantial. Figure 2 displays the $R^2$ results from the structural model. They found that 79 percent of the variance for the chance of travelling to a location that serves edible insects could be explained by perceived risks, perceived benefits, and food neophobia.

**Table 5.** *Structural Path Analysis Result*

| | Dependent Variable | | Independent Variable | β | S.E. | C.R. (t-value) | Decision |
|---|---|---|---|---|---|---|---|
| $H_1$ | ACCP | ← | PR | 0.171 | 0.071 | 2.419** | Supported |
| $H_2$ | ACCP | ← | NEO | -0.167 | 0.56 | -2.992*** | Supported |
| $H_3$ | ACCP | ← | PB | 0.672 | 0.77 | 8.774*** | Supported |

Notes: ACCP, youth's travel behavior; PB, perceived benefits; NEO, food neophobia; PR, perceived risk; CR, critical value. ***Significant at 0.01, ** Significant at 0.05

# 4.0 Disscussion

### *4.1 Theoretical Contributions*

The lack of empirical research on entomotourism especially on consuming edible insects among visitors gives this study academic significance by addressing knowledge gaps in the field of tourists' approval of eating edible insects. This will help to promote entomotourism as a sort of distinctive gastronomic experience. There are several factors that affect visitors' motivation and acceptance, and none of these factors can be explained by a single theory of consumer behavior (Lensvelt and Steenbekkers, 2014). Therefore, the objective of this study is to understand the motivational factors that can accurately measure youths' acceptance and motivation for entomotourism in Malaysia.

### *4.2 Managerial Contributions/ Marketing Policy*

Entomophagy tourism also supports the National Tourism Policy (DPN) 2020-2030 and National Ecotourism Plan by advancing the sustainable agenda to market Malaysia as an ecotourism destination (2016-2025). The results of this study may also promote the development of rural entrepreneurs in the entomotourism sector.

### *4.3 Limitations and Suggestions for Future Work*

Youths from Malaysia's Klang Valley make up the study's population. Malaysia is a multiethnic nation made up of several races, future study can concentrate on the corresponding states in Peninsular Malaysia, Sabah, and Sarawak to develop distinct marketing strategies for each state. Furthermore, future researchers might want to further investigate from several angles, such as looking at personality related elements like trust and food distaste; edible insect related components like perceived naturalness and disgust provoked; and covid related aspects like perceived severity and susceptibility to forecast youths' travel behavior.

### *4.4 Conclusion*

The main purpose of this research was to determine the driving forces that influence tourists' interest in entomotourism, particularly when it comes to looking for insect-based products when they're on the trip. The following analysis used CFA, and SEM with AMOS to investigate the relationship between the variables in the modified model. The study is appropriate since it validates the arguments made in the literature about perceived risks, food neophobia, and perceived benefits. Here, the perceived benefits are vital in influencing youths' travel behavior. Along with the limitations and a few suggestions for future research, the consequences of the current study are highlighted.

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