THE INTERPLAY OF TRIPLE BOTTOM LINE, AND GREEN ATTITUDES IN ELECTRIC VEHICLE ADOPTION

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Abstract: The aim of this research is to Interplay Triple Bottom Line, Technological Evolution, Green Attitudes, and Government Policy in the Adoption of Electric Vehicles. This research chose locations in the Jabodetabek area, the maximum sample size in this research was 165 respondents. The sampling method used in this research is non-probability sampling, namely purposive sampling. Purposive Sampling is a sampling unit selected based on certain considerations with the aim of obtaining a sampling unit that has the desired characteristics. The research method used in this research uses a Structural Equation Modeling (SEM) approach based on Partial Least Square (PLS) via the Smart PLS 3.0 application.

Keywords: Triple Bottom Line Interplay, Green Attitude, Electric Vehicles

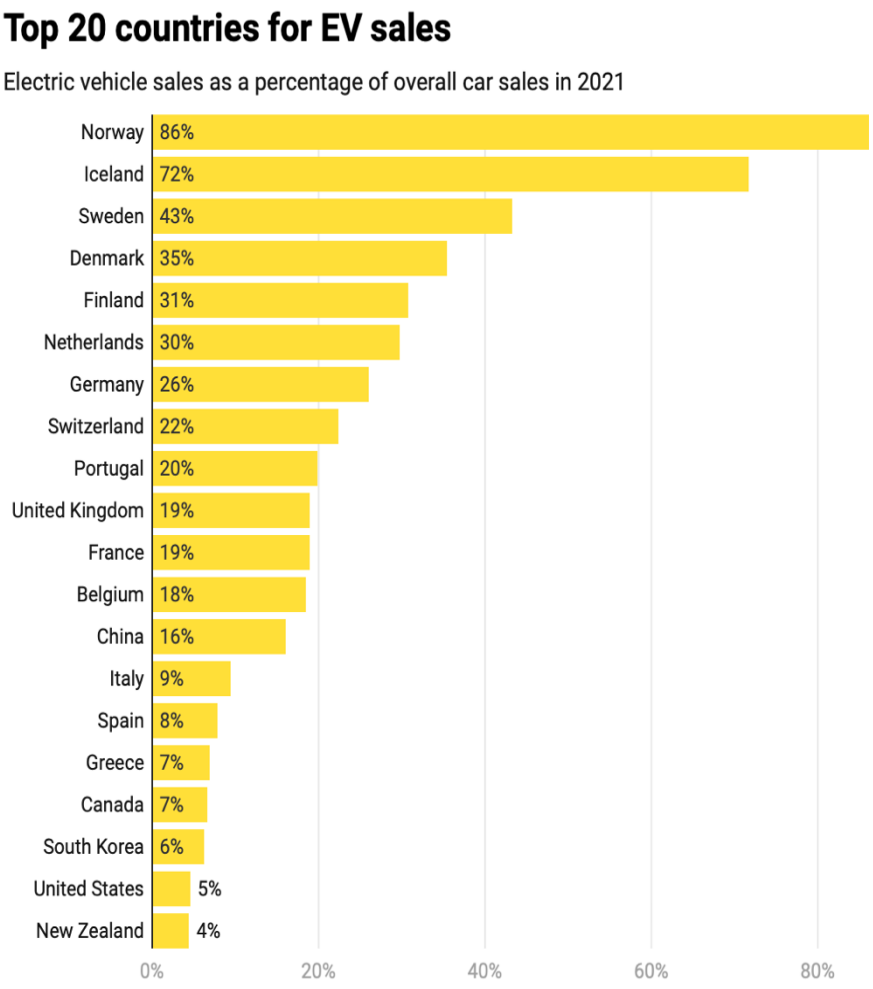
INTRODUCTION

Technological developments are increasingly sophisticated and advanced, including the automotive world, of course experiencing changes in a more advanced direction, including environmentally friendly cars such as hybrids to pure electrics. In the world, Indonesia is no exception, feeling the progress of this era (Nugrahadi, 2021). Electric vehicles are not actually a new technology in the field of transportation. Electric vehicle technology has been discovered and widely used since the 18th century. Further developments, in the 19th century, electric cars were first mass-produced and commercially produced by General Motors. However, over time, the development of electric vehicles has also coincided with the development of fossil fuel vehicles by several other manufacturers. In short, in 2003, the development of electric vehicle technology was stopped due to the failure of competition in the automotive market with vehicles made from fossil fuels which could be obtained more cheaply (Garasi.id, 2021).

The growth of private car ownership makes the transportation sector a very important sector in terms of energy consumption, private car ownership is also one of the main contributors to greenhouse gases (Lane & Potter, 2007). This means that the use of private vehicles has a large role in energy consumption. From this it can be concluded that increasing efficiency and reducing harmful gas emissions from private vehicles will have a large impact on the amount of greenhouse gas emissions.

Currently, electric vehicles are starting to be widely used in various countries with the aim of reducing greenhouse gas emissions and reaching a carbon neutral point in the future. (Ulfa, 2021). The acceleration of the shift from using conventional cars to electric cars is driven by the agreement of countries in the world to achieve net zero emissions or NZE by 2060 or sooner. In the NZE scenario, in 2025 the share is expected to increase to 25 percent. And in 2030 it could reach 60.9 percent. However, Indonesia's position on the world electric car development map is currently still marginal. (Perkim.id, 2022).

Figure 1.1 Electric Cars in the World 2021



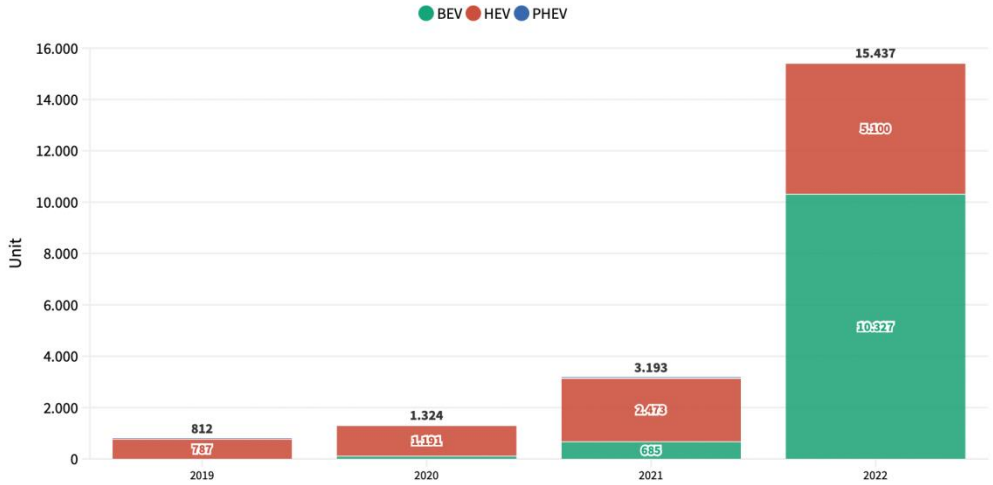
Source: IEA Global EV Outlook 2022

Electric car adoption in Indonesia is still very low, namely 0.1%. Based on a McKinsey report, this percentage is far below the main market countries for electric vehicles in Asia. China is the country with the highest adoption of electric vehicles in the McKinsey report, namely 16.1%. After that there is South Korea with electric vehicle adoption of 6.5%. Then, the adoption of electric vehicles in Australia and Japan was 2.9% and 1.2% respectively. Then, adoption of electric vehicles in Thailand was 0.7%. Electric vehicle adoption in India is recorded at 0.5%. Meanwhile, Malaysia recorded electric vehicle adoption of 0.3% (Dataindonesia.id, 2022).

In realizing NZE through the transformation of vehicles into electric cars, the Indonesian Government issued Presidential Regulation Number 55 of 2019 concerning the Acceleration of the Battery Electric Vehicle Program for Road Transportation. In this presidential regulation, acceleration efforts include, among other things, developing the electric motor vehicle (KBL) industry, providing incentives, providing electricity charging infrastructure, and regulating electricity tariffs for battery-based KBL (Perkim.id, 2022).

In general, so that consumers want to switch to using electric vehicles, there are a number of other incentives, including access to credit for electric vehicles and reduced costs for charging electricity at Public Electric Vehicle Charging Stations (SPKLU) provided by PLN. The conveniences provided are none other than so that the target of switching to electric cars set by the government can be realized. In the government's energy transition road map to carbon neutrality, by 2030 the use of electric vehicles in Indonesia is expected to reach 2 million cars and 13 million motorbikes (Perkim.id, 2022).

Figure 1.2 Graph of Electric Car Sales in Indonesia



Source: Indonesian data 2023

There are two types of electric cars that are widely circulating on the Indonesian market, namely battery electric vehicles (BEV) and hybrid electric vehicles (HEV). Based on the data above, it can be seen that in 2019 HEV type electric cars were the first to enter Indonesia and succeeded in selling 787 units. The new BEV electric car has recorded wholesale sales in the country starting in 2020. However, during the 2020-2021 pandemic period hybrid cars were much more dominant as can be seen in the graph. Then a turning point will be seen in 2022, where wholesale sales of BEV electric cars will increase by around 1,400% (yoy) to reach 10,327 units. This achievement is far above hybrid cars whose wholesale figure is 5,100 units, with a growth rate of around 106% (yoy) in 2022 (Katadata, 2023).

The government officially issued regulations regarding the provision of subsidy assistance for the purchase of Battery-Based Electric Motorized Vehicles (KBLBB), namely electric motorbikes on March 20 2023 and electric cars on April 1 2023. As of April 1 2023, electric cars with a Domestic Component Level (TKDN) of at least 40 % can get a VAT incentive of 10%. That way, electric cars that meet these requirements are only subject to 1% VAT. Practically, the VAT incentive has reduced the price of electric cars. These incentive rules have also been stated in Minister of Finance Regulation no. 38 of 2023 concerning Value Added Tax on the Delivery of Certain Four-Wheeled Battery-Based Electric Motor Vehicles (KBLBB) and Certain Bus Battery-Based Electric Motor Vehicles Borne by the Government for the 2023 Fiscal Year on March 29 2023 The regulation clearly states that VAT borne by the government is paid at the time of delivery to the final consumer. This incentive is also given for the April 2023 tax period to the December 2023 tax period (Rayanti, 2023).

Sales of pure battery-powered electric cars or battery electric vehicles (BEV) increased after the program to provide subsidies for the purchase of new electric cars took effect on April 1 2023. It was recorded that throughout last month sales of electric cars rose 15.5 percent compared to March 2023. Referring to wholesale data or deliveries from factories to dealers, throughout April electric cars sold 1,285 units. This number increased compared to March, which only recorded sales of 1,112 units. However, the contribution of electric car sales to the overall market for four-wheeled vehicles or more in April 2023 will only be around 2.2 percent (CNN, 2023).

The delay in adoption of electric vehicles in Indonesia is due to the price which is still quite high for people to switch from non-electric vehicles to electric vehicles. Meanwhile, for neighboring countries such as Thailand and Malaysia, there are various incentives that can encourage their people to switch to adopting electric vehicles. For this reason, various incentives have been issued that can help the community and the electric vehicle industry ecosystem in Indonesia develop more quickly so that by 2030 it is hoped that there will be 2 million electric vehicles on the roads. (Puspaningtyas, 2023).

However, an increase in purchases does not just happen, there are several supporting elements, one of which is buying interest. Thus, it is very important to examine more deeply the acceptance and interest of consumers in electric cars in Indonesia. Naszariahetal. (2021) explain that purchase intention is a situation when potential consumers decide to buy a product or service because they are considering buying it or even because they have an attitude towards the product and appreciation for the product. Then, according to Huang (Chetiouietal., 2020), purchase intention is the possibility of a consumer planning or being willing to buy a particular product or service in the future.

THE ORITICAL REVIEW

Triple Bottom Line

According to Andrew Savitz quoted in Slaper and Hall (2011): TBL "captures the essence of sustainability by measuring the impact of an organization's activities on the world.... including both its profitability and shareholder values and its social, human and environmental capital."

Economic Factor

Economic factors" or "economic factors" refer to elements or conditions that directly influence the economic environment in a region or country. These factors play an important role in shaping the overall economic landscape, influencing businesses, consumers and governments.

Social Inclusion

Community involvement in every development in a country or region can be called social inclusion. (Inawati, 2022)

Environmental Performance

Environmental performance is defined as the contribution and awareness that a person has towards environmental protection by using an electric car. The impact of this is considered an important factor when buying an electric car (Xu et al., 2019).

Green Consumer Behavior

According to Ajzen (1991), attitude is defined as a psychological evaluation of emotions, this evaluation can be positive or negative, the result of this evaluation is a rational evaluation.

Green Marketing

According to Murinetal. (2015) Green marketing is defined as marketing efforts undertaken to promote and popularize science which will produce responsible behavior from the marketing target. Green marketing is also used to disseminate environmental science so that it can be more easily understood and better communicated to consumers (Seebohm, 2004). Hemantha (2012) explains that green marketing in the short term aims to shape existing social views and in the long term to maintain the survival of consumers (having a feeling of needing to protect the environment).

Theory of Planned Behavior

As explained by Ajzen (1991), the main principle of the Theory of Planned Behavior (TPB) explains that there are certain behaviors that may occur if consumers have a positive attitude towards their behavior (attitude), feel approved by their social circle (social norms), and they believe that they are able to carry out a behavior (perceived behavioral control). The main difference between TPB and the Theory of Reasoned Action (Fishbein & Ajzen, 1975) is the addition of the variable perceived behavioral control, according to Ajzen (1991) perceived behavioral control determines how likely a person is to carry out a behavior. This is also supported by research from Pauletal

(2016).) where perceived behavioral control is a strong predictor of intention to buy green products.

Green Attitude

According to Ajzen (1991), attitude is defined as a psychological evaluation of emotions, this evaluation can be positive or negative, the result of this evaluation is a rational evaluation.

Purchase Intention Electric Vehicle

"Purchase intention" refers to a person's willingness or desire to buy a product or service in the future.

FRAMEWORK

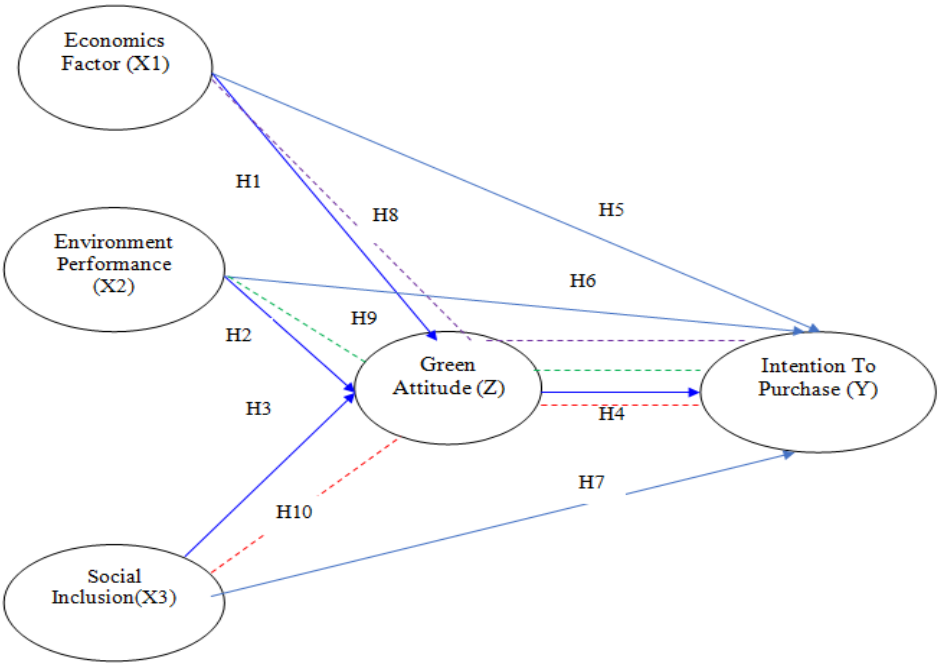


Figure 2.3 Proposed Research Model
Source: Data processed by researchers (2023)

1. Is there an influence of economic development on consumers' green attitude towards buying electric cars?
2. Is there an influence of Environmental Performance on consumers' green attitude towards buying electric cars?
3. Is there any influence of social influence on consumers' green attitude towards buying electric cars?
4. Is there an influence of Green Attitude on consumers' intention to purchase to buy an electric car?
5. Is there an influence of economic development on consumers' intention to purchase to buy an electric car?
6. Is there an influence of Environmental Performance on consumers' intention to purchase to buy an electric car?
7. Is there any influence of social influence on consumers' intention to purchase to buy an electric car?
8. Is there a mediating effect of Green Attitude on economic development with consumer intention to purchase to buy an electric car?
9. Is there a mediating effect of Green Attitude on Environmental Performance with consumer intention to purchase to buy an electric car?
10. Is there a mediating effect of Green Attitude on Social Inclusion with consumers' intention to purchase to buy an electric car?

RESEARCH METHODS

Time and Place of Research

The research period begins and is carried out from January 2024 to February 2024. This research process begins with finding and determining the phenomenon you want to research, determining the problem formulation, and collecting basic theory to strengthen the foundation of each variable. Next, methods for collecting data, preparation of instruments and testing techniques are carried out. To obtain data for preparing this research, researchers chose a location in the Jabodetabek area.

Research Design

In this research, researchers used the causal analysis method. Causal analysis is a causal relationship between several variables or several strategies developed in management. An illustration of the existence of a cause and effect relationship between several situations described in variables, which are then drawn into general conclusions. In causal research, apart from looking for direct cause and effect relationships, indirect cause and effect relationships can also be sought, namely through pathanalysis techniques. With pathanalysis, researchers can look for explanations of causal relationships between variables, where there are not only independent variables on dependent variables but also relationships through intervening variables (mediation). The method used in this research is quantitative and descriptive causal research methods. This research uses quantitative methodology and is a correlational study because there is no direct relationship or contact between researchers and respondents. So, this research is objective, not subjective. The setting of this research is field studies because the research is carried out in the field directly to mobile data users. And this research was carried out using a cross-sectional (oneshot) method (Sekaran&Bougie, 2016).

Population and Sample

According to Sekaran & Bougie (2017) population is the entire group, people, events, or things that interest researchers in conducting research. The population used in this research is electric car users in Jakarta. According to Sekaran & Bougie (2017), the sample is part of the population. The sample consists of a number of members selected from the population. To take a sample, a sampling technique is needed. The sampling technique used in this research is non-probability sampling because the population size is unknown and not everyone in the population has the same opportunity to be sampled. The non-probability sampling method used in this research is purposive sampling, that is, not everyone can be sampled, but only those who fit the criteria set by the researcher, namely electric car users.

This was done considering that Jabodetabek is one of the five largest cities and has a high level of electric car purchases. Therefore, in determining the sample size, researchers used the Hair formula, namely:

n = (Total Number of Indicators x 5)

So the total number of samples in this study was:
n = 35 x 5
165 respondents

Based on the formula above, the maximum sample size in this study is 115 respondents. The sampling method used in this research is non-probability sampling, namely purposive sampling. Purposive Sampling is a sampling unit selected based on certain considerations with the aim of obtaining a sampling unit that has the desired characteristics.

Data Collection Method

According to Sugiyono (2017) data collection was obtained from observation, interviews, documentation and triangulation. However, in this research the data collection method used was a questionnaire. The type of data in this research is primary data. Primary data is data obtained directly from the results of interviews, observations

and questionnaires distributed to a number of sample respondents who are in accordance with the target audience and are considered to represent the entire population. According to Sekaran & Bougie (2017) a questionnaire is a data collection technique that is carried out by giving a set of questions or written statements to respondents for them to answer. In this research, questionnaires will be distributed to samples that have been determined by researchers online via the Google Form platform using social media such as Whatsapp and Instagram, and assisted by colleagues in big cities on the island of Java such as Jakarta, Bandung, Semarang, Yogyakarta, Surabaya, and Banten via Whatsapp. The type of questionnaire that will be used is a closed questionnaire where a list of questions and statements are provided along with the answers. The questionnaire in this research will use a Likert Scale. The Likert scale is a tool for measuring subjects on a 5 point or 7-point scale with the same intervals Sekaran & Bougie (2017). This research uses a 7-point Likert scale. The 7-point Likert scale can minimize measurement errors and be more precise. The results of the answers are then given a value as follows:

Tabel 3.2 Skala Likert

Alternatif Jawaban	Nilai
Sangat Setuju(SS)	7
Setuju(S)	6
Cukup Setuju(CS)	5
Netral(N)	4
Cukup Tidak Setuju(CTS)	3
Tidak Setuju (TS)	2
Sangat Tidak Setuju (STJ)	1

Source : (Munshi, 2014)

Descriptive Analysis and Data Analysis Methods

Descriptive analysis is an analysis which is the collection, processing and presentation and interpretation of quantitative data or percentages which can be presented in table or graphic form (Sekaran&Bougie, 2017). Descriptive data was obtained from respondents' answers to the question items contained in the questionnaire. In this research, researchers used the Microsoft Excel 2016 application to measure descriptive data.

The results of descriptive data measurements will present quantitative data with the aim of knowing the picture of consumers used as research samples. Respondent characteristics that will be analyzed include gender, age, monthly income, occupation, domicile, provider used. After the research data from the questionnaire is filled in by the respondent, the frequency number and percentage value will be calculated.

Tabel 3.3 Profil Responden

No	Variabel	Kategori
1	Umur	18 – 30 tahun
		31 – 40 tahun
		41 – 50 tahun
		Lebih dari50 tahun
2	Jenis Kelamin	Laki-laki
		Perempuan
3	Pendapatan Perbulan	Kurang dariRp3.000.000
		Rp3.000.000–Rp5.000.000
		Lebih dariRp5.000.000
		Pelajar/Mahasiswa
		Karyawan Swasta

4	Pekerjaan	Karyawan BUMN
		Karyawan Sipil (PNS/TNI/Polri)
		Wiraswasta
		Lainnya

5	Domisi	Jakarta
		Bandung
		Semarang
		Yogyakarta
		Surabaya
		Banten
		Lainnya

The data used to describe the variables comes from primary data in the form of results from distributing questionnaires. The variables that will be described include the variables brandexperience, brandintimacy, brandcommitment, brandpassion, and brandloyalty.

SEM-PLS Method Analysis

The research method used in this research uses a Structural Equation Modeling (SEM) approach based on Partia lLeast Square (PLS) through the SmartPLS 3.0 application. PLS is an alternative model to covariance-based SEM. PLS is used to confirm a theory by looking at the relationship between several variables and determining how well the proposed theory fits. Apart from that, PLS is also used to develop theory in exploratory research by explaining variance in the dependent variable when examining the model (Hairetal., 2017). According to Hair et al., (2017) stated that PLS can be used for confirmation purposes, such as hypothesis testing and research purposes.

The data analysis technique in this research uses the PLS technique which is carried out in 2 stages, namely:

***Measurement Model* (*Outer Model*)**

The measurement model (outer model) aims to test the validity and reliability of the constructs of each indicator. Parameters in the outer model include convergent validity and discriminant validity for indicators forming latent constructs, as well as through composite reliability and Cronbach alpha (Hairetal., 2017).

Factor Loading (Outer Loading)

Factor loading (outer loading) is the suitability value of each indicator on a variable. The standard factor loading value is 0.70. According to (Hairetal., 2017) factor loading values that are below 0.4 are discarded from the model. So a factor loading value of 0.5 or 0.6 is still suitable for use.

a. Reliability

Reliability is the consistency of each indicator as a measuring tool for a variable. Reliability aims to measure the level of accuracy, consistency and precision of the instruments used to measure a research construct. Reliability estimates in PLS can be seen from the Cronbach's Alpha and Composite Reliability values. Cronbach's Alpha value must be greater than 0.6. Meanwhile, the Composite Reliability value must be greater than 0.7.

b. Convergent Validity

Convergent validity testing is testing the accuracy of each indicator in measuring the definition of the variable. The test is carried out by comparing the square root of average variance extracted (AVE) for each construct with the correlation between the construct and other constructs in the research. A construct can be said to be valid if the AVE value is greater than 0.50. This means that the construct has more than 50% of the variation in

indicators that can be explained by the research model (Hairetal., 2017).

c. Discriminant Validity

Discriminant validity testing is testing differences in definitions of each variable. In research, each variable has its own indicator and each variable also has its own definition. With discriminant validity, we can emphasize the differences between each variable and avoid conflicting meanings between these variables. The discriminant validity test is assessed based on several approaches, including the following:

(1) Fornell-Larcker Criterion

Fornell-Larcker criterion is a measure that compares the square root of the AVE value with the correlation of other variables. The test can be said to be valid if the square root of the AVE value is greater than the highest correlation value with other constructs. (Hairetal., 2017).

Cross Loading

Cross loading is one of the first approaches to testing discriminant validity. An indicator is declared sufficient and valid if it has a cross loading value for each variable greater than 0.7 (outer loading value).

Heterotrait-Monotrait (HTMT) Ratio

HTMT (Heterotrait-Monotrait Ratio) is a method for testing the extent to which a construct is different from other constructs. HTMT testing is carried out by calculating the ratio between the correlation between constructs (heterotrait) and the correlation within the same construct (monotrait) which is estimated from the PLS model. If the HTMT value between two constructs is less than 0.9, then the construct is considered to have good convergent consistency and can be differentiated from other constructs.

a. Fit Test

The fit test is one of the tests carried out in PLS. The fit test can be measured according to the output parameters of the PLS algorithm procedure, which are SRMR (smaller than 0.08), NFI (greater than 0.9), RMStheta (smaller than 0.12).

b. Collinearity Statistics

Collinearity is a high correlation between two formative indicators. When a study involves more than two indicators, this situation is called multicollinearity. The multicollinearity test is used to see whether the regression model finds correlation between the independent variables or the dependent variable. A good regression model should have no correlation between variables, which can also be said to have no symptoms of collinearity or collisions of meaning. The collinearity parameter is the variance inflation factor (VIF), the term VIF comes from its square root (VIF) which is the level at which the standard error has increased due to collinearity. The VIF value of each indicator must be less than 5. If not, indicators can be considered for elimination, combining indicators into a single index, or creating higher-level constructions to deal with collinearity problems (Hairetal., 2017).

***Structural Model* (*Inner Model*)**

The inner model is a structural model used to predict causal relationships (cause-effect relationships) between latent variables or variables that cannot be measured directly. The structural model (inner model) describes the causal relationship between latent variables that has been built based on the substance of the theory. The testing stages for the inner model are carried out with the following steps:

a. R-Square(R2)

The R-Square value is a test to measure the level of contribution of all variables behind variable Y to predict or influence variable Y using overall respondent data. R-Square value range 0.19 (small); 0.33 (medium); and 0.67(large). However, an R-Square value of 0.2 is also appropriate for consumer behavior studies (Hairetal., 2017).

b. Effect Size: f-Square(f2)

f-Square is used to test the contribution of each variable. f- Square also shows the strength of the relationship between variables (effect size) using overall respondent data. The range of f-Square values is 0.02 (small); 0.15 (medium); 0.35 (large).

c. Predictive Relevance:Q-Square (Q2)

Q-Square is used to test the feasibility and predictive ability of the model with incomplete respondent data. Incompleteness of respondent data is determined by choosing a distance in the blindfolding procedure: choose 5-12, and it is considered appropriate if the Q-Square is greater than 0.

a. Hypothesis testing

(1) Direct Hypothesis Testing

The main parameter in hypothesis testing is the T-statistic value. The T-statistics value must be greater than 1.96 for the hypothesis to be accepted (sig. 5%). Apart from that, the hypothesis is a guess, not a strong indication of a relationship between variables. The strength of the relationship between variables is based on the f-square value.

(2) Indirect Hypothesis Testing (Mediation)

Mediating variables are variables that theoretically influence the relationship between the independent variable and the dependent variable into an indirect relationship that cannot be observed and measured. Mediating variables can also be called variables that exist between variable X and variable Y.

Types of mediation relationships include:

• Partial Mediation

The mediated effect (axb) is significant and the direct effect (c) is also significant.

• Full Mediation

The mediated effect (axb) is significant and the direct effect (c) is not significant or vice versa.

• Non-Mediation

The mediated effect (a x b) is not significant and the direct effect (c) is also not significant.

a. Path Coefficient

Path coefficients are the relationship between latent variables in the structural model. Path coefficients aims to estimate path relationships in structural models. If the path coefficients value is positive then the relationship between these variables is in the same direction, and if the value is negative then the variable is in the opposite direction/negative. The path coefficient score is shown by the T-Statistic value. The T-Statistic value must be above 1.96 for the two-tailed hypothesis and above 1.645 for the one-tailed hypothesis for hypothesis testing at alpha 0.05 (Hairetal., 2017).

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