


ANALYSIS OF INDONESIAN SOCIETY'S PREFERENCES FOR THE PRESENCE OF ELECTRIC VEHICLES

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 30 June 2023</p> <p>Accepted 27 September 2023</p>	<p>Purpose: This study was to determine the preference of the Indonesian for the presence of electric vehicles. In addition, can provide information to EV manufactures, they can produce EV according to the preference of Indonesian.</p>
<p>Keywords:</p> <p>Conjoint Analysis; Customer Preference; Electric Vehicles.</p> <div data-bbox="172 913 480 1160" style="text-align: center;">  </div>	<p>Theoretical framework: This study is a development of previous studies, which was measured through five attributes: purchase price, driving range, availability of charging station, incentive policies, and type of vehicle load.</p> <p>Design/Methodology/Approach: This research is quantitative. Moreover, a questionnaire was used to collect data for this research. The data were then processed using conjoint analysis techniques with SPSS Version 27 software.</p> <p>Findings: The results demonstrated that price was the most important attribute, <Rp. 300,000,000 was the most useful level, and stimulus card number 9 was the most preferred combination. This combination includes an EV with a price of <Rp. 300,000,000, a range of 500 km, the availability of medium battery charging, an incentive of 1%–2%, and a type and load of 5 seats.</p> <p>Research, Practical & Social implications: EV manufacturers should produce and develop EV by taking into consideration the needs and abilities of Indonesians, especially at purchase prices that should be adjusted to the economic value of people's income. Adding another attributes can develop research.</p> <p>Originality/Value: This study was first conducted to see the preferences of the Indonesian for EV whose attributes are adjusted to the real conditions in Indonesia. It can be a reference on academic knowledge and the next research.</p> <p>Doi: https://doi.org/10.26668/businessreview/2023.v8i10.3324</p>

ANÁLISE DAS PREFERÊNCIAS DA SOCIEDADE INDONÉSIA PELA PRESENÇA DE VEÍCULOS ELÉTRICOS

RESUMO

Objetivo: Este estudo foi para determinar a preferência do indonésio pela presença de veículos elétricos. Além disso, pode fornecer informações aos fabricantes de EV, eles podem produzir veículos elétricos de acordo com a preferência do indonésio.

Estrutura teórica: Este estudo é um desdobramento de estudos anteriores, que foram medidos por meio de cinco atributos: preço de compra, autonomia, disponibilidade de posto de recarga, políticas de incentivo e tipo de carga do veículo.

Projeto/Metodologia/Aproximação: Esta pesquisa é quantitativa. Além disso, um questionário foi usado para coletar dados para esta pesquisa. Os dados foram então processados usando técnicas de análise conjunta com o software SPSS versão 27.

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Conclusões: O resultados demonstraram que o preço foi o atributo mais importante, <Rp. 300.000.000 era o nível mais útil e o cartão de estímulo número 9 era a combinação preferida. Esta combinação inclui um EV com um preço de <Rp. 300.000.000, um alcance de 500 km, a disponibilidade de carregamento médio da bateria, um incentivo de 1%–2% e um tipo e carga de 5 assentos.

Pesquisa Implicações Práticas e Sociais: O fabricantes de VEs devem produzir e desenvolver VEs levando em consideração as necessidades e habilidades dos indonésios, especialmente a preços de compra que devem ser ajustados ao valor econômico da renda das pessoas. Acrescentar outros atributos pode desenvolver pesquisas.

Originalidade/Valor: Este estudo foi conduzido pela primeira vez para ver as preferências do indonésio por EV cujos atributos são ajustados às condições reais na Indonésia. Pode ser uma referência no conhecimento acadêmico e nas próximas pesquisas.

Palavras-chave: Análise Conjunta, Preferência do Cliente, Veículos Elétricos.

ANÁLISIS DE LAS PREFERENCIAS DE LA SOCIEDAD DE INDONESIA POR LA PRESENCIA DE VEHÍCULOS ELÉCTRICOS

RESUMEN

Propósito: Este estudio fue determinar la preferencia de los indonesios por la presencia de vehículos eléctricos. Además, puede proporcionar información a los fabricantes de vehículos eléctricos, pueden producir vehículos eléctricos según las preferencias de los indonesios.

Marco teórico: Este estudio es un desarrollo de estudios previos, el cual fue medido a través de cinco atributos: precio de compra, rango de conducción, disponibilidad de estación de carga, políticas de incentivos y tipo de carga del vehículo.

Diseño/Metodología/Enfoque: Esta investigación es cuantitativa. Además, se utilizó un cuestionario para recopilar datos para esta investigación. Los datos fueron luego procesados utilizando técnicas de análisis conjunto con el software SPSS Versión 27.

Hallazgos: Los resultados demostraron que el precio era el atributo más importante, <Rp. 300,000,000 fue el nivel más útil, y la tarjeta de estímulo número 9 fue la combinación preferida. Esta combinación incluye un EV con un precio de <Rp. 300.000.000, una autonomía de 500 km, la disponibilidad de carga de batería media, un incentivo del 1% al 2% y un tipo y carga de 5 asientos.

Implicaciones de Investigación, Prácticas y Sociales: los fabricantes de vehículos eléctricos deben producir y desarrollar vehículos eléctricos teniendo en cuenta las necesidades y habilidades de los indonesios, especialmente a precios de compra que deben ajustarse al valor económico de los ingresos de las personas. Agregar otros atributos puede desarrollar la investigación.

Originalidad/Valor: este estudio se realizó primero para ver las preferencias de los indonesios por los vehículos eléctricos cuyos atributos se ajustan a las condiciones reales de Indonesia. Puede ser una referencia sobre el conocimiento académico y la próxima investigación.

Palabras clave: Análisis Conjunto, Preferencia del Cliente, Vehículos Eléctricos.

INTRODUCTION

One of the primary contributors to global warming are the emissions from motor vehicles. This is a result of the pollutants and CO₂ generated; each liter of fuel releases about 2 kg of CO₂ into the atmosphere (Kompas, 2022). Moreover, electric cars are a form of renewable energy that, albeit on a smaller scale, helps reduce pollution because car batteries still require fossil fuel power plants. Therefore, alternative power generation sources that are more environmentally friendly need to be developed for electric cars to completely reduce pollution (Victory, 2022). Furthermore, electric cars are still more environmentally friendly when compared to oil-fueled cars. Engines used in conventional motor vehicles only manage

to drive wheels and other functions by 12–30%, while the remaining 70–82% burn and generate emissions. In addition, electric cars use batteries to store energy, and electrical energy is converted into mechanical energy without requiring engine combustion (ENVIHSA, 2022).

The current number of electric vehicle users has not reached the government's target. Moreover, the government expects that through Presidential Regulation Number 55 of 2019 concerning the Acceleration of the Battery-Based Electric Motor Vehicle Program, people will increasingly use electric vehicles. The presence of electric vehicles is in line with the achievement of Sustainable Development Goals (SDGs) points 12 related to consumption and production and 13 related to handling climate change (Nurkhomariyah, 2022).

Electric car sales continue to increase every year, but they are still relatively low. In comparison to fuel vehicles, the percentage was not more than 1% (Pahlevi, 2022a). According to The Year in Search 2021 report, searches for the keyword “electric vehicle” increased by around 54% (Liputan6.com, 2022). BEV-type cars have the highest percentage of searches, which was 35%; therefore, electric car manufacturers are competing to attract potential customers (Pranayaditya, 2022). Although Indonesians have a high level of curiosity about electric cars, according to the Charta Politika survey, 61% of Indonesians were not interested in using electric vehicles even though fuel prices were rising, while those who were interested were not up to 30% (Annur, 2022). Based on the Pahlavi study (2022), the main reason people have not switched to using electric vehicle is the price, as well as a lack of knowledge about how to use technology, and it is difficult to use in certain areas due to inadequate infrastructure (Annur, 2022). This infrastructure is related to battery charging stations, of which there are not as many as gas stations, and battery charging requires high electrical power and takes a long time to charge (Rahadiansyah, 2022).

Electric cars currently cost an average of Rp. 500 million and higher in the Indonesian market, with some even reaching Rp. 2 billion, and the lowest price for an electric car is Rp. 200 million. There is one type of EV produced in Indonesia that is sold at a low price and is designed specifically for urban cars (Rahadiansyah, 2022). This is contrary to Indonesian culture, which favors traveling together in multi-capacity cars (Raharja, 2022).

Based on the formulation of the problem, it can be identified in this study is regarding consumer's preferences for what kind of EV, which is detailed by discussing what attributes consider to use and EV, what level is important for consumers to buy a EV, as well as the most preferred

Stimuli.

LITERATURE REVIEW

Consumer preference is the attitude that consumers take when selecting products after considering various brands and available choices (Kotler & Keller, 2016). Various choices of products and attributes will make consumers select and judge; thus, it is important for manufacturing companies to take this into consideration for the benefit of product development (Kotler & Armstrong, 2018).

Most studies have discovered external attributes or factors in the selection of electric cars. Research from various countries related to people's preferences for electric cars includes the construction of charging stations by Hardman et al. (2018) in the United States and Yu et al. (2016) in China; electric car prices by Yu, Li, and Tong (2016); fuel prices in Germany by Gnann et al. (Gnann et al., 2015); incentive policies by (Langbroek et al., 2016) and the status of family cars in Denmark (Jensen & Mabit, 2017). These studies investigated various factors that influenced the purchase of electric cars from various perspectives.

Conjoint analysis that examine consumer's preferences and the result can be used as design products features, assess sensitivity to price, forecast the target market, and predict adoption of new products (Idrus et al., 2023). Conjoint analysis uses various components such as attributes, levels, and combinations to identify consumer's preferences. This study used five attributes, including finance, which includes the purchase price. Price is one of the determinants of consumer preferences when buying a vehicle (Chowdhury et al., 2016). Price tiers are adjusted to correspond with the price range of reference vehicles (Liao et al., 2017).

The next attribute is the technical attribute, including driving range. The technical attributes of an electric car describe its technical characteristics (Liao et al., 2017). In addition, research conducted by Ščasný et al. (2018) discovered that this technical attribute is very important to consumer preferences.

This study additionally included infrastructure attributes such as the availability of charging stations for electric cars. The mileage of electric cars that have a maximum limit can be balanced with sufficient battery charging infrastructure. Therefore, many studies have investigated the effects of this attribute, such as a study conducted by (Ščasný et al., 2018).

Policy attributes are also an important factor in consumer preferences when selecting electric cars. According to Liao et al. (2017), this attribute includes government-implemented policy instruments for promoting the use of electric cars. This study used tax reductions in accordance with policies issued by the Indonesian government through the Coordinating Minister for Maritime and Investment Affairs (Rizky, 2023).

The addition of attributes about the number of vehicle seat loads made this study more specific and realistic (Abotalebi et al., 2020). Moreover, Indonesians will make purchases if they want to. The selection and consideration of buying an electric car are based on several choices of attributes with levels that are in line with reality in Indonesia. The attributes and levels used in this study were listed as follows:

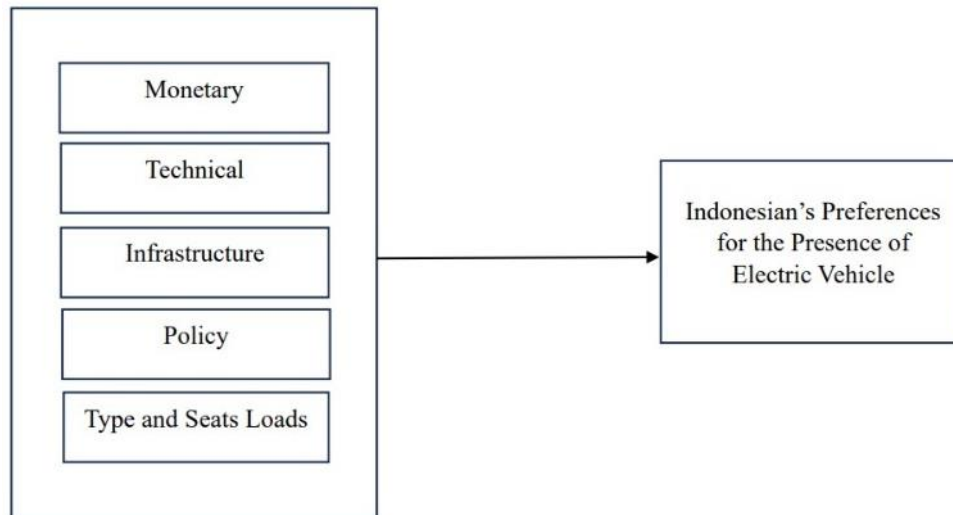
Table 1 - List of Attributes and Levels

Code	Attribute	Level
A1	Purchase price	<ul style="list-style-type: none"> • <Rp.300.000.000 • Rp.300.000.000-Rp.800.000.000 • >Rp.800.000.000.
A2	Driving range	BEV: <ul style="list-style-type: none"> • 150 Km • 350 Km • 500 Km (Ščasný et al., 2018)
A3	Infrastructure availability charging station	BEV: <ul style="list-style-type: none"> • Low: (20% gas stations + in some public places) • Medium: (60% gas station + in the middle of a public place) • High: (90% gas stations + in almost all public places) (Ščasný et al., 2018).
A4	Incentive policy	<ul style="list-style-type: none"> • 1%-2% • 3%-4% • >5%
A5	Vehicle type or load	<ul style="list-style-type: none"> • Cup (2 Seat) • Halvkombi (5 Seat) • Kombi (8 seat) (Chowdhury et al., 2016)

Source: Prepared by the authors from several sources (2023)

Referring to the results of previous research that have been developed, then a research model is created as depicted in the following.

Figure 1 - Framework



Source: Processed by the researchers, refers to Ščasný et al. (2018), Liao et al. (2017), and Abotalebi et al. (2020)

DATA AND METHODOLOGY

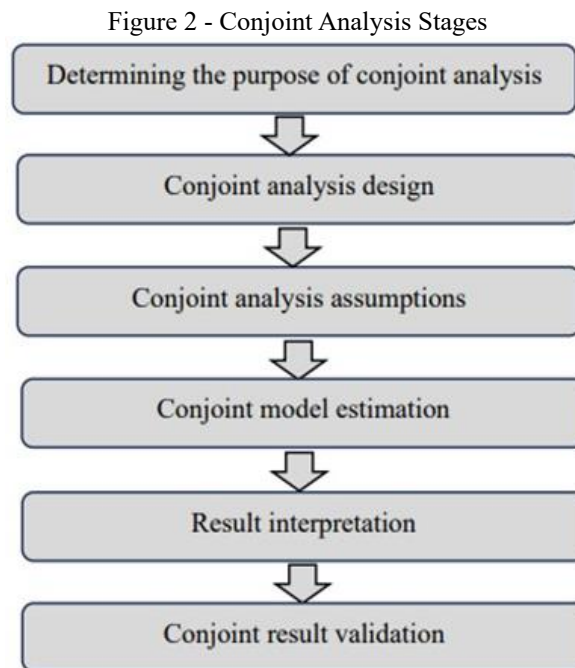
Research Object and Analytic Unit

The total population in this study was Indonesians from various regions, which could not be measured because Indonesian people who want to buy electric cars are dynamic and hence have no definite value. The sample was made up of members of the population who were selected to be asked for their opinions related to the object of research (Indrawati, 2015). This study used non-probability sampling, in which the population did not have the same opportunity to be selected as a sample. Moreover, purposive sampling was used in this study because it has limitations for certain respondents who served as research representatives, namely the Indonesian population, who were aware of BEV cars and own cars. Thus, this study utilized Bernoulli's formula to determine a sample of 385 respondents.

Analysis Technique and Model Testing

This study is part of a quantitative analysis whose data processing was carried out after the required data from respondents was collected using Google Forms. Moreover, this study used multivariate analysis with conjoint analysis techniques using SPSS software version 27. Conjoint analysis, an instrument measurement called attribute, refers to the procedure for measuring and analyzing consumer preferences for a particular object (Backhaus et al., 2021). Enhanced by the opinion of Indrawati (2015), where this analysis was also known later, the combination of these products provided the greatest value and benefits felt by consumers, thus affecting the product selection process.

According to Hair et al. (2014), there are seven stages that must be passed in order to conduct conjoint analysis. The seven stages are as follows:



Source: Hair et al. (2014)

At the design stage of conjoint analysis, the method used was determined to be traditional conjoint, in which the number of attributes studied was not more than 9 (Hair et al., 2014). Moreover, based on Sujarweni (2019: 179), factors are variables manipulated by researchers that represent an attribute that has at least two or more values (known as levels). After that, the creation of stimuli or profiles was carried out with the help of IBM SPSS 27. In addition, stimuli, as defined by Backhaus et al. (2021: 539) and Indrawati (2015: 196), are a combination of different attributes or levels displayed in one section.

In this study, five attributes with a total of 15 levels were used. Therefore, in the creation of stimuli, a possible combination of the multiplication of the sum of each level was $3 \times 3 \times 3 \times 3 \times 3 = 243$. According to Hair et al. (2014: 370) and Sugiyono (2017: 150), the number of stimuli that appeared too much could be reduced by the following formula:

$$\begin{aligned} \text{Min stimuli} &= \text{Number of Levels} - \text{Number of Attributes} + 1 \\ &= 15 - 5 + 1 \\ &= 11 \end{aligned}$$

Therefore, the minimum number of stimuli used was 11. Meanwhile, the results of the management of IBM SPSS version 27 gave 16 stimuli. Stimuli generated from IBM SPSS version 27 could be used because they exceeded the minimum amount.

Customer Value Index

The customer value index was calculated by summing each utility value in each card profile combination (Sujarweni, 2019). Cards with the highest number of customer value index values were the card stimuli that were most preferred by the public. The customer value index was formulated as follows:

$$CVI = \sum_{t=1}^n \text{Utility Value}$$

RESULTS AND DISCUSSION

Socio-Economic and Demographic Characteristics and Geography of Respondents

The questionnaires in this study were distributed online using social media. The sample has been set at 385 respondents. After data collection, 385 respondents passed the screening stage and met the sampling quota. Socio-Economic and Demographic factors have been proven to influence environmentally friendly purchase behaviours substantially (Mohan & Kinslin, 2022).

Socio-economic and demographic characteristics were the categories of individual-related variables most often included in studies, and findings on their effect on EV preference were divergent. These characteristics consisted of gender, age, status, number of families, occupation, income, level of education, and domicile of residence. The results can be seen in Table 2.

Table 2 – Socio-Economic and Demographic Characteristics

Sample	Category	Number	Percentage
Gender	Male	220	57,1%
	Female	165	42,9%
Age	26 – 36	193	50,1%
	37 – 47	128	33,2%
	48 – 58	53	13,8%
	>59	11	2,9%
Educational Level	Diploma	58	15,1%
	Graduated	201	52,2%
	Master-Graduated	99	25,7%
	Postgraduated	27	7%
Marital Status	Single	119	30,9%

	Married	266	69,1%
Number of Famililies	1 - 2	122	31,7%
	3 - 4	164	42,6%
	5 - 6	76	19,7%
	>7	23	6%
	Occupation	Government Employees	66
	Employees of state owned Enterprise	60	15,6%
	Private Employees	138	35,8%
	Entrepreneur	81	21%
	Others	40	10,4%
Monthly Income (Rp)	Rp.8.000.000 – Rp.15.000.000	174	45,2%
	Rp.16.000.000 – Rp.25.000.000	125	32,5%
	Rp.26.000.000 – Rp.35.000.000	57	14,8%
	>Rp.35.000.000	29	7,5%
Domicilie	Sumatera Island	91	23,6%
	Java Island	207	53,8%
	Kalimantan Island	44	11,4%
	Sulawesi Island	21	5,5%
	Others	22	5,7%

Source: Prepared by the authors (2023)

Table 2 shows that the majority of respondents (88%) are men in the age group of 26–36 years (50.1%), who are classified as still in productive age and represent the market for young couples. Moreover, the majority of respondents, based on their last educational background, are graduates (52.2%). In addition, 69.1% of respondents are married, and 42.6% of them have a family consisting of 3–4 people. Meanwhile, respondents' jobs are dominated by private employees (35.8%), and 45.2% earn Rp. 8,000,000 per month. These respondents' profiles were used to determine the segmentation of respondents in this study, namely, by analyzing the effectiveness of electric cars expected by consumers with conjoint analysis techniques to determine their preferences.

Validation and Reliability Test

After data collection, questionnaire questions or statements that were used as measuring instruments must be declared valid and reliable (Indrawati, 2015). A statement was valid if r was calculated to be positive and $>r$ was a table. This study used a significance level of 5% and an r table of 0.098. The results can be seen in Table 3.

Table 3 – Validation Test

No. Item	R Count	R Table	Information
1	0,844	0,098	Valid
2	0,796	0,098	Valid
3	0,657	0,098	Valid
4	0,834	0,098	Valid
5	0,864	0,098	Valid
6	0,830	0,098	Valid

7	0,856	0,098	Valid
8	0,696	0,098	Valid
9	0,654	0,098	Valid
10	0,857	0,098	Valid
11	0,849	0,098	Valid
12	0,849	0,098	Valid
13	0,805	0,098	Valid
14	0,865	0,098	Valid
15	0,853	0,098	Valid
16	0,636	0,098	Valid

Source: Processed data by the authors by using SPSS Versi 27 (2023)

According to Sujarweni's opinion (2019), every statement or question is said to be reliable if the alpha value is positive and >0.6 . The result can be seen in Table 4.

Table 4 – Reliability Test

Variable	Cronbach's Alpha	Indicator	Information
X	0.850	0.60	Reliable

Source: Processed data by the authors by using SPSS Versi 27 (2023)

Significance Test and Predictive Accuracy

Conjoint analysis aimed to predict respondents' assessment patterns on a product called part-worth estimates and then compare them with actual respondents' opinions. Predictive accuracy was used to measure the degree of accuracy of predictions, which was seen through a strong and significant correlation between the results of estimates and actual results.

Table 5 – Person and Kendall Values

Correlations ^a		
	Value	Sig.
Pearson's R	,989	,000
Kendall's Tau	,826	,000

a. Correlations between observed and estimated preferences

Source: Processed data by the authors by using SPSS Versi 27 (2023)

The results showed a correlation value of 0.989 according to Pearson and 0.826 according to Kendall, which was considered strong because it resulted in a number above 0.5. Furthermore, both have significance values of 0.000, which were far below 0.05. Therefore, this study has acceptable predictive accuracy.

Importance Value of Each Attribute

The results of this study were based on importance value and importance utility. Based on the results of data processing, the price attribute has the highest importance value of 23.10. Moreover, the results are in line with the opinion of Abotalebi et al (2020) which revealed that

type and load proved to be one of the important attributes by being in second place with an importance value of 20.683. The third is the driving range with a value of 18.896, followed by incentive policies of 18.788, and finally the availability of battery charging of 18.530.

Table 6 – Importance Value of the Attributes

Importance Values	
Price	23,103
Range	18,896
Availability	18,530
Policy	18,788
Type	20,683
Averaged Importance Score	

Source: Processed data by the authors by using SPSS Versi 27 (2023)

The only major factor slowing the penetration of the electric car market in Indonesia is its high price. One of the reasons is that Indonesians have a lower affordability index than people in developed economies because of their low per capita income. In addition, the results of the research by Chowdhury et al. (2016) showed that the aggregate price attribute had the highest importance weight of 20.75%. This result is supported by the research of Ma et al. (2019), which revealed that (Ma et al., 2019) price far exceeded other attributes. In contrast, a study by Boardman et al. (2000) conducted in the UK reported that price was the fourth most important.

Research by Chowdhury et al. (2016) found that the size and style of a car have the lowest importance weight of 11.19%. However, the same results were found in another UK study by Dixon & Hill (2009), which found car size to be the most important attribute, followed by price (second). With the limitations of driving range in EVs, respondents were more aware of the driving range attribute compared to the infrastructure availability attribute. Furthermore, Buhmann & Criado (2023) found that a higher driving range before recharging could increase preference for EVs. In addition, the application of EV user incentives through tax cuts can help the community, as stated in Regulation of the Minister of Finance Number 38 of 2023.

Utility Values of Each Level

This result is the value of each level that was used to get a picture of people's preferences for the level of the five attributes. These values were derived from the difference between the averages of certain attributes. The higher and more positive the value, the more people have a penchant for that level. The results of utility values can be seen as follows:

Table 7 – Utility Values of the Levels

Utilities			
		Utility Estimate	Std. Error
Price	<Rp.300.000.000	,153	,016
	Rp.300.000.000 - Rp.800.000.000	-,048	,021
	>Rp.800.000.000	-,105	,017
Range	150 Km	-,050	,014
	350 Km	-,026	,017
	500 Km	,076	,016
Availability	Low	-,006	,014
	Medium	-,031	,017
	High	,037	,016
Policy	1% - 2%	,001	,014
	3% - 4%	-,024	,017
	>5%	,023	,016
Type	Coupe 2 Seat	-,141	,014
	Halvkombi 5 Seat	,071	,016
	Kombi 8 Seat	,070	,016
(Constant)		3,811	,014

Source: Processed data by the authors by using SPSS Versi 27 (2023)

The utility value of <Rp. 300,000,000 was positive with a value of 0.153. The result indicated that respondents preferred this level the most. In line with the fact that the highest price of >Rp.800,000,000 was the least preferred level by respondents. Moreover, 500 km had the largest utility value and positive value. This result indicated that respondents preferred this level the most. Respondents felt safer driving with high mileage. In addition, the lowest utility value was at a distance of 150 km.

The availability of charging station facilities at the highest level was most preferred by respondents, with a value of 0.037, while the lowest level was least preferred by respondents. The utility value of >5% was positive and had the highest value, which indicated that respondents had a favorable opinion of government policies that provide VAT reductions of >5%. By providing this reduction, the community feels more alleviated in terms of operational costs per year.

Halvkombi 5-seat vehicles had the highest utility value and were positive. This indicated that respondents preferred the type or load of Halvkombi 5-seat vehicles the most. In contrast, Poles (30%) preferred small family-size cars ((Ščasný et al., 2018). Similar to the research by Chowdhury et al. (2016), the 2-seat coupe was the least preferred type by the Swedish public.

Total Usability Value of 16 Card Stimuli

The following is the utility value of 16 card stimuli calculated using customer value index analysis. To get the customer value index value, the researchers calculated each utility value from each level contained in each combination card using the formula:

CVI = Total Utility Value Attribut

Table 8 - Calculation of the Customer Value Index for 16 Stimul Cards

CVI Stimuli			
CVI Stimuli 1 (Card 1)		CVI Stimuli 2 (Card 2)	
IDR 300,000,000 - IDR 800,000,000	-0,048	IDR 300,000,000 - IDR 800,000,000	-0,048
350 Km	-0,026	150 Km	-0,05
Medium	-0,031	Tall	0,037
3%-4%	-0,024	1%-2%	0,001
2 Seat Cup	-0,141	Station wagon 8 Seat	0,07
Total CVI Stimuli 1	-0,27	Total CVI Stimuli 2	0,01
CVI Stimuli 3 (Card 3)		CVI Stimuli 4 (Card 4)	
<IDR 300,000,000	0,153	>IDR 800,000,000	-0,105
350 Km	-0,026	500 Km	0,076
Tall	0,037	Tall	0,037
1%-2%	0,001	>5%	0,023
Hatchback 5 Seat	0,071	2 Seat Cup	-0,141
Total CVI Stimuli 3	0,236	Total CVI Stimuli 4	-0,11
CVI Stimuli 5 (Card 5)		CVI Stimuli 6 (Card 6)	
<IDR 300,000,000	0,153	<IDR 300,000,000	0,153
150 Km	-0,05	150 Km	-0,05
Low	-0,006	Medium	-0,031
1%-2%	0,001	>5%	0,023
2 Seat Cup	-0,141	2 Seat Cup	-0,141
Total CVI Stimuli 5	-0,043	Total CVI Stimuli 6	-0,046
CVI Stimuli 7 (Card 7)		CVI Stimuli 8 (Card 8)	
>IDR 800,000,000	-0,105	<IDR 300,000,000	0,153
150 Km	-0,05	500 Km	0,076
Medium	-0,031	Low	-0,006
1%-2%	0,001	3%-4%	-0,024
Station wagon 8 Seat	0,07	Station wagon 8 Seat	0,07
Total CVI Stimuli 7	-0,115	Total CVI Stimuli 8	0,269
CVI Stimuli 9 (Card 9)		CVI Stimuli 10 (Card 10)	
<IDR 300,000,000	0,153	IDR 300,000,000 - IDR 800,000,000	-0,048
500 Km	0,076	500 Km	0,076
Medium	-0,031	Low	-0,006
1%-2%	0,001	1%-2%	0,001
Hatchback 5 Seat	0,071	2 Seat Cup	-0,141
Total CVI Stimuli 9	0,27	Total CVI Stimuli 10	-0,118
CVI Stimuli 11 (Card 11)		CVI Stimuli 12 (Card 12)	
>IDR 800,000,000	-0,105	IDR 300,000,000 - IDR 800,000,000	-0,048
150 Km	-0,05	150 Km	-0,05
Low	-0,006	Low	-0,006
3%-4%	-0,024	>5%	0,023
Hatchback 5 Seat	0,071	Hatchback 5 Seat	0,071
Total CVI Stimuli 11	-0,114	Total CVI Stimuli 12	-0,01
CVI Stimuli 13 (Card 13)		CVI Stimuli 14 (Card 14)	
<IDR 300,000,000	0,153	>IDR 800,000,000	-0,105
150 Km	-0,05	350 Km	-0,026
Tall	0,037	Low	-0,006
3%-4%	-0,024	1%-2%	0,001
2 Seat Cup	-0,141	2 Seat Cup	-0,141
Total CVI Stimuli 13	-0,025	Total CVI Stimuli 14	-0,277
CVI Stimuli 15 (Card 15)		CVI Stimuli 16 (Card 16)	
<IDR 300,000,000	0,153	<IDR 300,000,000	0,153
150 Km	-0,05	350 Km	-0,026

Low	-0,006	Low	-0,006
1%-2%	0,001	>5%	0,023
2 Seat Cup	-0,141	Station wagon 8 Seat	0,07
Total CVI Stimuli 15	-0,043	Total CVI Stimuli 16	0,214

Source: Processed data by the authors (2023)

Based on the results of Table 8 above, of the 16 card stimuli available, one had the highest usability value. The stimulus card number 9 had the highest usability value of 0.270. The combination of attributes and levels contained in the card consisted of the price of an electric car of <Rp. 300,000,000 with a distance of 500 km, the availability of charging stations with a medium level, and a tax discount of 1%–2%, as well as the type and load of the vehicle that has as many as 5 seats.

CONCLUSION, SUGGESTIONS, AND AGENDA FOR FUTURE RESEARCH

Based on the results of the analysis of respondent characteristics, it was dominated by male respondents, aged 26–36 years, having married status, and having a family consisting of 3–4 people. The majority of respondents had a job as a private employee with an average monthly income of Rp. 8,000,000–Rp. 15,000,000 and were domiciled in Java. Respondents rated that the attribute of electric cars that was most considered important was price, with an importance value of 23,103. In addition, the level of Rp. 300,000,000 was considered the most beneficial level for the Indonesians, with the largest positive usability value of 0.153.

Based on the calculation results using the CVI formula, which calculated the total utility value attributes of the 16 card stimuli, it was found that the combination of card stimuli no. 9 was the one that respondents preferred the most, which is electric cars with a price of <Rp. 300,000,000 whose mileage is 500 km with the availability of medium charging station facilities and incentives of 1%–2% and loaded with a 5-seat Halvkombi. It was concluded that the selected attributes and levels illustrate the importance of shaping consumer preferences when selecting electric cars that adjust to the conditions of respondents' dominance in this study.

The researchers made several suggestions based on the results of the study, including that electric car manufacturers should produce and develop electric cars by taking into consideration the needs and abilities of Indonesians, especially at purchase prices that should be adjusted to the economic value of people's income. In order to reduce the concern of the Indonesians about mileage, electric car manufacturers should develop technologies that are able

to shorten battery charging times and increase the mileage of electric cars to 500 km to satisfy the needs of the Indonesians.

Infrastructure readiness is also very important. Companies should increase the availability of charging stations at the medium level (60% charging stations and in the center of public places) by providing charging stations at every electric car manufacturer dealer in each region. Moreover, due to Indonesian culture, which favors traveling together, electric car manufacturers should increase the production of electric cars that are able to accommodate up to five passengers with adequate luggage loads. In addition, more realistic tax reduction incentives should be provided.

For the development of science and research in the future with methods like adding attributes, it is also expected that research will be carried out regularly using the latest research results and innovations in the use of different attributes, so that research can be useful for accelerating the program of using electric vehicles.

Further researchers can focus their research on one particular attribute, as conducted by Li et al. (2020), related to public preferences for electric vehicle incentive policies. In addition, other researchers can also examine several levels of attributes in this study, especially those with small and negative values, in order to determine the causes and factors that lead people to dislike the level of each attribute. Moreover, if other researchers have a relatively long research time span, research can be carried out with a larger number of samples compared to this study; therefore, the results of the research can better reflect Indonesian society.

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