The Influence of Environmental Concerns and Online Reviews toward Purchase Intention of Electrical Vehicle in Jakarta

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Abstract: This research was conducted to examine the partial and simultaneous effects of Environmental Concerns (X1) and Online Reviews (X2) on Electric Vehicle Purchase Intention (Y) in Jakarta. A quantitative approach was employed, using a purposive sampling technique with a total of 155 respondents. Data was collected through the distribution of questionnaires measured using a Likert scale. The analysis included validity and reliability testing, along with multiple regression analysis, processed using SPSS 25. The results indicate that Environmental Concerns and Online Reviews simultaneously have a positive and significant influence on Electric Vehicle Purchase Intention. Therefore, it can be concluded that potential EV buyers in Jakarta are significantly influenced by these two factors when considering their purchase decisions.
Keywords: Electric vehicle, environmental concerns, online reviews, purchase intention.

Abstrak: Penelitian ini dilaksanakan untuk melihat pengaruh secara terpisah dan juga secara simultan dari Kepedulian Lingkungan (X1) dan Review Online (X2) pada Intensi Pembelian Kendaraan listrik di area akarta. Penilitian ini menggunakan metode pendekatan quantitative yang mengaplikasikan teknik purposive sampling sejumlah 155 responden. Data diperoleh melalui penyebaran kuestioner yang disusun berdasarkan Skala Likert. Untuk analisa data dilakukan uji validitas dan reliabilitas, dilanjukan dengan Multiple regression analysis menggunakan applikasi SPSS 25. Hasil dari penelitian ini menunjukan bahwa Kepedulian Lingkungan and Online Reviews secara simultan memiliki pengaruh yang signifikan secara positif terhadap Intensi Pembelian Kendaraan Listrik. Oleh karena itu, dapat simpulkan bahwa calon pembeli kendaraan listrik di Jakarta dapat dipengaruhi secara signifikan oleh kedua faktor tersebut dalam mengambil Keputusan untuk membeli kendaraan listrik ini.
Kata kunci: Kendaraan listrik, kepedulian lingkungan, ulasan daring, minat beli.

I. INTRODUCTION

Among various factors, the environment is one of the most essential determinants of human sustainability, ensuring the continuity of life for future generations. Having good environment would increase our sustainability, whereas degrading it reduces the likelihood of sustaining human existence on Earth. Pollutants and greenhouse gases engender negative impact on human health that cause many diseases, such as asthma, lung malfunctions, and also cause symptoms of respiratory diseases. Air pollution has been considered one of the most concerning environmental issues around the world (World Health Organization, 2025).

As the capital of Indonesia, DKI Jakarta has been struggling to solve the air quality problem in recent years. The air quality of DKI Jakarta has deteriorated, with the PM2.5 average concentration escalating to 49.4 μg/m3 in 2019, which is about 66% higher than in 2017 (IQAir, 2023). This concentration is almost five times as much as the PM2.5 annual mean guideline established by the World Health Organization. As the central of business and industry, various factors contribute to severe air pollution in Jakarta, and Motor vehicles have become the primary source of this. In particular, the contribution of motor vehicles to the PM2.5 concentration of DKI Jakarta is approximately 32–57% (Zulkarnain, 2022). This is due to the rapid motorization of DKI Jakarta and its surrounding regions. The number of motor vehicles in DKI Jakarta has continued to

surge to 22.8 million units in 2019, which includes 1.6 million and 407,000 additional motorcycles and private cars, respectively, during the last two years (Badan Pusat Statistik, 2020).

To respond to these air pollution issue, our advance technology offers solution by producing electric vehicles (EV) that are much more environmentally friendly than fuel powered ones. In Indonesia, Battery Electric Vehicles (BEV) have been introduced by several well- known manufacturers in order to enter its domestic market. To welcome these new type of vehicle Indonesian government has issued regulation No. 55/2019 to accelerate the development of the electric vehicle business ecosystem (Presidential Regulation No. 55/2019, 2019). This EV ecosystem will include the infrastructure for charging stations, nickel raw material providers, battery manufacturers, components makers, and EV assemblers/manufacturers. Having strong support from its government makes Indonesia one of the most promising potential markets for EV. Until 2022, Indonesia sales market shares of EV placed the second position among SEA regions major countries with 25.2%, below Thailand that has two times higher market share than Indonesia around 59.2% (Mukherjee, 2023)

In order to penetrate Indonesian market, EV producer should understand Indonesian people perspective and needs toward transportation vehicle in general. One way to gain enough information regarding Indonesian people viewpoint about EV is by reviewing their interaction in digital platform, such as online forum discussion and social media. Online review facilitates communication channel for existing customer and people in general to express any concern and recommendation about EV, covering detail specification, features variation, current technology used by each brand, dimensions, and range of vehicle, prices and also its merits and demerits of purchasing EV as their personal transportation. Online review not only useful for EV producer company but also

for prospective customer. A lot of people with strong interest to purchase EV use digital platform to find more information about EV facts before deciding to by one. Many acknowledge online review as a significant factor to influence their purchase decision as it could fulfil their needs for requiring reliable information about a product (Wu, 2022).

Discussion above shows large emissions produced by fuel powered vehicles (Non-EV) can cause huge problem for the environment and it would bring much harm to people's health in the future. In order to have a much sustainable environment, Jakarta government encourage its citizen to move from gasoline vehicle to EV uses as their personal vehicle transportation. This research would like to understand more about how people in Jakarta make decision on purchasing EV that could support their government program. Among many factors that could contribute to people purchase intention for EV, researchers focus more on two of them which are people awareness of environmental issue and their behavior toward online reviews. Therefore, this research outlines its title as "The Influence of Environmental Concern and Online Reviews toward Purchase Intention of Electric Vehicle in Jakarta."

Research Objectives

This research has several objectives to achieve that could be defined as :

1. The effect of environmental concerns toward consumer purchase intention of Electric Vehicle in Jakarta.

2. The effect of online reviews on consumer purchase intentions of Electric Vehicle in Jakarta.

3. The effect of environmental concerns and online reviews on consumer purchase intention of Electric Vehicle in Jakarta.

Research Benefits

By doing this research, there are several benefits that could be obtain from both practical and theoretical aspects. In practical aspects, this research could

provide input for companies to build their marketing strategy in leading people to purchase intention. Also, this research explores market perception on EV that could be used by company to strengthen their business strategy in order to win competitive market. On the other hand, customer could also gain benefits as this research provides additional knowledge that can be used to comprehend people environmental issue awareness, online review uses, and purchase intention for EV products.

In theoretical aspects, this research can be used as reference and source of information regarding environmental concerns, online reviews and purchase intention on EV consumers in Jakarta for other similar researches.

II. RESEARCH METHODS
Environmental Concerns

According to Dunlap (2002) environment concern encompasses cognitive, affective and behavioral component within an individual. These dimensions explain how individuals perceive environmental problems and their willingness to act. On cognitive sector it involves individual knowledge and thinking process about the important of having good environment condition for their life. According to Steg (2009)People with high environmental concern would shape their perspective to be more supportive in protecting the environment and finding best solution for any environmental issues such as pollution, climate change, biodiversity loss, and sustainable resource use. Next, affective component represents their emotions aspect toward environment sustainability condition. This aspect reveals positive or negative feeling a person have regarding environmental issue prevention and solution, which would define the level of their concern for it. The greater their concern for the environment, the more positive their emotions about these matters (Steg, 2009). Lastly, behavioural component shown by people actual behaviour dealing with environmental

issues. People with high concern for environmental issues would be more proactive in maintaining environmental sustainability and preventing any possible harm to it.

To assist researchers in navigating the literature, a review of existing scale will be used, with structural validity of five scales that are commonly used in this corpus and that adhere to classical test theory. These results have important implications for general issues with measurement in this area, and inform our recommendations to other researchers about key considerations when selecting and using environmental concern scales (Cruz, 2020).

Online Reviews

Online reviews consist of voluntary consumer-generated evaluations of businesses, products or services by internet-users who purchased, used, or had experience with a product or service. It usually serves as a form of customer feedback on digital platform and commonly published on a review site. On these written opinion and evaluations, a grade or rating may also be assigned to indicate level of customer satisfaction (S. Dixon, n.d.). People use digital technology to interact and exchange information regarding a product or service among their community any time anywhere. The more frequently people visit and interact on this online review to gain information, the more they are seen as heavy user of this digital facility.

According to Chevalier & Mayzlin (2006) online reviews significantly influence consumer decision-making by providing social proof and reducing uncertainty. One of the reasons online review to be used widely in our modern life is that it could offer much reliable information on products or services, due to its unbiased source. Most discussion on those online reviews originate from existing customer who share their real purchase experience or from the general public, both of whom are generally perceived to have no personal interest in the content of their reviews. This condition makes online review one of highly

significant factors to influence people purchase intention.

Purchase Intention of EV

Based on Pavlou (2003) argument, online purchase intention is a situation when a customer is willing and intends to engage in online transactions. Online transactions can be considered as activities where the process of information retrieval, information transfer, and product purchase. Purchase intention refers to how consumers would likely make a transaction by considering service quality, atmospheric environment, and product quality. Consumer actual buying behavior as well as their probability in creating another transaction in the future are reflected by their purchase intention.

Various factors influence purchase intention, including product quality, brand image, price perception, and consumer trust (Fishbein & Ajzen, 1975). Quality of a product represents its performance for intended function reliably, efficiently, and consistently. Thus, product quality answers the most important question whether this product will meet consumer needs and bring expected value to them or not. One of many qualities that EV offers to the market is to provide vehicle using electricity that will not harm our environment as much as gasoline powered vehicles (European Environment Agency, 2023). People with high concern for environmental issues would see EV quality as one of the best solutions to reduce air pollution in Jakarta. Therefore, people with high environmental concern would likely have stronger purchase intention for EV products.

Other factors such as brand image, price perception and customer trust are also essential to define people purchase intention. Fortunately, in this digital age, online review could provide all the information needed regarding those factors. Most online reviews cover comprehensive information about EV price, brand image and how confidence the market toward EV product ("Customer Experience in the Electric Vehicle Industry Statistics," 2023). Due to its characteristic of providing unbiased opinion, online review could be used as a tool to build people trust on EV. Online reviews, social media endorsements, and peer recommendations have shown to significantly affect purchase intention by reducing perceived risk and increasing trust (Kim, Ferrin, & Rao, 2008). The stronger people trust EV products, the higher their intention to purchase them
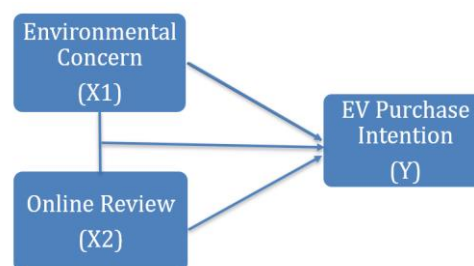
Research Framework

Figure 1. Research Framework
Source: Processed by Researcher, 2023

The conceptual model of this study focuses on three variables: environmental concern (X1) and online reviews (X2) as independent variables, and EV purchase intention (Y) as the dependent variable. Using all theories above, this research examines the relationship between environmental concern and EV purchase intention, the relationship between online reviews and EV purchase intention, and finally, the combined effect of environmental concern and online reviews on EV purchase intention.

Hypothesis

The hypotheses proposed in this research are:

H1: Environmental Concerns (X1) effects on Electric Vehicle Purchase Intention (Y).

H2: Online Reviews (X2) effects on Electric Vehicle Purchase Intention (Y).

H3: Environmental Concerns (X1) and Online Reviews (X2) simultaneously affect Electric Vehicle Purchase Intention (Y).

Research Procedure

The type of research used in this study is quantitative method, encompasses objective measurements, having the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys. In this method researchers gather numerical data and generalising it across groups of people or to explain a particular phenomenon.

This research was conducted by distributing questionnaires digitally through google forms on google drive distributed to 155 respondents who have met the predetermined criteria, that is respondents with knowledge about electric vehicle products and live in Jakarta area. The distribution of this questionnaire was carried out from 10 February 2023 to 7 March 2023.

There are two types of sources being used on this research, primary data and secondary data. First, primary data was collected by researchers directly from its main sources through interviews and surveys. Lastly, secondary data obtained by researchers from other researcher's previous works that available to use generally. In this research, secondary data was obtained through the internet, journals, articles, and literature books.

The data collection method carried out by researcher with the intention of being able to build good quality in achieving the objectives of the research through questionnaire. It consists of series of questions for the purpose of gathering information from respondents. It provide a relatively cheap, quick and efficient way of obtaining large amounts of information from a large sample of people (Mcleod, 2018).The instrument used to measure its variable using a *Likert* scale, which have range of score from 1 for strongly disagree, 2 for disagree, 3 for neither agree or disagree, 4 for agree and 5 for strongly agree.

Researchers use non probability sampling techniques, due to its selective respondents that participate on this research as their sample. This technique does not provide equal opportunities for each element or member of the population to be selected as a sample. Only people that have knowledge about EV and living in Jakarta area could join as sample.

III. RESULTS AND DISCUSSION

Researchers collected their data for this research through survey using questionnaires on Google form application. The questionnaire was distributed from 15 February 2023 to 7 March 2023 targeting respondents who have knowledge about EV products and lives in Jakarta area, as their requirement criteria for their non-random sample type. Due to 21 questions being used in this questioner, the minimum number of respondents should be attained is 105 respondents for this research to fulfil scientific method standard. Researchers distributed 167 questionnaires online and there are 155 responds considered eligible enough to be used as sample for this research.

From the 155 respondents who answered the questionnaire, 45.2% were 17-22 years old, 20.6 % were 23-27 years old, and the rest spread above 27 years old. Among them 56.8% were Male while the rest are female. As for their educational background 51.6% were Senior High Schools and 39.4% bachelor's degree, others are post graduate level. Occupation of these respondents are 46.5% students, 17% entrepreneur, 34.2% private employees, while the rest are others. As for domicile area 41.9% were in North Jakarta, 20.6% West Jakarta, 17.4 % East Jakarta, 11% Central Jakarta and 9% South Jakarta domicile based.

Table 1. Validity Test for Environmental Concerns Variable (X1)

Question	R Count
1	0.643
2	0.600
3	0.709
4	0.823
5	0.698
6	0.635
7	0.580
8	0.752
9	0.606
10	0.696

Source: SPSS Statistics (2023)

Using SPSS Pearson Correlation output result, Table 1 showing R count for each question covering Environmental Concern variable. Since all 10 questions have R Count greater 0.3610 as their R Table, using 30 respondents as their sample in pretest, we can define that all questions regarding Environmental Concern are valid.

Table 2 Validity Test for Online Reviews Variable (X2)

Question	R Count
1	0.837
2	0.781
3	0.895
4	0.922
5	0.896
6	0.871
7	0.895
8	0.862

Source: SPSS Statistics (2023)

Using SPSS Pearson Correlation output result, Table 2 showing R count for each question covering Online Reviews variable. Since all 8 questions have R Count greater 0.3610 as their R Table, using 30 respondents as their sample in pretest, we can define that all questions regarding Online Reviews are valid.

Table 3 Validity Test for EV Purchase Intention Variable (Y)

Question	R Count
1	0.679
2	0.414
3	0.497

Source: SPSS Statistics (2023)

Using SPSS Pearson Correlation output result, Table 3 showing R count for each question covering EV Purchase Intention variable. Since all 3 questions have R Count greater 0.3610 as their R Table, using 30 respondents as their sample in pretest, we can define that all questions regarding EV Purchase Intention are valid.

Table 4 Reliability Test

Variable	Cronbach Alpha
Environmental Concern (X1)	0.715
Online Reviews (X2)	0.915
EV Purchase Intention (Y)	0.777

Source: SPSS Statistics (2023)

Based on the test results above, all variable in this research have Cronbach's Alpha score greater than 0.184 as their R table. Therefore, researchers can state that data on each variable here; Environmental Concerns, Online Reviews and EV Purchase Intention are reliable.

Table 5 Partial Correlation Test

Variable	Correlation
Environmental Concern (X1) & Purchase Intention (Y)	0.493
Online Reviews (X2) & Purchase Intention (Y)	0.095

Source: SPSS Statistics (2023)

From the table above, it shows the correlation score between Environmental Concerns and Purchase Intention is 0.493. This result shows that Environmental Concern and Electric Vehicle Purchase Intention have a medium level relation. Next, the correlation between Online Reviews and Purchase Intention is shown as 0.095. This score could be classified as very weak relation between these two variable. In addition, due to positive value on its correlation score, we can assume that when the Environmental Concerns rises then its Purchase Intention will also rise.

Table 6 Multiple Correlation Test

Variable	Result
Environmental Concern (X1) & Online Reviews (X2)	0.960

Source: SPSS Statistics (2023)

From the test result above, the result shows how much the relation between the Environmental Concerns and the Online Reviews simultaneously is to the Purchase Intention using correlation coefficient which is 0.960 and the result of Sig F is 0.000 (Criteria <0.05) so, it is decided that Ho3 are declined and Ha3 are accepted. This means that Environmental Concerns and Online Reviews simultaneously very strongly does affect Electric Vehicle Purchase Intention.

Table 7 Determination Test

	R Square
Coefficient Determinant	0.922

Source: SPSS Statistics (2023)

Based on the R-Square value in Table 7 score 0.922, it means both variable Environmental Concerns and Online Review could influence EV Purchase Intention, by 92.2% while the remaining 7.8% can be explained by other variables.

Table 8 Multiple Linear Regression Test

Model	Unstd Coef.		Std Coef	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.710	0.108		29.256	0.00
Environmental Concerns (X1)	0.182	0.026	0.832	6.982	0.00
Online Review (X2)	0.041	0.035	0.139	1.178	0.24

Source: SPSS Statistics (2023)

Based on the multiple linear regression equation above, the following equation is obtained: Electric Vehicle Purchase Intention = 3.710 + 0.182 (Environmental Concerns) + 0.041 (Online Reviews). Constant value of 3.710, refer to Electric Vehicle Purchase Intention position without other variable exist, such as Environmental Concerns and Online Review. The multiple regression coefficient of the Environmental Concerns variable is 0.182, means that if the other independent variables are constant and online r increases, then Electric Vehicle Purchase Intention will increase by 0.182. On the other hand, the multiple regression coefficient of the Online Review variable 0.041, means that if the other independent variables are constant and Online Review increase, then Electric Vehicle Purchase Intention will increase by 0.041.

Table 9 T test

Variable	T Table	T Count	Sig.
Environmental Concerns (X1)	1.976	6.982	0.000
Online Reviews (X2)	1.976	1.178	0.241

Source: SPSS Statistics (2023)

The t-test is a test used for hypothesis testing in statistics and uses the t-statistic, the t-distribution values, and the degrees of freedom to determine statistical significance. A t-test compares the average values of two data sets and determines if they came from the same population (Hayes, 2021). The T test results, it shows that Environmental Concern has a Sig value of $0.000 < 0.05$ and a T Count of $6.982 > T$ table 1.976, so it can be concluded that Ho1 is rejected and Ha1 is accepted, which means that there is a significant effect from Environmental Concern to EV Purchase Intention.

Meanwhile, T test for Online Reviews variable shows a Sig value of $0.241 > 0.05$ and a T Count of $1.178 < T$ table 1.976, so it can be concluded that Ha2 is rejected and Ho2 is accepted, which means that Online Reviews has no significant effect on EV Purchase Intention.

Table 10 F test

	Sum of Squares	df	Mean Square	F Count	F Table	Sig.
Regress	1851.86	2	925.9	897.4	2.248	0.0
Residual	156.8	152	1.032			
Total	2008.6	154				

Source: SPSS Statistics (2023)

F test can be defined as a test that uses the f test statistic to check whether the variances of two samples (or populations) are equal to the same value. On conducting the hypothesis test, if the results of the f test are statistically significant then the null hypothesis can be rejected otherwise it cannot be rejected (Cuemath, n.d.).

From the F test results, F Count > F Table, which is $897.4 > 2.248$, so it can be concluded that Environmental Concerns and Online Reviews simultaneously affect the EV Purchase Intention. The value in the table also shows that the sig obtained is 0.00, which means lower than α 0.05. So the researcher concludes that Ho3 is rejected and Ha3 is accepted.

IV. CONCLUSION AND SUMMARY

The comprehensive analysis of the data collected throughout this study clearly addresses the research objective. In this research we can conclude that Environmental Concerns has a significant effect on Electric Vehicle Purchase Intention, however Online Reviews variable alone has no significant effect on Electric Vehicle Purchase Intention, and lastly Environmental Concern and Online Reviews simultaneously have a significant effect on Electric Vehicle Purchase Intention.

However, there are some conditions to be considered that could bring limitations to this result, like using questionnaires as source of data open the possibility of subjectivity and also personal attitude toward this type of measurement affecting their answer in this researcher.

Furthermore, this research only has 155 respondents from Jakarta territory, as EV market rapidly growing in other area outside Jakarta as well, many other researchers could use this study as reference for related studies on other area in the future.

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