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EXPLORING THE REASONS "FOR" AND "AGAINST" AMONG GENERATION Z IN PURCHASE INTENTION TOWARD ELECTRIC MOTORCYCLES

EXPLORANDO AS RAZÕES "A FAVOR" E "CONTRA" ENTRE A GERAÇÃO Z NA INTENÇÃO DE COMPRA DE MOTOCICLETAS ELÉTRICAS

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Abstract

This study examines the drivers and barriers that influence Generation Z's decision to purchase an electric motorcycle. The study used an exploratory qualitative approach through focus group discussions (FGDs) conducted in Yogyakarta Province, Indonesia. The findings identified reasons for and against a particular decision based on the behavioral reasoning theory (BRT) framework. The drivers are perceived ease of use, perceived usefulness, and attitudes, which align with the main dimensions of the technology acceptance model (TAM) as determinants of positive purchase intention. Conversely, the reasons against adopting the product stem from four barriers, such as risk, use, tradition, and image, that directly reduce purchase intention, which is consistent with the innovation resistance theory (IRT). The results also indicate that environmental beliefs and values play a significant role in shaping attitudes, which ultimately determine purchase behavior. The study's primary contribution is the development of a comprehensive BRT-based model that initially lacked standard variables to measure "reasons for/against." This model integrates TAM as a source of reasons for acceptance and IRT as a basis for reasons for resistance in the context of electric motorcycle adoption. Practically, these findings provide valuable input for policymakers and industry

Resumo

Este estudo analisa os fatores impulsionadores e as barreiras que influenciam a decisão da Geração Z de adquirir motocicletas elétricas. A pesquisa adotou uma abordagem qualitativa exploratória por meio de discussões em grupos focais (FGDs) realizadas na Província de Yogyakarta, Indonésia. Os resultados identificam razões a favor e contra a decisão com base na Teoria do Raciocínio Comportamental (Behavioral Reasoning Theory – BRT). Os fatores impulsionadores incluem a facilidade de uso percebida, a utilidade percebida e as atitudes, alinhados às principais dimensões do Modelo de Aceitação de Tecnologia (Technology Acceptance Model – TAM) como determinantes da intenção de compra positiva. Por outro lado, as razões contrárias decorrem de quatro barreiras — risco, uso, tradição e imagem — que reduzem diretamente a intenção de compra, em consonância com a Teoria da Resistência à Inovação (Innovation Resistance Theory – IRT). Os resultados também indicam que crenças e valores ambientais desempenham papel relevante na formação das atitudes, influenciando o comportamento de compra. A principal contribuição do estudo é o desenvolvimento de um modelo abrangente baseado na BRT, integrando o TAM como fonte de aceitação e a IRT como base da resistência.

players in designing strategies to reduce consumer resistance and encourage the younger generation to adopt sustainable transportation.

Keywords: Green Technology. Electric Motorcycle. Generation Z. Indonesia.

Esses achados oferecem subsídios práticos para formuladores de políticas e o setor industrial no incentivo ao transporte sustentável.

***Palavras-chave**: Tecnologia Verde. Motocicleta Elétrica. Geração Z. Indonésia.*

1 INTRODUCTION

Climate change and the continued rise in carbon emissions have raised public concern, given their detrimental impacts on the environment and health (Adu-Gyamfi *et al*., 2024; Sajjad *et al*., 2020). This environmental problem has become a serious threat, with its negative impacts spreading across regions worldwide. The transportation sector contributes significantly to greenhouse gas emissions, which contribute to global warming and climate change (Adu-Gyamfi *et al*., 2024). Motorized vehicles, particularly in urban areas worldwide, are a major cause of air pollution and the depletion of natural resources (Sajjad *et al*., 2020; Vafaei-Zadeh *et al*., 2022). High levels of air pollution from motorcycles can increase the incidence of respiratory illnesses and shorten life expectancy in a country (Nguyen-Phuoc *et al*., 2023).

In countries where motorcycles are the primary mode of transportation, electric motorcycles offer a solution to reduce dependence on fossil fuels, air pollution, and greenhouse gas emissions (Nguyen-Phuoc *et al*., 2024). Governments in various countries have provided support through intensive policies and collaborations with the automotive industry to accelerate the development of electric vehicles and address the climate crisis by reducing fossil fuel consumption, including in Indonesia (He *et al*., 2018; Nguyen-Phuoc *et al*., 2023). In Indonesia, the government has also implemented a comprehensive policy to encourage the use of electric vehicles domestically by issuing Presidential Regulation Number 55 of 2019. This Presidential Regulation regulates the acceleration of the battery-based electric motor vehicle (KBLBB) program, which aims to encourage the development and adoption of electric vehicles in Indonesia. Two emphasized policies are infrastructure development, including the availability of 101 electric charging stations in various public locations, with this number planned to continue growing over the next decade. Additionally, financial incentive policies include a 10% reduction in value-added

tax (VAT) for electric cars and a subsidy of approximately USD 500 for electric motorcycles. Despite these government policy initiatives, electric vehicle adoption in the fourth quarter of 2022 remains far from the target. Approximately 33,600 electric vehicles are registered in Indonesia (26,000 four-wheeled and 7,600 two-wheeled). The National Energy Master Plan, outlined in the ESR (2023) and AC Ventures (2023), sets a target of 711,000 electric vehicle adoptions for cars and 2.1 million for motorcycles by 2025. There is potential reluctance among Indonesians to adopt electric vehicles, which could lead to worsening environmental pollution (Han *et al*., 2017).

Generation Z was chosen as the subject of the study because they have different characteristics from previous generations. This generation is known to have greater environmental awareness and to be more open to information on environmental issues (Paramita *et al*., 2024). Furthermore, this generation is very familiar with technology, and, as the first to grow up with digital technology as an integral part of their lives, they do not view adopting new technologies as a risky move (Neves & Oliveira, 2021). This generation is the first to grow up with digital technology as an integral part of their lives. Several studies have indicated that Gen Z consumers prefer to purchase environmentally friendly products, such as electric vehicles, more than other generations (Gomes *et al*., 2023; Nguyen *et al*., 2024; Paramita *et al*., 2023; Zhang & Chang, 2023). However, this generation can also resist environmentally friendly innovations for various reasons. Examining the reasons behind consumers' intentions to adopt innovations can help companies refine future innovations to better suit the needs of consumers who were previously reluctant to adopt them (Chen *et al*., 2018). Generation Z, born between the mid-1990s and early 2010s, is the first generation to grow up with digital technology as an integral part of their lives.

This study employs content analysis, grounded in relevant theoretical frameworks, to minimize potential misinterpretations that could lead to inaccurate conclusions or misuse of theory. Specifically, it draws on the Technology Acceptance Model (TAM), Innovation Resistance Theory (IRT), and Behavioral Reasoning Theory (BRT) as its theoretical foundation. Previous research on electric motorcycle adoption has limitations. Some studies use only one theory (Chen *et al*., 2018; Chen *et al*., 2021; Ju & Kim, 2022; Nguyen-Phuoc, 2023; Nguyen *et al*., 2024; Xue *et al*., 2024). Others integrate two theories (Ho & Wu, 2021; Nguyen *et al*., 2024; Su *et al*., 2023; Tran *et al*., 2023; Zadeh

et al., 2022). However, studies that combine the three theories in the context of electric motorcycles remain limited. The integration of the IRT, BRT, and TAM provides a comprehensive framework for understanding electric motorcycle adoption. BRT explains the reasons for support and resistance that influence purchase intentions (Claudy *et al*., 2015; Westaby, 2005). TAM focuses on technology acceptance factors through perceived usefulness and ease of use (Davis *et al*., 1989), while IRT highlights adoption barriers such as risk, habit, and product image (Ram & Sheth, 1989). The integration of these three theories enables a comprehensive examination of consumer motivations and resistance, particularly among Generation Z in the Special Region of Yogyakarta.

This study is intended to address the following objectives: (1) To identify and analyze the key drivers and barriers influencing Generation Z's purchase intention toward electric motorcycles; (2) To explore the "reasons for" and "reasons against" purchase decisions using the Behavioral Reasoning Theory (BRT) framework; (3) To examine the role of Technology Acceptance Model (TAM) factors (perceived ease of use, perceived usefulness, and attitude) and Innovation Resistance Theory (IRT) factors in shaping purchase intention; and (4) To develop an integrated conceptual model combining BRT, TAM, and IRT and to provide practical insights for promoting sustainable transportation adoption among Generation Z.

In addition, this study contributes to both academic and practical realms by enriching knowledge of how sustainability considerations influence purchasing behavior in this generation. Practically, this study provides valuable insights for electric vehicle companies, especially motorcycle companies, and policymakers in formulating more effective strategies to encourage adoption and overcome consumer reluctance to adopt electric motorcycles among Generation Z. A deeper understanding of the factors that shape their attitudes and purchase intentions can help marketers market electric motorcycle products.

2 THEORETICAL FRAMEWORK

2.1 Behavioral reasoning theory (BRT)

BRT focuses on the role of individuals' reasons (reasons for and against) in shaping their intentions and future behavior. The concept of "reasons for" (RF) refers to factors that support and facilitate the adoption of a particular behavior or intention, while "reasons against" (RA) refers to obstacles that prevent the realization of that behavior (Ahmad & Rasheed, 2024; Nguyen-Phuoc *et al*., 2023). According to Westaby (2005), RF and RA are influenced by individual values, which in turn shape attitudes toward a particular behavior and ultimately determine intentions to perform that behavior. Global motives influence intentions in accordance with traditional behavioral intention theories such as the TPB and TRA. The RF and RA variables serve as important links between individual beliefs, global motives (such as attitudes, subjective norms, and perceived control), intentions, and behavior. RF and RA influence global motives and intentions; based on these two factors, individuals justify and maintain their behavior while increasing their self-esteem (Zhu *et al*., 2023). The stronger the reasons supporting a behavior, the greater the link between global motivation and that behavior (Nguyen-Phuoc *et al*., 2023; Sahu *et al*., 2020). The BRT approach is used to provide a more profound understanding of the cognitive processes in decision-making, from understanding environmental values and attitudes to behavioral intentions. This allows researchers to identify factors that not only drive intentions but also hinder them (Ahmad *et al*., 2024; Nguyen *et al*., 2023; Uddin *et al*., 2024; Zhu *et al*., 2023).

BRT also highlights the role of beliefs and values in shaping individual behavior. According to Westaby (2005), values are the underlying principles or beliefs held by individuals that can influence their behavior and decision-making. Environmental beliefs and values are the principles individuals hold regarding the environment and sustainability (Uddin *et al*., 2024). Stern (1995) stated that when someone perceives a value important to them as threatened, they will strive to protect it. This means that when values and beliefs about the importance of nature are threatened, it can encourage people to act more responsibly towards their environment. Individuals who strongly believe in the importance of protecting the environment are more motivated to engage in

environmentally friendly actions, such as purchasing an electric motorcycle.

2.2 Technology acceptance model (TAM)

TAM is a theory proposed by Davis (1989) and used to analyze the factors driving consumers' acceptance of new technologies, including electric motorcycles (Wu *et al*., 2019). Given that electric motorcycles are among products with new technological innovations, these factors are very important in determining whether consumers perceive them as useful and easy to use, which in turn drives their adoption (Adu-Gyamfi *et al*., 2024; Nguyen-Phuoc *et al*., 2023; Vafaei-Zadeh *et al*., 2022). Davis (1989) stated that technology use is influenced by behavioral intention, which, in turn, is simultaneously influenced by PEOU and PU, both of which are related to individual attitudes. PEOU refers to the extent to which a technology is perceived as easy to use (Gyamfi *et al*., 2024; Nguyen *et al*., 2024). PU is defined as the extent to which a new technology is perceived as useful and supports consumers in completing or improving the performance of the task under consideration (Adu-Gyamfi *et al*., 2024). In TAM, PU is also influenced by PEOU. This is based on the principle that if a system is perceived as easy to use, it is automatically perceived as more useful (Venkatesh & Davis, 2000). The more accessible a technology is to consumers in relation to their needs, the greater the likelihood that it will be accepted for use (Ngoc Su *et al*., 2023).

TAM has developed into a robust, reliable, and rigorous model for predicting user acceptance (Jaiswal *et al*., 2021). This theory is one of the most popular approaches to understanding consumer psychology in the context of the acceptance of innovative technologies or new products in technology usage behavior (Jaiswal *et al*., 2021; Wang *et al*., 2018). Various studies have indicated that TAM consistently explains most of the variance in usage intentions and behavior and has been shown to be equivalent to other models, such as the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) (Venkatesh & Davis, 2000). According to Ajina *et al*. (2024), the TAM framework is useful in the green technology literature as a tool for exploring motivations for adopting green technologies. TAM explains the factors that drive the adoption of green technologies.

2.3 Innovation resistance theory (IRT)

IRT was first introduced by Ram (1987) and further developed by Ram & Sheth (1989). This theory aims to explain why consumers reject innovations despite their potential for significant future impact. This theory aims to identify the main factors that hinder consumers from rejecting an innovation. Innovation resistance is defined as consumer rejection of an innovation, either because it disrupts existing routines or conflicts with their belief structures. The use of a new product can trigger consumer rejection, especially if the innovation changes their lifestyle and status (Ram & Sheth, 1989; Sadiq *et al*., 2021).

Ram & Sheth (1989) expanded on this research by classifying these barriers into two main categories: functional and psychological. Functional barriers pertain to changes in consumption patterns, whereas psychological barriers pertain to consumer beliefs, attitudes, and preferences for specific products (Kautish *et al*., 2024). Consumers face functional barriers when they perceive significant changes resulting from adopting a new product, whereas psychological barriers arise from conflicts with existing beliefs (Cao *et al*., 2023). This suggests that negative perceptions, both technical and emotional, can hinder purchase intentions even when the benefits of electric motorcycles are known.

Four main barriers can hinder the adoption of electric motorcycles: usage, risk, image, and tradition barriers. Usage barriers arise when consumers perceive electric motorcycles as impractical for everyday use, such as limited range and charging capacity. Risk barriers relate to uncertainty about reliability, maintenance costs, and resale value. Image barriers reflect negative perceptions of electric motorcycles as underpowered or unsuitable for certain community needs. Meanwhile, traditional barriers persist due to consumers' continued reliance on gasoline-powered motorcycles and their reluctance to change this habit. In this study, IRT was used to explain consumers' reasons against using an electric motorcycle.

3 METHODOLOGY

3.1 Research design

Data were collected through qualitative research with an exploratory research approach. Exploratory research aims to gain a clear understanding of the characteristics of the subjects and objects of the research and a good understanding of the concepts in the research model. The method used was a focus group discussion (FGD). This technique was used because sharing individual problems and experiences encourages people to express more opinions and experiences.

3.2 Respondents

Participants in this study were Generation Z individuals who had never purchased an electric motorbike and met several additional criteria. There were three criteria for inclusion in this study's sample. (1) Participants are decision makers. (2) Participants are individuals who are currently pursuing or have completed higher education. (3) Participants own a conventional motorcycle (gasoline-powered). (4) Participants are Generation Z students born between 1995 and 2007 (Zhang & Chang, 2023).

The sampling method used is non-probability sampling, specifically purposive sampling. The purpose of using this sampling method is to obtain research subjects who could provide accurate information regarding their intention to purchase an electric motorcycle. FGD was conducted with participants selected based on predetermined criteria.

3.3 Data collection procedures

The procedures for data collection are as follows: (1) Participants were selected using purposive (judgmental) sampling based on specific criteria; (2) Focus group discussions (FGDs) were conducted that lasted for around 120 minutes; (3) Documentation and recording were carried out, with all responses captured using a laptop and mobile phone. These recordings were later used by the researchers to ensure an

accurate understanding of the participants' answers; (4) Data reduction that is relevant to the research focus; (5) Data interpretation by linking categories or themes with research theories or models.

3.4 Data analysis technique

Qualitative data from FGDs are analyzed using inductive and thematic analyses. Content analysis methods were used in data processing and were grounded in relevant theories to avoid misinterpretations that could lead to inappropriate conclusions or the application of theory. The result of this study is expected to provide valuable insights for electric vehicle companies, especially motorcycles, and policymakers in formulating more effective strategies to encourage adoption and overcome consumer reluctance in adopting electric motorcycles among Generation Z. A deeper understanding of the factors that shape their attitudes and purchase intentions can help marketers in marketing electric motorcycle products. In addition, this study contributes to both academic and practical realms by enriching knowledge of how sustainability considerations influence purchasing behavior in this generation.

4 RESULTS

Interviews were conducted with 8 Generation Z participants, consisting of 3 male participants and 5 female participants, with the criteria of being decision-makers, currently/having completed higher education, and already having a gasoline-powered bicycle. Table 1 shows the profile of respondents in the exploratory study. All participants were students aged between 20 and 22 years. Based on their domicile, participants were spread across several areas in the Special Region of Yogyakarta, namely Sleman (Participants 1, 4, and 5), Yogyakarta (Participants 2 and 8), Bantul (Participant 3), Kulonprogo (Participant 6), and Gunungkidul (Participant 7). This indicates that there is representation from several regions in the Special Region of Yogyakarta, Indonesia.

Table 1

Exploratory Study Respondent Profile

Participants	Age (Old)	Gender	Domicile	Status
Participant 1	21	Male	Sleman	Student
Participant 2	22	Male	Yogyakarta	Student
Participant 3	22	Female	Bantul	Student
Participant 4	22	Female	Sleman	Student
Participant 5	20	Female	Sleman	Student
Participant 6	21	Female	Kulonprogro	Student
Participant 7	21	Male	Gunungkidul	Student
Participant 8	21	Female	Yogyakarta	Student

4.1 Theme 1: motivational factors (reason for)

Participants viewed electric motorcycles as an accessible, easy-to-use mode of transportation, especially given the widespread availability of charging infrastructure in the city. However, there were important concerns regarding the limited availability of specialized repair shops, which could be a long-term obstacle.

"Electric motorcycles are easy to use. Charging is easy now: there are battery-powered stations, so you do not have to wait to charge; you can just swap the battery at the station, and it's free. There are many charging stations in the city. Electric motorcycle sales/dealers are also easy to find, except that electric motorcycle repair shops are rare, as far as I know."

Participants had a positive perception of the utility of electric motorcycles. They were seen as suitable for everyday use because they offer cost-effectiveness in both fuel and maintenance. Respondents also considered electric motorcycles more advantageous than gasoline-powered motorcycles, as they do not require gasoline, oil, or routine servicing, and key components, such as batteries, only need to be replaced after a relatively long period.

"Electric motorcycles are worth it for everyday use, but they're less efficient for long distances. Electric motorcycles are more energy efficient, making them more profitable. However, the longer distance traveled is still a consideration. In terms of fuel consumption, maintenance is more efficient because fuel isn't just gasoline but also oil. Monthly servicing is required. For electric motorcycles, the most common type is a rechargeable type, which needs to be replaced every five years."

Participants' attitudes toward electric motorcycles were generally very positive. Electric motorcycles are seen as supporting environmentally friendly goals by reducing air pollution, noise, and carbon emissions. This technology is considered quite sophisticated and suitable for everyday use, and it provides comfortable driving because it doesn't produce smoke or noise. Thus, respondents' acceptance is influenced not only by environmental aspects but also by technological factors, practical function, and user comfort.

“I think electric motorcycles can help reduce air and noise pollution." "Electric motorcycles can support environmentally friendly goals because they can reduce vehicle exhaust fumes. Electric motorcycles are quite sophisticated and suitable for everyday use, but only for short trips. Because it doesn't produce smoke or noise, I think using an electric motorbike provides comfort to the rider."

4.2 Theme 2: barrier factors (reason against)

Participants perceived electric motorcycles as having risk barriers, particularly in economic and safety aspects. Resale value was considered uncertain and likely to decline, as with most electronic products, while battery quality at the time of exchange was questionable. From a safety perspective, the absence of engine noise was considered risky because it could prevent other road users from recognizing the electric motorcycle. These factors raised consumer concerns.

“Resale value is still rarely heard. The resale value of electronic goods will decrease. I think most people think that, rather than buying a second-hand electric motorcycle, it's better to buy a new one because it's more affordable. The quality of the battery you get when you exchange it at a station. Although it's good for noise pollution, the lack of noise makes it more dangerous to overtake other vehicles because other vehicles don't know your motorcycle is nearby.”

Participants perceived that the use of electric motorcycles still faces practical barriers related to maintenance, repairs, and infrastructure availability. Concerns arise when a motorcycle has issues on the road or runs out of battery, as electric motorcycle repair shops remain scarce and users lack the understanding to handle such situations. The limited and uneven distribution of charging stations also raises doubts.

"I think more knowledge is needed regarding maintenance and repairs because I'm afraid of suddenly getting stuck in traffic, not knowing what to do, and electric motorcycle repair shops are still rare. I'm hesitant if I suddenly get stuck in traffic or the battery runs out without a charger or a spare. For example, if a fuel-powered motorcycle gets stuck in traffic, there are many repair shops, but electric motorcycles are rare, and we lack the knowledge to handle them. Furthermore, I think the limited number of charging stations makes me hesitant. While they are common in big cities, not all areas have access to battery charging."

The traditional barrier arises from respondents' attachment to fuel-powered motorcycles. Long-standing habits, perceived reliability, and the experience of riding with the engine noise, vibration, and distinctive style of fuel-powered motorcycles are considered to provide a comfort that is difficult to replace. For some respondents, especially those with automotive hobbies, electric motorcycles are perceived as "lacking in life" because they lack the engine's roar or a masculine feel.

"I've been used to using a fuel-powered motorcycle for a long time, and this is one of the factors that makes me reluctant to switch to an electric motorcycle, both in terms of maintenance and reliability on long-distance trips. The engine sound, vibration, and riding style of a fuel-powered motorcycle provide a unique sense of comfort that's difficult to replace. I'm a motorcyclist, and I feel that electric motorcycles lack the soul of a roaring engine. This makes the riding experience different and less satisfying, especially for men who want a more masculine motorcycle design."

Image barriers arise from several negative perceptions respondents have about electric motorcycles. First, from an environmental perspective, nickel mining is considered to undermine the image of being environmentally friendly. Second, from a stylistic perspective, electric motorcycles are perceived as less masculine because they lack the engine's roar and are considered more suitable for women. The image of electric motorcycles is also influenced by concerns about quality, as most brands are associated with Chinese products.

"Currently, there's the issue of nickel mining, where nickel batteries are used in electric motorcycles, so their environmental image isn't good. So, they're not environmentally friendly, even though they can reduce air and noise pollution.” “As an automotive enthusiast, I think electric motorcycles are worthless because they lack the

roar of the engine, and the designs aren't very appealing to men. Yes, in my opinion, electric motorcycles are more for women because their designs aren't very masculine. On the other hand, I'm hesitant because electric motorcycles are mostly Chinese brands."

4.3 Theme 3: the role of environmental beliefs & values

Participants demonstrated strong environmental beliefs, viewing electric motorcycles as an environmentally friendly solution. They are seen as capable of reducing air and noise pollution, providing comfort for both users and the public, and supporting the global goal of reducing carbon emissions. This belief reinforces respondents' positive attitudes toward adopting electric motorcycles.

"Yes, I do think about the impact of air pollution, because exhaust fumes from other vehicles also bother me when driving. I am concerned about the pollution impact of the motorcycle I use. I think electric motorcycles are actually very helpful in terms of air pollution and noise. Electric motorcycles don't emit any smoke at all and are silent, making them comfortable for me and others. Furthermore, I think electric motorcycles also support the goals of countries to be more environmentally friendly and reduce carbon emissions."

Participants indicated a positive intention to purchase an electric motorcycle in the future. This intention was driven by the need for personal transportation, the practicality of an electric motorcycle for short-distance travel, its suitable design, and adequate infrastructure. This indicates that, despite various obstacles, respondents remain inclined to adopt electric motorcycles as a transportation alternative in the future.

"I am willing to purchase an electric motorcycle in the future. I plan to purchase an electric motorcycle for short-distance travel. I intend to purchase one if there is a more stylish design. I intend to purchase one in the future for short-distance transportation."

5 DISCUSSION

5.1 Driving factors that influence Generation Z to buy electric motorcycles (reasons for)

In the context of electric motorcycle adoption, perceived ease of use (PEOU), perceived usefulness (PU), and attitude have been shown to be important drivers of purchase decisions among Generation Z. PEOU refers to the perception that an electric motorcycle is easy to learn and operate, including charging, vehicle control, and relatively simple maintenance. When Generation Z perceives that using an electric motorcycle presents no significant difficulties, this increases their likelihood of considering a purchase (Davis, 1989). Furthermore, PU relates to the extent to which Generation Z perceives electric motorcycles to provide tangible benefits, such as operational cost efficiency, energy savings, and contribution to environmental sustainability, as a sustainable transportation alternative for the future.

The results of the study indicate that Generation Z perceives electric motorcycles as having perceived usefulness (PU) in terms of being more cost-effective/lower, requiring minimal maintenance, and supporting a sustainable lifestyle, although range remains a consideration. Furthermore, perceived ease of use (PEOU) reflects the perception that electric motorcycles are easy to use, with practical charging via battery-swapping systems at various locations, making them more efficient and convenient. Positive attitudes also arise from the perception that electric motorcycles are environmentally friendly, capable of reducing air and noise pollution, and providing comfortable, smoke-free driving. This combination of PEOU, PU, and positive attitudes strengthens Generation Z's intention to adopt and purchase electric motorcycles for daily transportation.

This aligns with the TAM, which posits that perceived ease and usefulness of a technology strengthen an individual's positive attitude toward using it, ultimately driving behavioral intentions (Venkatesh & Davis, 2000). High perceived usefulness can strengthen positive value perceptions toward electric motorcycles, thereby increasing purchase intentions. Both factors contribute directly to the formation of positive attitudes. According to previous research, positive attitudes toward technology play a significant

mediating role in driving usage and purchase intentions (Ajzen, 1991; Fishbein & Ajzen, 1975). Therefore, for Generation Z, the greater the perceived ease and usefulness of electric motorcycles, the stronger the positive attitudes, ultimately driving their intention to adopt and purchase them.

5.2 Inhibiting factors that influence Generation Z's resistance to buying electric motorcycles (reasons against)

This study also identified several resistance factors affecting Generation Z's electric motorcycle purchase intentions, which were explained by four main barriers. Risk barriers stem from doubts about the resale value of electric motorcycles and long-term battery life. Usage barriers include infrastructure limitations, such as the scarcity of electric motorcycle repair shops and the limited number of charging stations outside urban areas. Traditional barriers are evident in Generation Z's attachment to riding fuel-powered motorcycles, which are perceived as more powerful, have a distinctive engine sound, and provide a unique riding experience. Meanwhile, image barriers stem from the perception that electric motorcycle designs are less masculine, the stigma associated with certain brands (especially Chinese brands), and environmental concerns related to the use of nickel in battery manufacturing.

This is consistent with the Innovation Resistance Theory (IRT), which posits that resistance to innovation is influenced not only by rational considerations but also by perceived barriers related to risk, tradition, image, and usability (Ram & Sheth, 1989). For Generation Z, these four barriers are determining factors inhibiting purchase intentions, despite their environmental awareness and positive attitudes toward the benefits of electric motorcycles. Therefore, understanding these barriers is important for designing strategies that can reduce consumer resistance and accelerate the adoption of electric motorcycles among the younger generation.

5.3 The role of environmental beliefs and values influences attitudes and purchase intention

The analysis shows that environmental beliefs and values (EBV) play a significant role in shaping Generation Z's attitudes, which in turn influence their intention to purchase electric motorcycles. EBV refers to individuals' beliefs and values regarding the importance of protecting the environment and supporting sustainability. It encompasses the awareness that consumption behavior can impact the environment, including air pollution, noise, and carbon emissions. The findings indicate that electric motorcycles are perceived as helping reduce smoke and noise while supporting global emissions-reduction goals. Consequently, EBV strengthens Generation Z's positive attitudes toward electric motorcycles, which are then reflected in their intention to purchase these environmentally friendly vehicles, despite ongoing barriers such as limited infrastructure and battery-related risks. The results further highlight a clear tendency for Generation Z to view electric motorcycles as a viable and relevant transportation alternative for their daily mobility needs, particularly for short-distance travel.

This is consistent with Behavioral Reasoning Theory (BRT), which explains that reasons for acceptance, including environmental beliefs and values, play a critical role in shaping positive attitudes that subsequently influence behavioral intentions, while reasons against, such as barriers, can weaken them (Westaby, 2005). Among Generation Z, the stronger their belief in the importance of sustainability, the more positive their attitudes toward electric motorcycles, ultimately increasing their purchase intentions. Thus, EBVs serve as a rationale for acceptance, reinforcing attitudes and acting as a key driver of the adoption of these environmentally friendly vehicles.

6 CONCLUSION

An exploratory study using focus group interviews found that Generation Z has a positive attitude toward electric motorcycles. This study supports several previous studies indicating that consumers have purchase intentions for environmentally friendly technologies, such as electric motorcycles (Gomes *et al*., 2023; Paramita *et al*., 2023; Zhang & Chang, 2023; Nguyen *et al*., 2024). Participants cited acceptance and

environmental awareness as key factors reinforcing this positive view, as electric motorcycles are perceived to align with global sustainability goals. Participants assessed that electric motorcycles can reduce air pollution, noise, and carbon emissions, while also being more efficient in terms of operational costs and requiring less maintenance than fuel-powered motorcycles. Motivational factors such as perceived usefulness and perceived ease of use, as explained in the Technology Acceptance Model (TAM) (Davis, 1989), play a role in shaping consumer attitudes. The easier an electric motorcycle is to use and the greater the perceived benefits, the stronger the consumer's positive attitude. Most respondents also expressed an intention to purchase an electric motorcycle in the future, particularly for personal transportation and short-distance travel.

However, contrary to these acceptance factors, consumers also expressed several reasons for rejection, which can be explained through Innovation Resistance Theory (IRT) (Ram & Sheth, 1989). The identified barriers include risk (resale value and battery quality), usage (lack of repair shops and limited charging infrastructure), tradition (attachment to the habit of using fuel-powered motorcycles and the experience of driving with engine noise), and image (environmental issues related to nickel, designs perceived as less masculine, and doubts about certain brands). These barriers directly weaken purchase intentions. These findings align with the Behavioral Reasoning Theory (BRT) (Westaby, 2005) perspective, in which reasons for and against both influence behavioral intentions; however, in the case of electric motorcycle adoption, reasons against are shown to be more dominant. Thus, while cognitive motivations such as convenience and usability can strengthen positive attitudes, the presence of barriers is a key factor that reduces or weakens consumers' intentions to adopt electric vehicles.

7 LIMITATIONS AND SUGGESTIONS FOR FURTHER STUDIES

This study has limitations in its design and scope. First, the study was conducted using a qualitative approach through focus group discussions (FGDs) with a limited number of participants and was limited to Generation Z in the Special Region of Yogyakarta, so the findings cannot be generalized to a wider population. Second, this study only explored perceptions and intentions and did not quantitatively measure the relationships between variables with a more robust empirical model. Third, the research

context remained limited to electric motorcycles as an environmentally friendly innovation, so it did not compare them with other potentially relevant green products.

Given the research limitations, future studies can use quantitative or mixed methods with a larger, more representative sample. In addition, comparative studies between generations (e.g., Gen Z, Millennials, and Gen X) can be conducted to understand the differences in motivation and resistance to adopting environmentally friendly innovations. Finally, the research scope can be expanded to other regions in Indonesia or other developing countries to provide a more comprehensive picture.

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