

CHAPTER I

INTRODUCTION

1.1 Research Background

The cycling culture in Indonesia shows great potential, although it is not as popular as in other global cities. It is indeed important to recognize that addressing Indonesia's traffic congestion requires effective transportation methods, and cycling may not be the best option. However, cycling activity in Indonesia has experienced growth, and its demand has increased. This is evident from the rising number of cyclists in Indonesia over the past few years, particularly among young people and those who use bicycles for sports activities. Cyclists in Indonesia vary in age, gender, and purpose, whether for recreation, exercise, or daily commuting. However, major challenges remain, such as roads that are not bike-friendly and the lack of supporting infrastructure, including safe bike lanes and adequate parking facilities (Pambudi & Hidayati, 2020).

One of the environmentally friendly and sustainable urban mobility solutions is bike-sharing, which has gained the attention of many major cities worldwide to reduce traffic congestion and carbon emissions. The concept of bike-sharing involves the public rental of bicycles for short trips, aiming to enhance overall mobility, reduce dependence on private cars, and promote a healthy lifestyle. Successful bike-sharing programs in cities such as New York, London, Paris, and Beijing demonstrate that this service can meet urban mobility needs. For example, the Citi Bike program in New York and Vélib' in Paris have proven successful in providing city residents with an efficient and eco-friendly transportation alternative. Adequate infrastructure, supportive government policies, and active public participation contribute to this (Daniella & Wangsa, 2019; Rojas-Rueda et al., 2011).

Bike-sharing in Indonesia has a high potential to address several major urban transportation issues. As part of the government's efforts to build a greener and more sustainable city, vehicle-sharing programs can help reduce traffic congestion by offering a more environmentally friendly mode of transportation. Additionally,

these programs can contribute to lowering carbon emissions. Through regular physical activity, cycling can also improve public health and help mitigate health issues associated with a sedentary lifestyle (Daniella & Wangsa, 2019; Mahajan & Argota Sánchez-Vaquerizo, 2024; Shajal & Mohamed, 2023).

As the data indicates, people in Indonesia are beginning to embrace the idea of bike-sharing as an efficient and affordable transportation alternative. For short-distance travel within the city, this program offers an easily accessible transport option. Additionally, improvements in cycling infrastructure, such as bike lanes and parking facilities, will enhance the experience and safety for cycling enthusiasts in Indonesia. Case studies conducted in other major cities can be useful in developing and implementing an effective bike-sharing program in Indonesia (Suta, 2018).

In addition to the direct benefits of reducing carbon emissions and traffic congestion, bike-sharing also has a significant long-term impact on people's transportation behaviour. By encouraging individuals to use bicycles as a daily mode of transport, Indonesia can transition to a more inclusive and sustainable transportation system. The success of the bike-sharing program in Indonesia will depend on collaboration between the government, private businesses, and community groups to create an environment that supports and promotes cycling as a primary means of transportation. The benefits of the bike-sharing program in Indonesia are not only limited to reducing congestion and carbon emissions but also have a lasting impact on people's transportation behaviour (Hasibuan et al., 2022).

One of the latest innovations in the bike-sharing system is electric bike rentals, which are becoming increasingly popular in major cities worldwide. Compared to traditional bicycles, shared electric bikes offer a more cost-effective and environmentally friendly mode of transportation. Electric bikes and conventional bicycles differ significantly in how they generate power. Electric bikes are equipped with a motor and battery that provide riders with additional physical energy. They offer several advantages, such as higher speed and greater comfort—especially on uphill routes—compared to cars. Conventional bicycles, on the other hand, are more cost-efficient, do not require battery charging, and are easier to maintain since they lack electrical components (J. Lee et al., 2012).

Moreover, the comparison between purchasing a bicycle and using a bike-sharing service highlights the benefits and drawbacks of each option. By purchasing a bicycle, one gains personal ownership and the ability to use it anytime and anywhere. However, the initial cost of buying a bike can be high, and owners must take responsibility for maintenance and storage. On the other hand, bike-sharing services offer easy access to bicycles without high upfront costs and relatively affordable rental fees. Users of bike-sharing services also do not need to worry about bicycle maintenance. Electric bike-sharing emerges as the best option for cyclists in Indonesia for several reasons. First, electric bikes can cover longer distances and require less physical effort, making them more suitable for a wider range of age groups and health conditions compared to conventional bicycles. Second, the speed and convenience of electric bikes attract users who want to avoid traffic congestion. Additionally, electric bikes are available in many strategic locations, making it easier for people across the city to use them (Kadarisman et al., 2015; Rukmana, 2018).

It is projected that the use of e-bike sharing in Jakarta and Surabaya will have a significant positive impact on the environment and transportation. This program can help reduce carbon emissions and air pollution by providing a greener mode of transportation. It aligns with the city's goal of creating a healthier and more sustainable environment. The use of electric bikes can also enhance mobility by reducing travel time and traffic congestion. Studies show that increased bicycle usage can improve public health by promoting physical activity, which may reduce the burden of non-communicable diseases on public health (Yudhistira et al., 2017; J. Zhang et al., 2016).

Bike-sharing in Indonesia heavily relies on good infrastructure and supportive regulations. Safe bike lanes, parking spaces, and easily accessible battery charging stations will attract customers. To shift public transportation behaviour and increase the adoption of electric bike-sharing services, raising public awareness of the benefits of electric bike usage is also essential. Indonesia can learn from the experiences of other cities that have successfully implemented bike-sharing programs and apply best practices to address potential challenges during implementation. Studies show that bike-sharing programs can succeed if supported

by the right strategies tailored to the local context. New York City's Citi Bike program, launched in 2013, is one example of success. Every year, Citi Bike attracts millions of new users with thousands of bikes available at hundreds of stations across the city. This success results from adequate infrastructure, government-supportive policies, and private sector participation in funding and managing the program (Muhtadi et al., 2017; Rahadianino et al., 2022).

Other studies include the Vélib program in Paris, one of the largest bike-sharing programs in the world. Launched in 2007, Vélib offers more than 20,000 bicycles across 1,800 stations throughout the city and has successfully increased bicycle usage while reducing dependence on motor vehicles. Vélib's success is influenced by its user-friendly system, affordable pricing, and effective campaigns to raise public awareness and participation. With more than 84,000 bicycles across over 3,200 stations, the bike-sharing program in Hangzhou, China, is among the most successful in Asia. Hangzhou's efficient and eco-friendly public transportation system has helped reduce traffic congestion and improve air quality, thanks to the seamless integration of bike-sharing with other public transport modes and strong government support in terms of funding and infrastructure (Hartono & Muthohar, 2013).

Successful experiences from e-bike-sharing programs in various cities can serve as important references for implementing e-bike-sharing in Indonesia. Adequate infrastructure support, such as safe bike lanes, easily accessible parking stations, and charging facilities for electric bikes, is crucial. Additionally, long-term success depends on government policies that support the private sector and private sector involvement in funding and managing the program. Moreover, case studies on bike-sharing programs in different cities indicate that effective public promotion and education are essential to raising awareness and participation. Awareness campaigns highlighting the economic, environmental, and health benefits of e-bike use can help shift transportation behaviour and encourage people to adopt the service. Affordable pricing and convenient payment methods can further enhance accessibility and attract more users (Farda & Lubis, 2018; Hayyu et al., 2022).

Successful case study strategies from other cities must be adapted to Indonesia's local conditions. For instance, when selecting locations for electric bike

stations, it is essential to consider mobility patterns and population density across different areas of the city. The success of this program depends on local government policies that support bicycle use, such as favourable regulations and the development of bicycle-friendly infrastructure. To achieve this goal, the government, private sector, and community must collaborate to create an ecosystem that supports and encourages electric bicycle use. Electric bike-sharing can be an innovative and sustainable mobility solution by learning from other cities' experiences and implementing best practices suited to Indonesia's context. In addition to improving urban mobility and enhancing the quality of life for residents, this program will contribute to long-term goals of building a greener, healthier, and more environmentally friendly city. E-bike sharing in Indonesia is expected to bring numerous significant benefits. One of the primary impacts is improving transportation convenience in a city often plagued by severe traffic congestion. Since electric bicycles require less space than motorized vehicles, their use can help reduce traffic density. Studies show that if more people incorporate bicycles into the urban transportation system, they can significantly decrease congestion and travel times. Ultimately, this will lead to greater improvements in overall mobility and urban efficiency (Hendric et al., 2020).

E-bike sharing can also improve air quality in Indonesia. One of the main causes of air pollution in major cities is vehicle emissions. Switching to electric bikes can significantly reduce carbon emissions and other pollutants. Research has shown that bicycle use, especially electric bikes, can lower greenhouse gas emissions and improve urban air quality, which in turn enhances public health. Electric bike-sharing can also contribute to public health by increasing physical activity. Although pedal-assisted, electric bikes still provide a beneficial form of physical exercise. According to research, regular physical activity can reduce the risk of heart disease, diabetes, and obesity. Additionally, studies indicate that bike-sharing programs can increase community-wide physical activity levels, ultimately leading to improved health and overall well-being (Maimunah & Kaneko, 2016; Nikitas et al., 2016).

Moreover, the e-bike-sharing program can help achieve sustainability and environmental-friendly goals in Indonesia. This program supports the development

of more sustainable and eco-friendly transportation by reducing reliance on motor vehicles. Cities that implement bike-sharing systems often experience improved environmental management and a reduction in carbon footprint. This aligns with global objectives to lower emissions and combat climate change. Increased productivity and efficiency are also expected benefits of this program. Electric bikes can help employees reach their workplaces faster and reduce time spent on the road. This enhances individual productivity and overall economic efficiency. According to research, an effective transportation system boosts economic productivity (Aydın & Yıldırım, 2019; Mukti & Prambudia, 2018).

The improvement of transportation accessibility for all segments of society is another positive effect. For those who do not own a private vehicle or cannot rely on public transportation, bike-sharing services offer an affordable transportation option. This program can enhance mobility and accessibility for various social groups, including students, workers, and low-income residents. Lower fares and the ability to use electric bicycles are effective ways to achieve the desired outcomes. Indonesia must implement a comprehensive and responsive strategy to achieve this goal. The success of this program depends on adequate infrastructure, supportive policies, and public education. To promote the use of electric bicycles and support sustainable transportation, the government, private sector, and communities must collaborate. By learning from the successful experiences of other cities (Cheng & Wei, 2020; Macioszek et al., 2020).

Therefore, this study focuses on Migo users in Jakarta and Surabaya. This study aims to analyse the factors that influence users' intention to use the app-based electric bicycle service, Migo, in Indonesia. Migo is the first e-bike sharing service in Indonesia that has been present in Surabaya since 2017 and was later introduced in Jakarta in December 2018. The service offers electric bicycles that can be rented through an app available on the Apple Store and Google Play Store. The Migo electric bike rental rate is Rp 3,500 for the first 10 minutes and Rp 2,500 for every 5 minutes thereafter. The service is available in Central Jakarta and Surabaya, with the aim of providing an environmentally friendly transportation alternative that can reduce air pollution and dependence on fossil fuels. In addition, the Migo app also

provides a range of digital services that support the user experience in entertainment, education, and financial services.

To use Migo's services, users only need to download the Migo E-bike app, register using their phone number and ID card, and are ready to use the service. After registration, users can search for the nearest Migo station via the map available on the app. To rent a bike, users simply select the “Borrow” option on the app, then scan the QR code printed on the selected bike. After that, the bike can be used as needed. Users can also use the “Temporary Parking” feature if they want to stop for a moment, and lock on the app to temporarily lock the bicycle. Once finished using the bike, it can be returned to the nearest Migo station and select the “Return” option on the app. Payment can be made in cash or through a pre-topped up balance.

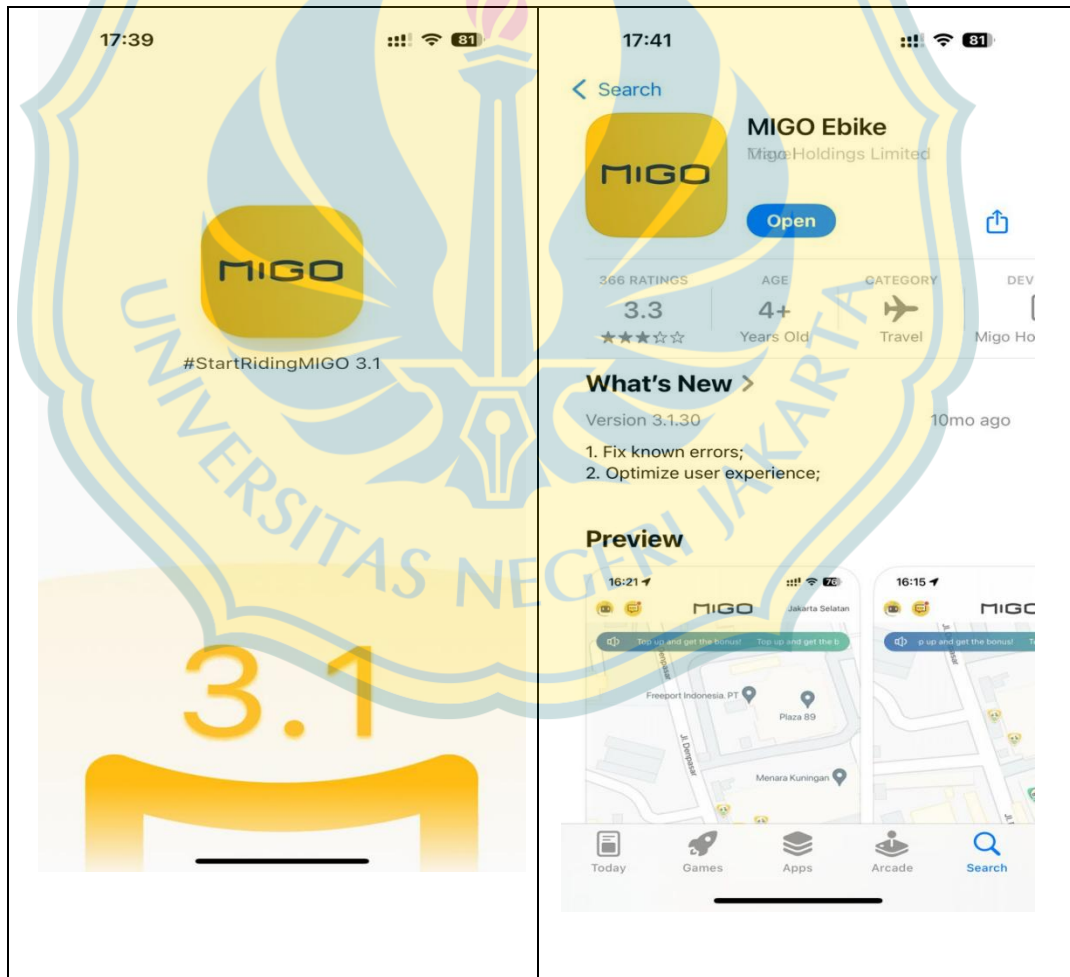


Figure 1. 1 Image of Migo App

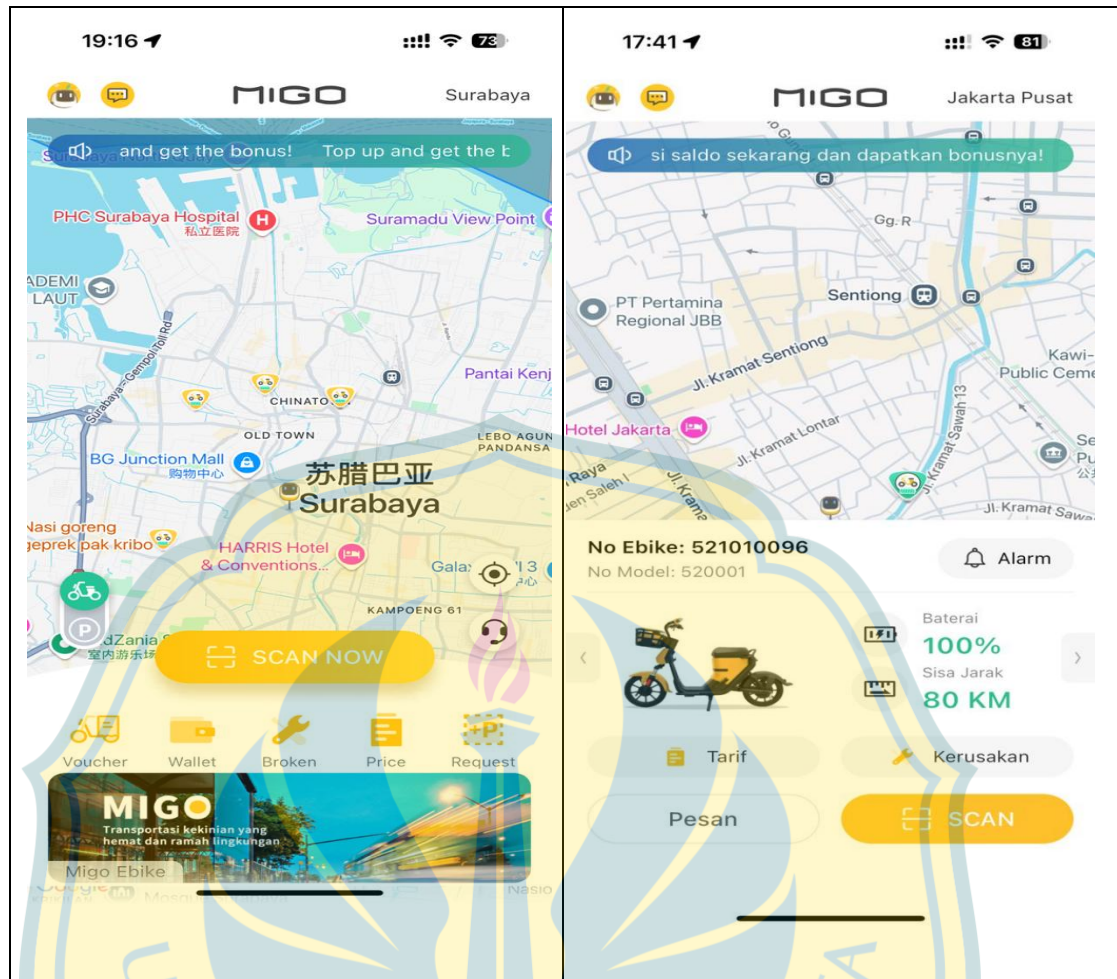


Figure 1. 2 Image of Migo App

To explain the process of technology adoption, Venkatesh et al. developed the Unified Theory of Technology Acceptance and Use (UTAUT) in 2003. This theory integrates eight major theories and models that had previously been used in technology adoption research, such as the Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), and Social Cognitive Theory (SCT). UTAUT identifies four key constructs that influence the intention and behaviour of technology use: performance expectancy, effort expectancy, social influence, and facilitating conditions. The extent to which an individual believes that using a particular technology will help them achieve better work performance is referred to as performance expectancy. For example, users of electric bicycles may perceive that riding an electric bicycle is faster, more convenient, and more efficient compared to conventional bicycles in Indonesia (Venkatesh et al., 2003).

UTAUT (Unified Theory of Acceptance and Use of Technology) is used in this research because it provides a complete and proven framework for understanding what affects users' decisions to adopt new technology. UTAUT is very useful for studying electric bike-sharing services in Indonesia. It can explain how people's views on usefulness (performance expectancy), ease of use (effort expectancy), social influence, and available support (facilitating conditions) affect their intention to use the service. UTAUT combines key ideas from earlier technology adoption theories. This gives a strong and organized theoretical foundation for finding the main factors that encourage or discourage the use of this environmentally friendly transportation technology. UTAUT is very important for this research because it was created to explain how people accept and use new technology, including technology-based services like electric bike-sharing. E-bike sharing is a new type of transportation that uses digital apps, public infrastructure, and automated systems, so we need a theory that can capture the psychological, social, and technical factors that affect user decisions. UTAUT does this by using four main ideas that have been shown to explain why people intend to use and actually use technology. Therefore, this model is a good way to study why Indonesians are willing or unwilling to use e-bike sharing services.

UTAUT is also relevant because it connects individual factors (like how useful and easy something seems) with external factors (like social influence and available facilities). These factors are very important in the context of public services that are new and not yet well-established in Indonesia. The model is also useful because it allows researchers to measure how well technology is accepted based on the local context and user demographics. By using UTAUT, this study can provide a deep understanding of user behaviour and offer data-driven recommendations to support the wider and more sustainable adoption of e-bike sharing.

To study why e-bike sharing adoption is low, the UTAUT model is used to measure and test how each factor affects the intention to use the service. The problem is broken down into parts: Do people believe the service is helpful (performance expectancy)? Do they find it easy to use (effort expectancy)? Is there influence from their social environment (social influence)? And is there infrastructure to support the service's use (facilitating conditions)? By using

questionnaires and quantitative analysis like regression or Structural Equation Modeling (SEM), researchers can find out which factors have the biggest impact on intentions to use. They can then offer strategic advice to service developers and policymakers to help them increase e-bike sharing usage more effectively.

The extent to which an individual believes that using a particular technology will not require much effort or difficulty is measured by the term effort expectancy. An important factor in this regard is how accessible and easy to use the bike-sharing service is. Customers are more likely to use electric bike services if the bike-sharing system is easily accessible and the electric bikes are user-friendly. Previous studies have shown that perceived ease of use and social influence significantly affect the adoption of certain technologies. Perceived ease of use refers to how essential an individual believes it is to use a particular technology. Support and recommendations from friends, family, and colleagues can play a crucial role in encouraging the adoption of e-bike sharing in Indonesia. Studies indicate that social influence is often a key factor in the decision to use technology, especially in cases where (Gupta & Arora, 2020; Tavares & Oliveira, 2018).

The extent to which an individual believes they have the necessary infrastructure and technical support to use a particular technology is referred to as facilitating conditions. This indicates the presence of supporting infrastructure for the use of electric bikes in Indonesia, such as bike lanes, battery charging stations, and technical support for bike maintenance. Research has shown that adequate facilitating conditions are a crucial factor in encouraging the adoption and use of new technology. However, although UTAUT has been applied and validated in various contexts, there is still a limited body of literature that needs further exploration. One of these gaps is the lack of studies on the adoption of bike-sharing in developing countries like Indonesia within the UTAUT model. Previous studies have mostly been conducted in developed countries such as the United States, Japan, South Korea, and France. Consequently, this study aims to fill that gap by exploring the determinants of the intention to use electric bike-sharing in Indonesia based on the UTAUT model, which may differ from cities in developed countries.

The objective of this research is to identify and analyse the elements influencing the intention to use e-bike sharing in Indonesia. This study will focus

on four key constructs of the UTAUT model: effort expectancy, performance expectancy, social influence, and facilitating conditions. Understanding the determinants of bike-sharing adoption in Indonesia is crucial for ensuring the successful implementation of such programs and maximizing their positive impact within the city's context. By identifying the factors that influence the intention to use e-bike sharing, the government and service providers can develop better strategies to promote its adoption and achieve sustainable transportation goals in Indonesia.

An understanding the adoption of new technology, a crucial concept is intention to use, or the intention to utilize. The general definition of this term refers to a person's willingness or intention to use a particular system or technology. In the context of technology adoption, the intention to use often serves as an initial signal indicating actual future usage. According to research on transportation technology, intention to use reflects the extent to which people are willing to adopt new transportation methods, such as electric bike-sharing. It is expected that this will make a significant contribution to environmental sustainability and transportation efficiency in cities (Silva, Shojaei, & Barbosa, 2023).

A recent study by Li et al. (2020) emphasized the importance of perceived ease of use and perceived benefits in enhancing the intention to use shared electric bikes. Meanwhile, research by Wang et al. (2021) found that social factors and facility support play a crucial role in shaping this intention. Another study, such as that conducted by Kim and Park (2019), suggests that prior user experience and exposure to green technology promotional campaigns can significantly increase the willingness to adopt.

It cannot be overlooked how important the purpose of use is in technology adoption, especially for technology developers and policymakers. For developers, understanding what customers want can help them create products that better align with market desires and preferences. Data on the intention to use can be utilized by policymakers to develop plans that encourage the adoption of environmentally friendly technologies, such as electric bike-sharing, which can reduce carbon emissions and congestion in major cities. Additionally, research focused on the intention to use can provide insights into potential challenges and ways to address

them, making the process of adopting new technology smoother (S. H. Kim & Yoo, 2020).

In terms of e-bike sharing usage, the intention to use reflects how ready the people of Indonesia are to accept and integrate this technology into their daily lives. This is highly relevant given the transportation issues faced by major cities in Indonesia. A study on the willingness to use e-bike sharing can help identify key elements that need to be considered to enhance the adoption of this technology. Therefore, this research not only contributes to academic literature but also has practical benefits in formulating policies and strategies for implementing environmentally friendly transportation technology in Indonesia.

1.2 Research Objectives

The primary objective of this study is to examine the factors influencing users' intention to adopt electric bike-sharing services in Jakarta and Surabaya by applying and extending the Unified Theory of Acceptance and Use of Technology (UTAUT). Specifically, this study seeks to investigate the direct and indirect relationships among Effort Expectancy, Facilitating Conditions, Performance Expectancy, Social Influence, and Intention to Use within the context of sustainable urban mobility.

The specific objectives of this study are as follows:

1. To examine the effect of Effort Expectancy on Performance Expectancy.
2. To examine the effect of Effort Expectancy on Social Influence.
3. To examine the effect of Effort Expectancy on Intention to Use.
4. To examine the effect of Facilitating Conditions on Performance Expectancy.
5. To examine the effect of Facilitating Conditions on Social Influence.
6. To examine the effect of Facilitating Conditions on Intention to Use.
7. To examine the effect of Social Influence on Intention to Use.
8. To examine the effect of Performance Expectancy on Intention to Use.
9. To investigate the indirect effect of Performance Expectancy on Intention to Use through Social Influence.
10. To investigate the mediating role of Performance Expectancy in the relationship between Effort Expectancy and Intention to Use.

11. To investigate the mediating role of Social Influence in the relationship between Effort Expectancy and Intention to Use.
12. To investigate the mediating role of Performance Expectancy in the relationship between Facilitating Conditions and Intention to Use.
- ~~13.~~ To investigate the mediating role of Social Influence in the relationship between Facilitating Conditions and Intention to Use.

1.3 Problem Limitation

The scope of this research is also limited to measuring the intention to use electric bike-sharing, not actual usage behaviour or long-term engagement. Research only in Jakarta and Surabaya. Data collection was carried out over a specific period (cross-sectional) during the period July to December 2025.

1.4 Research Questions

This research was prompted by the need to understand the factors that influence the adoption of electric bike-sharing in Jakarta and Surabaya, a growing transportation innovation. While this service promises to be an environmentally friendly and efficient solution, the level of public acceptance of this new technology is mixed. Therefore, it is important to explore how psychological and social elements such as perceived ease of use (effort expectancy), perceived benefits (performance expectancy), facilitating conditions, and social influence interact and influence a person's intention to use it. The following research questions are raised in this study:

Building on the identified gap in understanding electric bike-sharing adoption in Indonesia, this study seeks to investigate the interaction and influence of psychological and social elements on individuals' intention to use this growing transportation innovation. Specifically, the following research questions guide this study:

- a. How does Effort Expectancy influence Performance Expectancy toward electric bike-sharing services in Jakarta and Surabaya?
- b. How does Effort Expectancy affect Social Influence regarding electric bike-sharing services in Jakarta and Surabaya?

- c. How does Effort Expectancy influence users' Intention to Use electric bike-sharing services in Jakarta and Surabaya?
- d. How does Facilitating Conditions influence Performance Expectancy toward electric bike-sharing services in Jakarta and Surabaya?
- e. How does Facilitating Conditions influence Social Influence toward electric bike-sharing services in Jakarta and Surabaya?
- f. How does Facilitating Conditions influence users' Intention to Use electric bike-sharing services in Jakarta and Surabaya?
- g. How does Social Influence influence users' Intention to Use electric bike-sharing services in Jakarta and Surabaya?
- h. How does Performance Expectancy influence users' Intention to Use electric bike-sharing services in Jakarta and Surabaya?
- i. Does Social Influence mediate the relationship between Performance Expectancy and Intention to Use electric bike-sharing services in Jakarta and Surabaya?
- j. Does Performance Expectancy mediate the relationship between Effort Expectancy and Intention to Use electric bike-sharing services in Jakarta and Surabaya?
- k. Does Social Influence mediate the relationship between Effort Expectancy and Intention to Use electric bike-sharing services in Jakarta and Surabaya?
- l. Does Performance Expectancy mediate the relationship between Facilitating Conditions and Intention to Use electric bike-sharing services in Jakarta and Surabaya?
- m. Does Social Influence mediate the relationship between Facilitating Conditions and Intention to Use electric bike-sharing services in Jakarta and Surabaya?

1.5 Usefulness of Research Results

This research is expected to provide several benefits, including:

- a. Theoretical Benefits

This study enhances the researcher's understanding of electric bike-sharing adoption in Indonesia and contributes to the existing literature on technology adoption as a reference for future research.

b. Practical Benefits

This study provides practical implications for policymakers, tourism destination managers, technology developers, and business practitioners by identifying the key factors that influence users' intention to adopt digital technology. The findings are expected to serve as empirical evidence for designing strategies that enhance technology adoption by improving users' perceived ease of use (effort expectancy), strengthening supporting infrastructure and resources (facilitating conditions), increasing perceived performance benefits (performance expectancy), and leveraging social influence. Furthermore, understanding the mediating roles of performance expectancy and social influence enables stakeholders to develop more effective interventions, digital marketing strategies, and user engagement initiatives that encourage sustained technology use and improve the overall effectiveness of digital services.

1.6 State of the Art

The studies explore various factors that influence people's decisions to use shared or private mobility services like e-scooters, e-bikes, and automated vehicles. (Aguilera-García et al., 2024) found that Perceived Safety (PS) strongly affects the intention to use automated vehicles, similar to the influence of Social Influence (SI) and Facilitating Conditions (FC), suggesting that safety, social factors, and infrastructure matter. (Cahya & Sukresna, 2022) showed that Performance Expectancy (PE) and Social Influence (SI) positively impact the intention to use electric bikes in ride-hailing apps, but Effort Expectancy (EE) and Facilitating Conditions (FC) didn't have a significant effect. Bergantino et al. (2021) highlighted how good infrastructure, economic incentives, and changes in behaviour after the pandemic all interact to affect bike-sharing decisions. Research from Chen 2024 found that Performance Expectancy (PE) is the most important factor in the intention to use automated vehicles, with Perceived Safety (PS), Social Influence (SI), and Facilitating Conditions (FC) also playing key roles. Research from Ghalandari in 2012 showed that Performance Expectancy (PE) and Effort Expectancy (EE) significantly affect the intention to use e-banking, with Social

Influence (SI) also playing an important role, and Facilitating Conditions (FC) helping when infrastructure is good. Lastly, Research from Papendieck 2023 found that Performance Expectancy (PE) strongly influences the intention to use bike-sharing in Germany, but Social Influence (SI) didn't have a significant effect, and Facilitating Conditions (FC) were important. These studies show that performance expectations, social factors, and infrastructure are key to shaping user decisions in adopting new transportation technologies.

Table 1. 1 Previous Research

Journal/Research	Research Results
Which factors influence the use of shared and privately-owned e-scooters in the city of Madrid? Implications for urban mobility, (Aguilera-García, Gomez, Rangel, Baeza, & Vassallo, 2024)	PS has a significant influence on the intention to use automated vehicles (AV), being at a level comparable to social influence (SI) and facilitating conditions (FC).
Factors Affecting Intention To Use Fully Electric Bike Transport Of Ride-Hailing Applications: The Utaut Approach, (Cahya & Sukresna, 2022)	Performance expectancy and social influence have a positive and significant influence on the intention of user behaviour to use electric bicycles in ride-hailing applications. Effort expectancy does not show a significant effect, and facilitating conditions also have no positive effect on the intention to use the service.
Influencing factors for potential bike-sharing users: an empirical analysis during the COVID-19 pandemic. (Bergantino et al., 2021)	All these variables work synergistically to influence individual decisions about the use of bike-sharing. For example, the existence of good infrastructure can reduce psychological barriers, while economic incentives can increase

Journal/Research	Research Results
	acceptance of the system, and post-pandemic behavioural changes can increase interest in general.
Integrating perceived safety and socio-demographic factors in UTAUT model to explore Australians' intention to use fully automated vehicles, (Chen et al., 2024)	Performance Expectancy (PE) is the most dominant factor and has the greatest influence on Behavioural Intention (BI) to use AV. Perceived Safety (PS), Social Influence (SI), and Facilitating Conditions (FC) have a significant and comparable influence on BI.
The Effect of Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions on Acceptance of E-Banking Services in Iran: the Moderating Role of Age and Gender, (Ghalandari, 2012)	Based on the research findings, it can be concluded that performance expectancy has a positive and significant effect on users' behavioural intention to use e-banking services. Effort expectancy also shows a positive and significant influence on behavioural intention. Social influence from users' surrounding environment plays an important role in shaping their behavioural intention to use e-banking. Facilitating conditions, such as adequate infrastructure (computers and fast internet), are proven to facilitate the adoption of e-banking services.
Understanding intention to use bike sharing systems in urban areas in Germany: A mixed-methods analysis, (Papendieck et al., 2023)	Based on the research findings, performance expectancy demonstrates a strong positive and significant relationship with behavioural intention (BI), indicating that higher

Journal/Research	Research Results
	expectations of BSS performance correspond to greater intention to use the service. Social influence was found to have no significant effect on intention to use BSS. While not detailed extensively in the summary, facilitating conditions such as improved access and bicycle availability may positively impact behavioural intention. Effort expectancy showed inconsistent impact and could be disregarded in further analysis, as it failed to meet adequate reliability criteria in this research.

Recent research on shared mobility services, particularly bike-sharing and e-mobility systems, has explored various factors influencing adoption intentions using the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. This review synthesizes findings from studies conducted across different geographical contexts to identify patterns relevant to electric bike-sharing adoption in Indonesia.

Performance expectancy consistently emerges as the most significant predictor of adoption intention across multiple studies. Chen et al. (2024) found performance expectancy to be the dominant factor influencing behavioural intention to use automated vehicles in Australia. Similarly, Cahya and Sukresna (2022), in their study specifically focused on electric bikes in ride-hailing applications in Indonesia, confirmed that performance expectancy positively and significantly influences intention to use. This pattern was further corroborated by Papendieck et al. (2023) in the German context, where performance expectancy demonstrated a strong positive relationship with intention to use bike-sharing systems (Cahya & Sukresna, 2022; Papendieck et al., 2023).

The influence of social factors shows mixed results across studies. While Ghalandari (2012) found that social influence plays an important role in shaping behavioral intentions toward e-banking services in Iran, Papendieck et al. (2023) reported no significant effect of social influence on bike-sharing adoption in Germany. However, Cahya and Sukresna (2022) found positive and significant effects of social influence on intention to use electric bicycles in the Indonesian context, suggesting that cultural differences may moderate this relationship. Chen et al. (2024) also confirmed that social influence significantly affects intention to use automated vehicles in Australia, though with less impact than performance expectancy (Cahya & Sukresna, 2022; Chen et al., 2024; Ghalandari, 2012; Papendieck et al., 2023).

Facilitating conditions show variable impacts across different mobility services and geographical contexts. A study stated emphasized the importance of infrastructure factors for e-scooter adoption in Madrid. Similarly, Bergantino highlighted how good infrastructure can reduce psychological barriers to bike-sharing adoption during the COVID-19 pandemic. Ghalandari found that adequate infrastructure facilitates e-banking adoption in Iran. However, Cahya and Sukresna reported that facilitating conditions had no positive effect on Indonesians' intention to use electric bicycles in ride-hailing applications, suggesting that contextual factors in Indonesia may mediate this relationship (Aguilera-García et al., 2024; Bergantino et al., 2021; Ghalandari, 2012).

The role of effort expectancy appears to be the least consistent across studies. Papendieck found that effort expectancy showed inconsistent impact on bike-sharing adoption in Germany, while Cahya and Sukresna reported no significant effect of effort expectancy on intention to use electric bicycles in Indonesia. In contrast, Ghalandari found that effort expectancy positively influences behavioural intention to use e-banking services in Iran. These inconsistencies suggest that the importance of ease of use may vary based on the specific technology, user experience, and cultural context (Cahya & Sukresna, 2022; Ghalandari, 2012; Papendieck et al., 2023).

These findings collectively indicate that while performance expectancy consistently drives adoption intention across contexts, the influence of social factors,

facilitating conditions, and effort expectancy varies significantly. For electric bike-sharing in Indonesia, the research by Cahya and Sukresna provides the most directly relevant insights, suggesting that performance expectancy and social influence are likely to be the primary drivers of adoption intention, while the roles of facilitating conditions and effort expectancy may be more complex and context-dependent. This creates an opportunity for the current research to explore these relationships more deeply in the specific context of electric bike-sharing services in Indonesian urban centres (Cahya & Sukresna, 2022).

Existing research points to several gaps that need to be addressed, especially in the context of the adoption of electric bike sharing systems in Indonesia. Most existing studies, such as those conducted by Aguilera-García, Cahya and Sukresna, and Chen, mostly focus on developed countries or specific technological contexts such as automated vehicles or e-banking, which may not be fully relevant to conditions in Indonesia. Therefore, there is a research void regarding how electric bike sharing technology will be received in developing countries such as Indonesia, which has different social and infrastructure conditions (Aguilera-García et al., 2024; Cahya & Sukresna, 2022; Chen et al., 2024).

Moreover, the role of facilitating conditions such as infrastructure, which is highly influential in studies such as Ghalandari for e-banking and Bergantino for bike sharing, has not been explored in depth in the context of electric bike sharing in Indonesia. It is unclear whether existing infrastructure in Indonesia, such as bike lanes or charging stations, will have a significant influence on adoption, especially when compared to cities that have more developed infrastructure (Bergantino et al., 2021; Ghalandari, 2012).

Effort expectancy which did not show a significant effect in some studies, such as those found in Cahya and Sukresna and Papendieck, suggests that ease of use may not be as important as expected in technology adoption. Suggest that ease of use may not be as important as expected in technology adoption. However, this could be different in Indonesia, given the varying levels of technological literacy and access to digital tools, which warrants further research into its influence in the local context (Cahya & Sukresna, 2022; Papendieck et al., 2023).

Regarding social influence, some studies such as Papendieck show that social influence has no significant effect, while other studies, such as Cahya and Sukresna and Chen, emphasize the importance of this factor. This inconsistency in results creates a research gap in understanding how social influence - an important cultural factor in Indonesia - affects the adoption of new technologies such as electric bike sharing (Cahya & Sukresna, 2022; Chen et al., 2024; Papendieck et al., 2023).

Performance expectancy appears to be a consistently influential factor in many studies, as found in Papendieck, Cahya and Sukresna, and Chen. However, there is a gap in understanding the specific benefits that users expect from electric bike-sharing services in Indonesia, especially in relation to time savings and environmental benefits, and how these expectations shape their intention to use the service (Cahya & Sukresna, 2022; Chen et al., 2024; Papendieck et al., 2023).

Furthermore, although some studies, such as the one conducted by Bergantino, observed changes in behaviour after the pandemic, there is still a lack of studies that measure long-term use or changes in behaviour over time. It is important to understand not only initial adoption, but also ongoing use and changes in people's behaviour towards these technologies (Bergantino et al., 2021).

Lastly, while intention to use is often measured in many studies, research still lacks data regarding actual use or the transition from intention to behaviour in the Indonesian context. This is a significant gap in understanding how intention to use an electric bike-sharing system can be directly proportional to actual use on the ground.

Overall, while many studies have highlighted key themes such as performance expectations and social influence, existing research has not provided enough insight into the cultural, infrastructural and behavioural nuances specific to Indonesian conditions. This opens up opportunities for current research to fill these gaps and provide a deeper understanding of the factors influencing the adoption of electric bike sharing in Indonesia.