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Adopting Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) on Intention to Use EV Charging Station at Pertamina Green Energy Station

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Abstract

The acceleration of the national energy transition has encouraged Pertamina to develop Green Energy Stations (GES) as integrated energy service centers, including the provision of Electric Vehicle (EV) Charging Stations. Although the electric vehicle ecosystem shows progressive growth, the utilization rate of public SPKLU is still not optimal, so an empirical study is needed on the determinants of intention to use. This research integrates the Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM) frameworks to analyze the influence of Attitude, Subjective Norm, Perceived Behavioral Control, Economic Factor, Green Advertising, Perceived Usefulness, and Perceived Ease of Use on the intention to use EV Charging Stations in Pertamina GES. The research approach used is quantitative collected primary data from 230 respondents via an online questionnaire and analyzed it using SEM-PLS with SmartPLS for validity, reliability, and hypothesis testing. The findings of the study showed that the variables Perceived Ease of Use, Subjective Norm, Green Advertising, and Economic Factor had a positive and significant effect on the intention to use EV Charging Station, while Perceived Usefulness, Attitude, and Perceived Behavioral Control were not significant and Attitude did not mediate the influence of other variables. These results confirm that the intention of use is more influenced by practical factors, social influences, environmental messages, and cost considerations. These findings form the basis for strategic recommendations to strengthen ease of service, facility location, environmental campaigns, and policy support to accelerate the adoption of sustainable energy infrastructure in Indonesia.

INTRODUCTION

Pertamina is a national energy company that plays an important role in supporting Indonesia's energy security. Climate change and global demands for the use of clean energy have encouraged Pertamina to transform its business toward sustainable energy. This step is directed at reducing carbon emissions, reducing dependence on fossil energy, and supporting the government's target of accelerating the national energy transition (De La Peña et al., 2022; Saleh & Hassan, 2024).

This transformation is realized through the development of Pertamina Green Energy Station (GES), which is an integrated energy station that not only provides conventional fuel but also presents alternative energy sources such as EV Charging Stations. The presence of GES is expected to accelerate the adoption of electric vehicles in Indonesia while strengthening Pertamina's commitment to realizing a clean and sustainable energy future.

The concept of GES development is based on the principle of sustainability, which includes the use of solar energy (Solar PV), digitization of services through MyPertamina, and the provision of environmentally friendly facilities such as Battery Swapping Stations or Public Electric Vehicle Battery Swapping Stations (SPBKLU) and EV Charging Stations or Public Electric Vehicle Charging Stations (SPKLU). This innovation is in line with the government's policy of accelerating the use of battery-based electric vehicles. The implementation of this policy aims to reduce greenhouse gas emissions while reducing dependence on fossil fuels.

Based on the PT Pertamina Patra Niaga Booklet (2025), Green Energy Station (GES) is Pertamina's integrated innovation that implements the One Stop Energy Solution concept in five main areas: Green, Digital, Future, High Tier & Sustainable Fuel, and Lifestyle. Pertamina currently operates 442 GES petrol station locations with 14 charging stations, 92 units of battery swapping stations, and several strategic partners in its development. This innovation shows Pertamina's seriousness in supporting the national electric vehicle ecosystem. Each GES is equipped with main facilities such as Solar PV panels, Charging Stations, and Battery Swapping Stations (SPBKLU). These three are important parts of Pertamina's energy transformation to improve operational efficiency, reduce carbon emissions, and support sustainable lifestyles in the community.

Based on PLN data (2024), the number of electric vehicles in Indonesia increased from 125 units of four-wheeled vehicles in 2020 to 68,695 units in 2024, while two-wheeled vehicles reached 167,864 units. However, of the approximately 30,000 existing charging points, most are still in the form of home charging, while public SPKLU is only around 2,000 units. This condition shows that there is still low public interest in the use of public facilities such as those in Pertamina GES.

The gap between the growth of electric vehicles and the utilization of public charging infrastructure raises the need to understand the factors that affect consumers' intentions in using EV Charging Stations. This understanding is important so that GES network development strategies can be structured effectively and aligned with user behavior.

Research on the intention to use EV Charging Stations is still very limited, especially in developing countries such as Indonesia, which are in the early stages of transitioning to an electric vehicle ecosystem. Most previous studies have been conducted in developed countries that already have mature electric vehicle infrastructure and strong regulatory support, such as the United States (Burra et al., 2024), India (Gupta et al., 2024), and New Zealand (Majhi et al., 2024). Meanwhile, the Indonesian context presents different characteristics, both in terms of infrastructure readiness, the level of technological literacy, and public perception of environmental sustainability. Most previous studies have also focused on consumer behavior toward environmentally friendly products, such as the green product sector in general (Cerri et al., 2018), organic F&B (Ghazali et al., 2018), green cosmetics (Sobgo et al., 2025), green furniture (Y. Zhang et al., 2023), manufactured products (Wei et al., 2017), organic products (Sousa et al., 2025), green petrol stations (Rebualos et al., 2024), and electric vehicles (Clarita & Chalid (2024); Oliveira et al., 2022; Solekah et al. (2023)), which belong to the Electric Vehicle (EV) sector. Studies that highlight consumer behavior toward the supporting infrastructure of electric vehicles are still rare. In fact, the availability and utilization of infrastructure are key elements in the successful adoption of electric vehicles.

Consumer behavior toward the use of EV Charging Stations can be explained by the

Theory of Planned Behavior (TPB), which emphasizes the influence of Attitude, Subjective Norm, and Perceived Behavioral Control on behavioral intentions (Ajzen, 1991). The additional variable Economic Factor is also used to describe the rational considerations of consumers (Rebualos et al., 2024). In addition to TPB, this study adopts two variables from the Technology Acceptance Model (TAM), namely Perceived Usefulness and Perceived Ease of Use (Chen et al., 2020).

Research by Sun et al. (2021) and Li & Shan (2025) proves that green advertising has a positive effect on attitude and sustainable behavioral intention. These results confirm that promotional messages highlighting the value of sustainability can increase consumer interest in using clean energy services such as EV Charging Stations.

The combination of TPB and TAM theories provides a comprehensive conceptual framework for understanding consumer behavior toward the use of EV Charging Stations at Pertamina GES. Analysis of the variables Attitude, Subjective Norm, Perceived Behavioral Control, Economic Factor, Perceived Usefulness, Perceived Ease of Use, and Green Advertising is expected to explain the main factors affecting people's intentions.

This study also pays attention to the potential indirect influence through the mediating role of Attitude. The mediating role of Attitude is an important focus because attitude functions as a psychological bridge that connects consumers' perceptions of technology with their behavioral intentions. In the framework of TAM, Perceived Usefulness and Perceived Ease of Use not only affect intentions directly but also form positive evaluations of technology that then encourage intention, as evidenced by Wang et al. (2022), who show that Attitude mediates the influence of Perceived Usefulness and Perceived Ease of Use on Behavioral Intention among students using MOOCs. However, these findings are not always consistent, because the research of Dong et al. (2022) found that Attitude does not mediate the influence of Perceived Usefulness on intention, but Attitude is able to mediate the influence of Perceived Ease of Use on intention in the context of farmers adopting new technologies. The variation in empirical results suggests that the role of Attitude mediation can differ depending on the technological context, the level of user readiness, and the characteristics of the adoption environment.

In the context of EV Charging Stations at Pertamina GES, this condition is very relevant considering that the adoption of SPKLU in Indonesia is still in its early stages, so consumer attitudes have the potential to be a key element in bridging perceptions of benefits and convenience with the intention to use the service. The inconsistency of previous findings opens room for further research to test whether Attitude plays a mediating role in the context of clean energy services in Indonesia. Therefore, this study hypothesizes that Attitude mediates the influence of Perceived Usefulness and Perceived Ease of Use on Intention to Use EV Charging Stations, in order to explain the psychological mechanisms that may contribute to the low utilization of public SPKLU even though the growth of electric vehicles in Indonesia continues to increase.

This research makes important practical and academic contributions in the context of electric vehicle development in Indonesia. Practically, the results of the research can serve as a basis for Pertamina in designing marketing strategies, incentive policies, and the development of the Pertamina Green Energy Station (GES) network that is more aligned with consumer needs and preferences. Academically, this study enriches the literature on consumer behavioral intention in the adoption of environmentally friendly technology, especially in green energy

infrastructure. The problem formulation in this study focuses on the influence of the variables Perceived Usefulness, Perceived Ease of Use, Attitude, Subjective Norm, Perceived Behavioral Control, Economic Factor, and Green Advertising on the Intention to Use EV Charging Stations, as well as the role of Attitude mediation and the implications of the analysis results in formulating policy recommendations to support the acceleration of electric vehicle adoption in Indonesia.

The purpose of this study is to analyze the influence of these variables on Intention to Use, test the mediating role of Attitude, and formulate policy recommendations based on research results. The expected benefits include Pertamina's contribution to improving the service and marketing strategy of EV Charging Stations, as well as the development of academic literature related to consumer behavior toward green technology. This research is limited to the location of Pertamina Green Energy Station with a focus on usage interest during the 2024–2025 period and certain variables analyzed for Intention to Use. In addition, this study assumes that respondents have a basic understanding of electric vehicles, provide objective answers, and that the research instruments used are valid and reliable, so the results are expected to provide a representative and relevant picture.

RESEARCH METHOD

The type of research used in this study was quantitative research with an explanatory research approach, as the study aimed to explain the causal relationship between independent variables (Attitude, Subjective Norm, Perceived Behavioral Control, Economic Factor, Green Advertising, Perceived Usefulness, and Perceived Ease of Use) and the dependent variable, namely Intention to Use EV Charging Stations at Pertamina Green Energy Station. The explanatory approach was chosen because the study not only described phenomena but also tested the relationships between variables through statistical analysis. The analysis method used was Structural Equation Modeling Partial Least Squares (SEM-PLS), which is suitable for testing complex relational models with many latent constructs and is capable of handling data with a relatively limited number of samples. Thus, this study was expected to provide a comprehensive understanding of the factors that affect consumer intentions in using EV Charging Stations at Pertamina Green Energy Stations.

The source of data in this study came from primary data obtained through the distribution of questionnaires to respondents who were the target of the study, namely electric vehicle users or prospective users who had the potential to use EV Charging Station services at Pertamina Green Energy Station. The questionnaire was compiled based on indicators from each research variable, such as Attitude, Subjective Norm, Perceived Behavioral Control, Economic Factor, Green Advertising, Perceived Usefulness, and Perceived Ease of Use, which were then measured using a Likert scale. This primary data was chosen because it was able to describe respondents' perceptions, attitudes, and intentions directly related to factors affecting intention to use. In addition, this research also utilized secondary data in the form of academic literature, previous research results, government reports, and Pertamina publications related to the development of Green Energy Stations as supporting materials for analysis.

The data collection technique in this study used a survey method with instruments in the form of questionnaires distributed online through Google Forms. The questionnaire was compiled based on indicators from each research variable, namely Attitude, Subjective Norm,

Perceived Behavioral Control, Economic Factor, Green Advertising, Perceived Usefulness, Perceived Ease of Use, and Intention to Use, which were measured using a 1–5 Likert scale (strongly disagree to strongly agree). The distribution of Google Forms was carried out among relevant respondents, namely users or prospective users of electric vehicles who had the potential to use EV Charging Stations at Pertamina Green Energy Station, through social media, electric vehicle communities, and personal networks. According to Sugiyono (2019), the questionnaire data collection technique is a method of obtaining primary data by providing a set of written questions or statements to respondents to be answered, so this method is considered effective in exploring consumer perceptions, attitudes, and behavioral intentions toward a phenomenon being studied.

The population in this study was all electric vehicle (EV) users who used the EV Charging Station facility at Pertamina Green Energy Station, because they had relevant direct experience to examine the factors affecting intention to use. The sample was a subset of the population selected to represent the overall characteristics, with respondent criteria being EV users who had charged at Pertamina Green Energy Station and had made transactions within the past year. The determination of sample size referred to Structural Equation Modeling (SEM) guidelines, which suggest a sample size of 5 to 10 times the number of indicators. Thus, with 27 indicators, a sample range of 135 to 270 respondents was obtained, and in this study, the minimum number of 135 respondents was considered sufficient to maintain the reliability, validity, and stability of the estimated model used.

In this study, data analysis was carried out using the Structural Equation Modeling (SEM) method based on Partial Least Squares (PLS) with the help of the SmartPLS application, which included two main stages, namely evaluation of the outer model and the inner model. The outer model was used to measure the validity and reliability of the constructs through convergent validity tests (outer loading > 0.6 and AVE > 0.5), discriminant validity (via Fornell-Larcker, HTMT, and cross loading), and reliability tests using Cronbach's Alpha and Composite Reliability (> 0.7). The inner model was used to analyze relationships between latent variables by examining R-Square, F-Square, Q-Square, and Goodness of Fit (GoF) values. Hypothesis testing was conducted using t-statistics and bootstrapping p-values with significance criteria of $t \geq 1.96$ and $p < 0.05$, which were used to test the influence of variables such as Perceived Usefulness, Perceived Ease of Use, Attitude, Subjective Norm, Perceived Behavioral Control, Green Advertising, and Economic Factor on Intention to Use EV Charging Stations, as well as the mediating role of Attitude. The entire research process was carried out according to the planned activity schedule, from the planning stage to the finalization of the report.

RESULTS AND DISCUSSION

Hypothesis Testing Results

1. Direct Hypothesis Testing Results

The path coefficient test was carried out to analyze the direction and strength of the relationship between variables in the research model. The value of the path coefficient reflects the magnitude of the influence of the independent variable on the dependent variable in the structural model. Testing of the significance of the relationship between variables was carried out through a bootstrapping procedure in the Partial Least Squares Structural Equation Modeling (PLS-SEM) method.

The test results were evaluated based on t-statistical values and p-values. A relationship is declared significant if the t-statistic value is greater than 1.96 or the p-value is less than 0.05 at a significance level of 5%. In addition, a positive path coefficient value indicates a unidirectional relationship between variables, while a negative value indicates an inverse relationship.

Table 1. Direct Contact Test Results

Variable	*Original sample* (O)	*Sample mean* (M)	*Standard deviation* (STDEV)	*T statistics* (|O/STDEV|)	*P values*
Perceived Usefulness → Intention to Use	0.014	0.017	0.095	0.142	0.887
Perceived Ease of Use → Intention to Use	0.405	0.408	0.094	4.31	0.000
Attitude → Intention to Use	-0.039	-0.034	0.079	0.492	0.622
Subjective Norm → Intention to Use	0.143	0.14	0.064	2.224	0.026
Perceived Behavioral Control → Intention to Use	0.033	0.029	0.106	0.308	0.758
Green Advertising → Intention to Use	0.262	0.259	0.099	2.646	0.008
Economic Factor → Intention to Use	0.149	0.146	0.059	2.502	0.012
Perceived Usefulness → Attitude	0.493	0.494	0.122	4.031	0.000
Perceived Ease of Use → Attitude	0.361	0.36	0.119	3.027	0.002

Source: Data Processing (2026)

Based on table 1 of the hypothesis testing results in the table, it is known that not all hypotheses in this study are accepted. In the first hypothesis (H1), the relationship between Perceived Usefulness and Intention to Use has a path coefficient value of 0.014 with a t-statistic of 0.142 and a p-value of 0.887. This value indicates that the t-statistic is smaller than 1.96 and the p-value is greater than 0.05, so the relationship is not significant and H1 is rejected. Thus, Perceived Usefulness has no effect on Intention to Use.

In the second hypothesis (H2), the relationship between Perceived Ease of Use and Intention to Use shows a path coefficient value of 0.405 with a t-statistic of 4.310 and a p-value of 0.000. These results show a significant relationship because the t-statistic is greater than 1.96 and the p-value is smaller than 0.05, so H2 is accepted. Furthermore, in the third hypothesis (H3), the relationship of Attitude to Intention to Use has a path coefficient value of -0.039 with a t-statistic of 0.492 and a p-value of 0.622, which suggests that the relationship is not significant so H3 is rejected.

The fourth hypothesis (H4) shows that the Subjective Norm for Intention to Use has a path coefficient value of 0.143 with a t-statistic of 2.224 and a p-value of 0.026, so the relationship is significant and H4 is accepted. Meanwhile, in the fifth hypothesis (H5), the relationship between Perceived Behavioral Control and Intention to Use had a path coefficient value of 0.033 with a t-statistic of 0.308 and a p-value of 0.758, which suggests that the relationship is not significant and H5 is rejected.

In the sixth hypothesis (H6), the relationship between Green Advertising and Intention to Use shows a path coefficient value of 0.262 with a t-statistic of 2.646 and a p-value of 0.008,

so that it is declared significant and H6 is accepted. Furthermore, in the seventh hypothesis (H7), the relationship of Economic Factor to Intention to Use has a path coefficient value of 0.149 with a t-statistic of 2.502 and a p-value of 0.012, which also shows a significant relationship so that H7 is accepted.

In the eighth hypothesis (H8), the relationship of Perceived Usefulness to Attitude shows a path coefficient value of 0.493 with a t-statistic of 4.031 and a p-value of 0.000, so H8 is accepted. Then, in the ninth hypothesis (H9), the relationship between Perceived Ease of Use and Attitude had a path coefficient value of 0.361 with a t-statistic of 3.027 and a p-value of 0.002, which indicates that the relationship was significant so that H9 was accepted.

Overall, of the nine hypotheses proposed, there were six accepted hypotheses, namely H2, H4, H6, H7, H8, and H9 because they had a positive and significant influence. Meanwhile, the other three hypotheses, namely H1, H3, and H5, were declared insignificant and were rejected.

2. Mediation Relationship Hypothesis Testing Results

In addition, this study also examines the indirect influence or mediating effect to find out whether a variable can mediate the relationship between independent variables and dependent variables. Mediation testing was carried out through a bootstrapping procedure by paying attention to the indirect effect values, t-statistic, and p-values. A mediating relationship is declared significant if the t-statistic value is greater than 1.96 or the p-value is less than 0.05. Through this test, it can be known to what extent the mediating variables are able to explain or strengthen the relationship between independent variables and dependent variables in the research model.

Table 2. Mediation Relationship Test Results

Variable	*Original sample (O)*	*Sample mean (M)*	*Standard deviation (STDEV)*	*T statistics (|O/STDEV|)*	*P values*
Perceived Usefulness → Attitude → Intention to Use	-0.019	-0.015	0.04	0.481	0.631
Perceived Ease of Use → Attitude → Intention to Use	-0.014	-0.014	0.031	0.457	0.648

Source: Data Processing (2026)

Based on table 2 of the results of the indirect influence test in table 9, it is known that the Attitude variable is not able to play a mediator role in the relationship between independent variables and dependent variables in the research model. In the tenth hypothesis (H10), the indirect relationship between Perceived Usefulness and Intention to Use through Attitude showed a path coefficient value of -0.019 with a t-statistic of 0.481 and a p-value of 0.631. The results showed that the t-statistic was smaller than 1.96 and the p-value was greater than 0.05, so the indirect effect was not significant. Thus, H10 is rejected, which means that Attitude is unable to mediate the relationship between Perceived Usefulness and Intention to Use.

Furthermore, in the eleventh hypothesis (H11), the indirect relationship between Perceived Ease of Use and Intention to Use through Attitude has a path coefficient value of -0.014 with a t-statistic of 0.457 and a p-value of 0.648. The value also showed that the relationship was insignificant because the t-statistic was smaller than 1.96 and the p-value was greater than 0.05, so H11 was rejected. This indicates that Attitude does not play a mediating variable in the relationship between Perceived Ease of Use and Intention to Use.

Overall, the results of the analysis showed that the Attitude variable was not able to mediate the relationship between Perceived Usefulness and Perceived Ease of Use to Intention to Use.

Perceived Usefulness has a positive and significant effect on the Intention to Use EV Charging Station

Based on the results of the hypothesis test, it is known that Perceived Usefulness does not have a significant effect on the Intention to Use EV Charging Station. This shows that the perception of benefits felt by users has not been able to directly encourage the intention to use the service. Although users are aware that EV Charging Stations have benefits such as energy efficiency and contribution to the environment, these factors are not yet a major consideration in determining usage decisions.

These findings are not in line with the concept in the Technology Acceptance Model (TAM) which states that Perceived Usefulness is one of the main factors that affect the intention to use technology. However, in the context of this study, this condition can be explained by the characteristics of electric vehicle adoption in Indonesia which is still in its early stages. At this stage, users tend to consider other factors such as ease of use, infrastructure accessibility, and economic factors rather than the long-term benefits offered. Thus, while Perceived Usefulness is able to form positive perceptions, it is not yet strong enough to directly affect Intention to Use.

The results of this study are in line with Nathania et al. (2021) who showed that Perceived Usefulness does not have a significant effect on behavioral intention, which indicates that in technologies that are not yet fully mature, the perception of benefits has not been the main factor in encouraging use intention. However, these findings are not in line with Chen et al. (2020) in the context of the adoption of the Home Energy Management System (HEMS), who found that Perceived Usefulness has a positive effect on adoption intention. This difference shows that the effect of Perceived Usefulness is highly dependent on the level of technological maturity, where in more established technologies the benefits are more clearly felt, while in EV Charging Stations that are still in the early stages of development in Indonesia, these benefits are not strong enough to directly affect the intention of use.

Perceived Ease of Use has a positive and significant effect on the Intention to Use EV Charging Station

Based on the results of the hypothesis test, it is known that Perceived Ease of Use has a positive and significant effect on the Intention to Use EV Charging Station. This shows that the higher the level of convenience felt by users in using the service, the greater their intention to use it. Ease of access to charging locations, understanding usage procedures, and ease of use of supporting applications are important factors in increasing interest in use.

These findings are in line with the Technology Acceptance Model (TAM) which states that ease of use is one of the main factors in driving technology acceptance. In this context, users tend to be more interested in using an EV Charging Station if the system provided is easy to understand and does not require a large effort. This also shows that in the early stages of the adoption of electric vehicle technology, the convenience factor is the main consideration compared to other factors, so that the simpler and more practical the services provided, the

higher the level of acceptance and intention to use from the public.

The findings of this study are supported by Chen et al. (2020) who show that ease of use plays an important role in encouraging the acceptance of technology, especially in energy-based technologies that are still relatively new, because the ease of understanding and operating the system can increase the readiness of users to adopt it. However, these results are not in line with Nathania et al. (2021) who found that Perceived Ease of Use had no significant effect on behavioral intention. This difference shows that the influence of ease of use can vary depending on the characteristics of the respondents and the type of technology, where in the context of EV Charging Stations which are still in the early stages of adoption, ease of use is a more important factor in encouraging use intent than in users who are used to technology.

Attitude has a positive and significant effect on the Intention to Use EV Charging Station

Based on the results of the hypothesis test, it is known that Attitude does not have a significant effect on the Intention to Use EV Charging Station. This shows that individuals' positive attitudes or judgments towards the use of EV Charging Stations have not been able to encourage the intention to use the service in real terms. In other words, even if users have a good view of this technology, it does not directly influence their decision to use it. These findings show the existence of the attitude-behavior gap phenomenon, where positive attitudes are not always followed by behavior or intention to use. This condition can be influenced by various external factors, such as limited infrastructure, ease of access, and cost considerations which are still obstacles in the use of EV Charging Stations. Therefore, in the context of this study, practical factors such as ease of use and economic factors tend to be more dominant in influencing Intention to Use compared to individual attitudes.

The findings of this study are in line with Shyr et al. (2024) who showed that Attitude does not have a significant effect on behavioral intention, thus reinforcing the phenomenon of an attitude-behavior gap where positive attitudes are not always followed by intentions of use. This indicates that in the context of the adoption of technology such as EV Charging Stations, attitude alone is not enough to encourage intention to use, as more practical factors such as convenience, immediate benefits, and supporting conditions are more dominant. However, these results are not in line with Solekah et al. (2023) who found that attitude has a significant effect on the intention to purchase electric vehicles, thus showing that the influence of attitude on behavioral intentions is highly dependent on the context, where in the purchase decision attitude plays a greater role, while in the use of services such as EV Charging Station the practical factor becomes more decisive.

Thus, it can be concluded that in the context of using an EV Charging Station, Attitude is not the main factor that affects Intention to Use. There needs to be an improvement in practical aspects such as ease of access, infrastructure availability, and cost efficiency in order to encourage more effective use intentions.

Subjective Norm has a positive and significant effect on Intention to Use EV Charging Station

Based on the results of hypothesis testing, it is known that the Subjective Norm has a positive and significant effect on the Intention to Use EV Charging Station. This shows that the stronger the social influence felt by individuals, both from family, friends, and the surrounding environment, the higher their intention to use these services. Support,

recommendations, and trends that develop in the community regarding the use of electric vehicles and their supporting facilities are important factors in driving use decisions.

This finding is in line with the Theory of Planned Behavior (TPB) which states that subjective norms are one of the main determinants in shaping individual behavioral intentions. In this context, individuals tend to consider the views and expectations of their social environment before making the decision to use an EV Charging Station. It also shows that social influence has an important role in accelerating the adoption of new technologies, especially those that are still in the development stage. Thus, the stronger the social support received, the greater the individual's tendency to have the intention of using an EV Charging Station.

The findings of this study are in line with Solekah et al. (2023) who show that Subjective Norms have a significant effect on the purchase intention of electric vehicles, which confirms that social influence has an important role in encouraging technology adoption. However, these results are not in line with Verdian & Handoyo (2024) who found that Subjective Norms do not have a significant effect on behavioral intention. This difference shows that the influence of subjective norms depends on the context, where in the use of EV Charging Stations the social influence is stronger because it is related to trends and adoption of technology, so that the higher the social support felt, the greater the individual's intention to use it.

Perceived Behavioral Control has a positive and significant effect on the Intention to Use EV Charging Station

Based on the results of the hypothesis test, it is known that Perceived Behavioral Control does not have a significant effect on the Intention to Use EV Charging Station. This shows that individual perceptions of ability, convenience, and control in using the service have not been able to encourage real use intentions. In the context of Theory of Planned Behavior, Perceived Behavioral Control reflects an individual's belief in the ability to control behavior based on the availability of resources and opportunities they have. However, in this study, even though individuals felt they had the ability or resources to use an EV Charging Station, it did not directly affect their decision to use it because the intention of use was likely to be more influenced by external factors such as infrastructure availability, accessibility, and other supporting conditions.

The findings of this study are in line with Ruslim et al. (2023) who showed that Perceived Behavioral Control does not have a significant effect on the intention to use, thus indicating that even if individuals feel they have the ability or control, it does not necessarily encourage Intention to Use. This shows that in the context of EV Charging Stations, other factors such as ease of use, social influence, and cost are more dominant. However, these results are not in line with Gupta et al. (2024) who found that individual perceptual factors such as knowledge, awareness, and public opinion have a significant effect on use intention. This difference shows that the influence of Perceived Behavioral Control depends on the context and support of external factors, where in this study the perception of control is not strong enough to significantly influence Intention to Use.

These findings indicate that perceived behavioral control factors have not been the main consideration in the use of EV Charging Stations. This condition can be caused by limited infrastructure, uneven accessibility, and lack of user experience with the technology. In

addition, in the early stages of technology adoption, users tend to be more influenced by other factors such as ease of use, social influence, and economic factors. Thus, in the context of this study, Perceived Behavioral Control has not been the dominant factor in influencing the Intention to Use EV Charging Station.

Green Advertising has a positive and significant effect on Intention to Use EV Charging Station

Based on the results of hypothesis testing, it is known that Green Advertising has a positive and significant effect on the Intention to Use EV Charging Station. This shows that the more effective and attractive the advertising message that emphasizes the eco-friendly aspect, the higher the individual's intention to use the service. Information that highlights environmental benefits, such as reducing carbon emissions and contributing to sustainability, is able to raise awareness and encourage interest in using EV Charging Stations.

The findings of this study are in line with Li & Shan (2025) who show that green advertising has a positive and significant effect on consumer behavior intentions, both directly and through increasing green perceived value and green trust, so that it is able to form positive perceptions and encourage the adoption of environmentally friendly services such as EV Charging Stations. However, these results are not in line with Panopoulos et al. (2023) who found that influencers and user-generated content are more dominant in influencing green purchase intention than green advertising. This difference shows that the effectiveness of green advertising depends on the characteristics of users and communication media, where in this study environmental advertising is effective in increasing Intention to Use, while in Generation Z the approach based on digital interaction is more influential.

Based on these findings, it shows that communication strategies that focus on environmental issues have an important role in shaping consumer behavior towards environmentally friendly technology. Ads that emphasize sustainability values not only increase knowledge, but also build positive perceptions that can drive intent to use. Thus, the stronger the green advertising message conveyed, the more likely individuals are to adopt and use EV Charging Stations as part of a more environmentally friendly lifestyle.

Economic Factor has a positive and significant effect on Intention to Use EV Charging Station

Based on the results of the hypothesis test, it is known that the Economic Factor has a positive and significant effect on the Intention to Use EV Charging Station. This suggests that the greater the favorable economic considerations, such as more efficient charging costs, long-term savings, and incentives, the higher the individual's intention to use the service. Economic factors are one of the main considerations in decision-making, especially in the use of technology that is still relatively new.

The findings in this study are in line with the research of Rebualos et al. (2024) which shows that economic factors have a positive and significant influence on consumer purchase intentions at fuel stations that implement sustainable practices, thus confirming that economic considerations such as cost efficiency and financial benefits are important factors in encouraging behavioral intentions. However, these results are not in line with Hidayati & Destiana's (2023) research which found that financial factors, in the form of financial literacy,

do not have a significant effect on the intention to invest. This difference shows that the influence of economic factors on behavioral intentions is highly context-dependent, where in the use of EV Charging Stations the economic benefits that are directly felt are more able to encourage Intention to Use, compared to other contexts that do not have a direct financial impact.

Thus, these findings indicate that the financial aspect has an important role in driving the adoption of EV Charging Stations. Users tend to be more interested in using services if the costs incurred are comparable to or lower than other alternatives, and provide economic benefits in the long run. Thus, the greater the economic benefits felt, the higher the individual's tendency to have the intention of using an EV Charging Station.

Perceived Usefulness has a positive and significant effect on Attitude

Based on the results of hypothesis testing, it is known that Perceived Usefulness has a positive and significant effect on Attitude. This shows that the higher the benefits that users feel for EV Charging Stations, the more positive their attitude towards using the service will be. In the context of the Technology Acceptance Model (TAM), Perceived Usefulness is the main construct that explains that technology that is considered to provide real benefits will encourage the formation of positive attitudes, so that the greater the benefits felt, the stronger the user's acceptance of the technology.

These findings are in line with the research of Wang et al. (2022) which shows that Perceived Usefulness has a significant effect in shaping attitudes towards the use of technology, where the perception of benefits perceived by users is able to encourage the formation of more positive attitudes. This confirms that when a technology is considered to provide clear value and usefulness, users will tend to have a better evaluation of the technology. However, the results of this study are not in line with Wiprayoga & Widagda (2023) who found that Perceived Usefulness has a positive but not significant effect on Attitude. This difference indicates that the influence of the perception of benefits on attitudes is highly dependent on the context of the technology used, where in this study the benefits of EV Charging Stations are felt more clearly by users so that they are able to form a positive attitude significantly

Based on these findings, it indicates that the perception of benefits is an important factor in shaping users' attitudes towards technology. When individuals feel that a technology provides clear added value and benefits, they tend to have a more positive assessment of the technology. Thus, the greater the benefits felt from the EV Charging Station, the more positive the user's attitude in accepting and supporting the use of the service.

Perceived Ease of Use has a positive and significant effect on Attitude

Based on the results of the hypothesis test, it is known that Perceived Ease of Use has a positive and significant effect on Attitude in the use of EV Charging Stations. This shows that the higher the convenience that users feel, the more positive their attitude towards the service will be. In the context of the Technology Acceptance Model (TAM), Perceived Ease of Use plays an important role in the acceptance of technology because the ease of use can reduce user barriers, thereby encouraging the formation of positive attitudes towards the technology used.

These findings are in line with the concept in the Technology Acceptance Model (TAM) which states that ease of use is one of the main determinants in shaping attitudes towards

technology. In this context, ease of use not only plays a role in increasing the intention of direct use, but also forms a positive attitude that can ultimately strengthen the acceptance of technology. This shows that in the early stages of technology adoption such as EV Charging Stations, the convenience aspect is a crucial factor that affects how users assess and respond to the technology. Therefore, the simpler, more practical, and more user-friendly the system offered, the more likely it is that a positive attitude from users towards the service will be formed.

This study is in line with Wang et al. (2022) who showed that Perceived Ease of Use has a positive and significant effect on Attitude, thus confirming that the ease of understanding and using technology is able to form a positive attitude of users. This indicates that both in the context of digital learning and the use of EV Charging Stations, ease of use is an important factor in shaping the acceptance of technology. However, these results are not in line with Chanda et al. (2024) who found that Perceived Ease of Use does not have a direct effect on Attitude, but rather through Perceived Usefulness as a mediating variable. This difference shows that the effect of ease of use on attitudes can vary depending on the technological context, where in this study ease is directly felt by users

Attitude Mediating Perceived Usefulness on Intention to Use EV Charging Station

Based on the results of the hypothesis test, it is known that Attitude is not able to mediate the effect of Perceived Usefulness on the Intention to Use EV Charging Station. This shows that even if users have a perception that the service is useful, that perception does not indirectly drive intent to use through attitude formation. In other words, the perceived benefits are not strong enough to influence the intention of use either directly or through the Attitude variable. This condition indicates that the relationship between Perceived Usefulness and Intention to Use does not depend on the role of attitude as an intermediate variable in this research model.

In the context of the Technology Acceptance Model (TAM), Perceived Usefulness should theoretically form a positive attitude that then encourages the intention to use, but in this study the path has not been proven to be strong because the adoption of EV Charging Stations is still in the early stages so that users consider practical factors such as ease of use, availability of infrastructure, and cost rather than the long-term benefits offered. This condition also shows the existence of an attitude-behavior gap, which is when attitudes formed from the perception of benefits have not been fully translated into intention to use, so that Attitude has not played a role as a variable that bridges the influence of Perceived Usefulness on Intention to Use.

The findings in this study are in line with Wiprayoga & Widagda (2023) who show that Attitude is unable to mediate the influence of Perceived Usefulness on Behavioral Intention to Use, thus confirming that the perception of benefits does not necessarily translate into an attitude that encourages use intention. However, these results are not in line with Namahoot & Rattanawiboonsom (2022) who found that Attitude is able to mediate such relationships, where the perception of benefits can form positive attitudes that then increase intention to use. This difference shows that the role of Attitude mediation is highly dependent on the technological context, where in this study the benefits of EV Charging Station are not strong enough to form an attitude that has an impact on the intention of use, in contrast to the context of cryptocurrency platforms whose benefits are felt more concretely by users.

Attitude Mediating Perceived Ease of Use on Intention to Use EV Charging Station

Based on the results of the hypothesis test, it is known that Attitude is not able to mediate the effect of Perceived Ease of Use on the Intention to Use EV Charging Station. This shows that even though users feel the convenience of using the service, the convenience does not indirectly affect the intention of use through the formation of attitudes. In other words, ease of use isn't strong enough to translate into an attitude that then drives intent to use significantly.

In the context of the Technology Acceptance Model (TAM), Perceived Ease of Use theoretically plays a role in forming positive attitudes that can encourage intention to use, but in this study this influence has not been able to be passed on through the Attitude variable. This suggests that the relationship between Perceived Ease of Use and Intention to Use tends to be straightforward, while other factors such as infrastructure availability, accessibility, and cost considerations are more dominant in influencing usage decisions. This condition also shows that there is an attitude-behavior gap, where the attitude formed from the perception of convenience has not been fully followed by an increase in the intention to use EV Charging Stations.

The findings of this study are in line with Chanda et al. (2024) who showed that Attitude does not mediate the relationship between Perceived Ease of Use and Intention to Use in the adoption of electric vehicles, showing that ease of use does not directly shape the intention of use through attitude, but rather through other pathways such as Perceived Usefulness. However, these results differ from Namahoot & Rattanawiboonsom (2022) on cryptocurrency platforms, where Attitude is able to mediate the influence of ease of use on intent to use, signaling that Attitude's mediating role depends on the technological context. In the context of EV Charging Stations, ease of use is not strong enough to form an attitude that encourages intention to use, so the mediation of Attitude is not significant.

Research Implications

The results of this study provide comprehensive implications both theoretically, practically, and social-environmentally, where theoretically the findings strengthen the relevance of the integration of Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) in explaining the intention to use technology, especially in the context of EV Charging Station at Pertamina Green Energy Station, by showing that Perceived Usefulness and Perceived Ease of Use continue to play an important role in shaping acceptance technology, while Attitude functions as a psychological mechanism that connects perception with intention to use; In practice, the results of this study emphasize the need for government support through policies such as the provision of equitable infrastructure, fiscal incentives, technical standards, and public education, and for business actors such as Pertamina, a strategy to improve service ease, accessibility, and environmental awareness campaigns is needed to increase user adoption; while socially and environmentally, the increase in the use of EV Charging Stations has the potential to encourage the acceleration of electric vehicle adoption, reduce carbon emissions, reduce dependence on fossil fuels, and increase public awareness of the importance of using environmentally friendly technology and sustainable mobility patterns.

CONCLUSION

Based on the results of the study, it can be concluded that not all variables in the Technology Acceptance Model and Theory of Planned Behavior model have an effect on the intention to use EV Charging Station at Pertamina Green Energy Station, where only Perceived Ease of Use, Subjective Norm, Green Advertising, and Economic Factor are proven to have a positive and significant effect, thus showing that the ease of use, social influence, environmental message effectiveness, and economic considerations were the main factors in driving use intention, while Perceived Usefulness, Attitude, and Perceived Behavioral Control did not show significant influences, indicating that benefit perception, attitude, and usage beliefs were not strong enough to drive direct intention; In addition, Attitude is also unable to mediate the influence of Perceived Usefulness and Perceived Ease of Use on intention to use, thus reinforcing that usage decisions are based more on practical factors such as accessibility, infrastructure, and cost, and these findings imply that governments and business actors need to strengthen infrastructure development, fiscal incentives, technical standards, public education, as well as improving the quality of environmental services and campaigns to accelerate the adoption of electric vehicles, while for future research, it is recommended to add other variables such as technology trust, infrastructure availability, and risk perception as well as expand the scope of respondents so that the results obtained are more comprehensive and representative.

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