

Factors Influencing Muslim Community in Medan City Choosing Electric Bus Services

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ABSTRACT

This study aims to analyze the factors influencing the interest of Muslim communities in using electric bus services in Medan City. It adopts a quantitative approach with a causal-associative design, using questionnaire data collected from respondents and analyzed through multiple linear regression. The study examines three main factors, namely economic, service, and masalah factors, in shaping public interest. The findings reveal that all three factors have a positive and significant influence, both individually and simultaneously, with service factors emerging as the most dominant determinant. These results indicate that public interest in electric bus usage is shaped not only by practical considerations such as cost and service quality but also by value-based motivations related to environmental sustainability and social welfare. The study implies that efforts to increase the adoption of electric buses should be carried out through an integrated approach that combines affordable pricing, improved service quality, and the strengthening of environmental and social awareness.

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INTRODUCTION

Medan, the capital of North Sumatra Province, is one of the largest economic centers in Indonesia. Public transportation has become increasingly essential due to the rapid growth of industrial, trade, and service sectors. According to Badan Pusat Statistik (BPS) of Medan City, in 2024, there were more than 3.5 million private vehicles in the city, consisting of 2.8 million motorcycles, 166 thousand freight cars, and 5,700 buses. The dominance of private vehicles has led to major issues, including traffic congestion, increased fossil fuel consumption, and air pollution, all of which negatively affect environmental quality and public health (BPS Kota Medan., 2024).

In collaboration with PT Kalista Biru Nusantara and Blue Bird Group, the Medan City Government launched the Mass Rapid Transit Bus (MASTRAN) Electric Bus program in 2024. This program adopts a Buy The Service (BTS) scheme, in which the government provides operational subsidies to operators to ensure that public transportation services remain affordable. The electric bus fares, as stipulated by the Mayor of Medan Regulation No. 550/16.K of 2024, are IDR 5,000 for general passengers and IDR 3,000 for students and persons with disabilities. This initiative is aligned with the national agenda toward Net Zero Emissions 2060 and green energy-based public transportation policies (Pemerintah Kota Medan, 2024).

Despite the provision of minimum service standards such as air conditioning, ergonomic seating, digital payment systems, and CCTV cameras the utilization rate of electric buses in Medan remains low. The average number of daily passengers is approximately 3,000, which is significantly below the potential capacity of public transportation in the city (Dinas Perhubungan Kota Medan, 2024). This phenomenon indicates a gap between public interest in environmentally friendly transportation and the actual utilization of such services.

Various academic studies have identified comfort and service quality as key determinants influencing public interest in new transportation modes. Ojo (2019) found that service quality contributes 76.2% to public interest in electric buses. Meanwhile, (de Oña & de Oña, 2015) reported that route coverage and comfort account for 98.1% of public interest in new transportation modes. However, a discrepancy persists between service availability and actual usage. Although electric buses operate on several main routes, public utilization remains limited, as many individuals still prefer private vehicles due to their flexibility and accessibility. Nevertheless, electric buses offering affordable fares, comfortable facilities, and environmental benefits should ideally attract more users. This suggests that the determinants of public interest in electric bus services have not been fully understood or optimized, making this an important issue to investigate.

Therefore, this study aims to examine the factors influencing public interest in electric bus services in Medan City. This study involves participants aged 17 years and above, reflecting the minimum age at which individuals are considered capable of making independent transportation decisions. The selection of the Muslim community as the research subject is based on both demographic and conceptual considerations. As the majority population in

Medan, the Muslim community significantly contributes to the adoption rate of public transportation. Furthermore, from the perspective of Islamic economics, consumer behavior is influenced by values such as *maslahah* (public benefit), justice, and environmental responsibility. These values are closely aligned with the characteristics of green transportation, which emphasizes sustainability and social welfare.

Accordingly, this study focuses on three main factors. The first is the economic factor, including fares and government subsidies. Affordable fares increase purchasing power, while subsidies help offset operational costs. The second is the service factor, encompassing facilities, fleet availability, punctuality, and route coverage. The third is the *maslahah* factor, referring to socio-environmental benefits such as reducing congestion, minimizing air pollution, and supporting green energy utilization. These three factors are believed to play a significant role in shaping public perceptions and interest in environmentally friendly public transportation.

From a consumer behavior perspective, Muslim communities tend to consider aspects of utility, fairness, and social responsibility in economic activities. The principle of *maslahah* in Islamic economics emphasizes generating broader benefits for society and the environment. Therefore, electric buses, as green energy-based transportation, are not merely viewed as mobility alternatives but also as part of efforts to achieve social welfare and environmental sustainability. This study is thus relevant for understanding how economic, service, and *maslahah* factors influence interest in electric bus usage in Medan City.

From an Islamic economics perspective, this research also holds significant value as it emphasizes principles of justice, efficiency, and public welfare in public policy and subsidy management. The transition toward green energy through electric transportation aligns with *maqashid al-shariah*, particularly environmental preservation (*hifdzul bi'ah*) and social welfare (*maslahah 'ammah*). Therefore, this study contributes not only academically but also practically in supporting socially just and sustainable green transportation policies.

This research is scientifically important as it incorporates the concept of *maslahah* as a determinant variable in public transportation behavior theory. Practically, the findings can be utilized by the Medan City Government and the Department of Transportation to improve fare systems, expand route coverage, and enhance public awareness of environmental benefits. Furthermore, this study supports the implementation of Sustainable Development Goals (SDGs) 11 and 13, which focus on sustainable cities and climate action.

To provide a stronger theoretical foundation for these relationships, the following section presents a review of relevant literature concerning public interest, economic factors, service quality, and *maslahah* values.

Muslim Community Interest in Public Transportation. Interest in public transportation is defined as the tendency of individuals to use a particular mode based on their perceptions of comfort, efficiency, cost, and socio-environmental value (Gelaidan et al., 2023; Buenavista et

al., 2024; Göransson & Andersson, 2023). According to the Theory of Planned Behavior Ajzen, (1991), in the context of public transportation research in Indonesia, the term “interest” is often operationalized as intention. Thus, in this study, Muslim community interest is understood as intention formed by three main components: (1) attitude toward behavior, (2) subjective norms, and (3) perceived behavioral control.

Meanwhile, the Technology Acceptance Model (Davis, 1989) emphasizes two primary determinants: perceived usefulness and perceived ease of use. In the context of electric buses, perceived usefulness includes energy efficiency, environmental contribution, and cost savings, while ease of use relates to route availability, facilities, and service convenience.

Empirical studies support these frameworks. (Siboro & Ginting, 2025; Khairani et al., 2022) found a strong correlation between service quality and public interest in electric buses in Medan. Similarly, (Nursiah Fitri et al., 2025) highlighted that social, religious, and environmental awareness factors significantly shape public interest in green transportation.

Economic Factors (Fares and Subsidies). Economic factors refer to the costs incurred by users in consuming transportation services. According to consumer demand theory, price is negatively related to demand, meaning that higher prices tend to reduce the quantity demanded (Samuelson & Nordhaus, 2012) Subsidies are financial assistance provided by the government to reduce the cost burden on society (Sann & Siripipattaworn, 2024). In public transportation, affordable fares and subsidies encourage usage by lowering financial barriers. Additionally, rising energy consumption and dependence on fossil fuels necessitate the development of alternative energy-based transportation (Fitrah et al., 2024). Empirical studies confirm this relationship. (Gutjar et al., 2025) found that electric vehicle subsidies increase public interest by reducing total ownership and operational costs. Similarly, Marek et al., (2018) emphasized that affordable fares are a primary consideration in choosing public transportation.

Service Factors (Facilities, Fleet Availability, and Routes). Service factors encompass all aspects of public transportation quality, including physical and non-physical elements such as facilities, comfort, safety, punctuality, cleanliness, fleet availability, and route coverage (Ojo, 2019). High-quality service enhances positive user attitudes and encourages usage, while poor service leads to dissatisfaction and negative perceptions (de Oña & de Oña, 2015).

Siboro & Ginting, (2025) found that service quality significantly influences public interest in electric buses in Medan, with a correlation value of $r = 0.873$ and a determination coefficient (R^2) of 0.762. This indicates that 76.2% of user interest variation is explained by service factors. Similar findings by Marek et al., (2018) show that route availability and facilities are dominant determinants in transportation mode choice. These findings align with the Technology Acceptance Model, where service quality enhances perceived usefulness and ease of use. In the context of Muslim communities, service quality also includes ethical values such as friendliness, cleanliness (*thaharah*), and excellence (*ihsan*), which strengthen the positive image of public transportation as part of public welfare (*maslahah 'ammah*).

Maslahah Factors (Reducing Congestion and Green Energy). According to Al-Ghazali in *Al-Mustashfa*, *maslahah* refers to public benefit aimed at achieving good and preventing harm as part of *maqashid al-shariah*. In the context of public transportation, electric buses represent *maslahah 'ammah* by providing social, economic, and environmental benefits, including:

1. Reducing carbon emissions and air pollution
2. Saving energy and reducing dependence on fossil fuels
3. Improving travel efficiency by reducing congestion
4. Promoting environmental awareness as part of human responsibility (*khalifah fil ardh*)

Previous studies indicate that religious values and environmental awareness significantly influence pro-environmental behavior. (Ermelia et al., 2023) found that understanding *maslahah* encourages the use of environmentally friendly products, while Karimi et al., (2022) demonstrated that religious beliefs promote the adoption of green technology. Nursiah Fitri et al., (2025) further noted that a lack of environmental awareness contributes to low public interest in electric buses. Within the Theory of Planned Behavior framework, *maslahah* is associated with subjective norms (social and religious influences) that shape positive behavioral intentions. Meanwhile, in the Technology Acceptance Model, perceived environmental benefits encourage the adoption of sustainable innovations such as electric buses.

Studies in Indonesia show that religious values and spiritual norms play an important role in shaping environmental awareness and pro-environmental behavior among Muslim communities, where religiosity functions as a moral foundation for sustainability-oriented actions (Siagian et al., 2023). Furthermore, spiritual norms have been found to significantly influence environmental behavioral intentions, indicating that religion-based social norms contribute to environmentally responsible decision-making (Hajar, 2024).

Based on the theoretical and empirical discussion above, the relationships among variables can be formulated into the following research hypotheses. The conceptual framework of this study is presented in Figure 1.

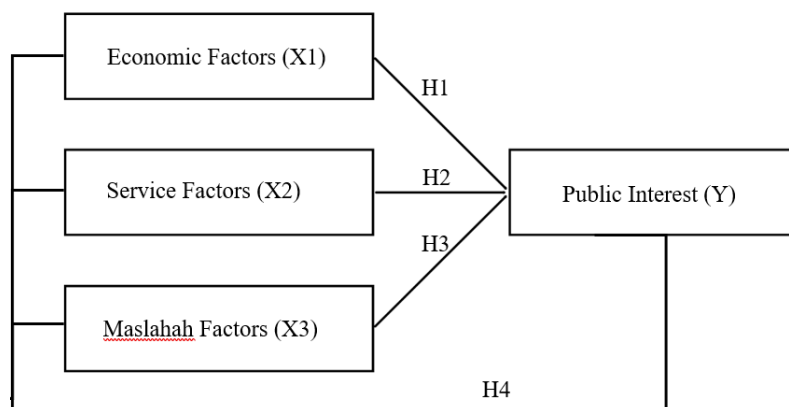


Figure 1. Conceptual Framework

Source: Processed Data by the Author (2026)

H1: Economic factors have a positive and significant effect on public interest in using electric buses.

H2: Service factors have a positive and significant effect on public interest in using electric buses.

H3: Maslahah factors have a positive and significant effect on public interest in using electric buses.

H4: Economic factors, service factors, and maslahah factors simultaneously have a significant effect on public interest in using electric buses.

RESEARCH METHODS

This study adopts a quantitative methodology featuring a causal-associative research design, aimed at investigating both the interrelationships and causal impacts of economic factors, service factors, and maslahah on public interest. A quantitative approach is utilized because this study tests hypotheses using numerical data and statistical analysis (Sugiyono, 2022). Multiple linear regression analysis is employed to assess the effects of economic factors (X_1), service factors (X_2), and maslahah factors (X_3) on the Muslim community's interest (Y) in utilizing electric bus services in Medan. This analytical approach is selected to test causal relationships among the variables (Sugiyono, 2022).

The population in this study consists of all Muslim residents of Medan City aged at least 17 years who have the potential to use electric bus services. The selection of this population is based on two main considerations: (1) the Muslim community represents the majority group in Medan City and culturally embodies *maslahah* values (social and environmental benefits), and (2) they constitute the primary target of the city government's green transportation policies. Based on data from Badan Pusat Statistik (BPS) Medan City (2024), the Muslim population is estimated at approximately 1.7 million people, or around 68% of the total population.

A sample is defined as a subset of the population that represents its characteristics (Sugiyono, 2022). The purpose of sampling is to ensure that the research findings can represent the population with an acceptable level of error (minimal sampling error). The sample size in this study is determined using the Slovin formula as follows:

Sample Size Determination

$$n = \frac{N}{1 + N(e)^2}$$

$$n = N / (1 + Ne^2)$$

$$n = 1,700,000 / (1 + 17,000)$$

$$n = 1,700,000 / 17,001$$

$$n = 99.99$$

The requisite cohort size, derived via Slovin equation at $e = 0.10$, was pragmatically escalated to 100 participants. Primary empirical artifacts were elicited through a Likert-format questionnaire (1 = Strongly Disagree to 5 = Strongly Agree). Psychometric rigor entailed

Pearson correlation for construct validity ($r_{\text{observed}} > r_{\text{critical}}$ at $\alpha = 0.05$) and Cronbach $\alpha \geq 0.70$ for internal consistency (Ghozali, 2021). SPSS 25 facilitated multivariate linear regression ($Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$), where Y indexes Muslim communal affinity for electric bus adoption, X_1 operationalizes economic predicates, X_2 service attributes, X_3 masalah imperatives, β_0 the constant, β_i slope parameters, and ε stochastic disturbance. Sequential protocols encompassed descriptive tabulations (demographics, centralities, dispersions), scale vetting (validity/reliability), and OLS diagnostics (normality, collinearity, homoscedasticity, linearity). t -statistics adjudicated partial efficacies (H_1 – H_3), F -statistic conjoint impacts (H_4), and R^2 variance apportionment, benchmarked at $\alpha = 0.05$ ($p < 0.05$ rejects H_0 ; $\beta > 0$ signals positive covariance). Adherence to sociocultural mores incorporated informed assent and respondent anonymity. Instrumentation was calibrated to Islamic ethos, attuned to Medan City's Muslim demographic idiosyncrasies.

RESULTS & DISCUSSION

Results. Respondent Characteristics

Table 1. Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Age	< 20 years	15	15.0
	20–30 years	77	77.0
	31–40 years	6	6.0
	≥ 50 years	1	1.0
	Unspecified	1	1.0
Occupation	Student	78	78.0
	Office worker	6	6.0
	Entrepreneur	4	4.0
	Others	12	12.0
Total		100	100

Source: Processed SPSS Data (2026)

Table 1 presents the characteristics of the respondents based on age and occupation. The majority of respondents are in the 20–30 age range (77%), indicating that most are of working age and have high levels of daily activity. This makes them a relevant group for assessing interest in the use of electric buses. In terms of occupation, the majority of respondents are students (78%), followed by office workers (6%) and entrepreneurs (4%), while the remainder fall into the “other” category. This composition indicates that respondents tend to have high mobility needs but with relatively limited economic capacity. Therefore, factors such as fare affordability and service quality are crucial in influencing their interest in using public

transportation. Although the characteristics of the respondents in this study are limited to age and occupation, these two variables are sufficient to provide a relevant overview of transportation usage behavior.

Descriptive Statistics

Table 2. Descriptive Statistical Analysis Results

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Economic Factors	100	24	50	40.60	6.050
Service Factors	100	42	75	61.36	7.632
Maslahah Factors	100	18	45	37.58	5.621
Public Interest	100	14	25	20.79	2.829
Valid N (listwise)	100				

Source: Processed SPSS Data (2026)

The Service Factor construct evinces a range spanning 42 (minimum) to 75 (maximum), central tendency $\mu = 61.36$ ($SD = 7.632$). Analogously, Maslahah Factor delineates 18–45 bounds ($\mu = 37.58$, $SD = 5.621$), while Public Interest traverses 14–25 ($\mu = 20.79$, $SD = 2.829$). The analytic corpus encompasses $N = 100$ valid cases across constructs, attesting dataset integrity for inferential proceedings.

Research Instrument. Validity Test. The validity test is employed to ascertain the validity of the questionnaire. A questionnaire is deemed valid if its items effectively measure the intended constructs. In this study, instrument testing utilizes a significance level of 5%, with an item considered valid if r_{hitung} exceeds r_{tabel} . The r_{tabel} value is derived from $df = n - 2 = 98$, yielding $r_{\text{tabel}} = 0.1966$. The results of the validity test, generated using SPSS, are presented in the table below:

Table 3. Validity Test Results

Variable	Item	r hitung	r tabel	Description
Economic Factors (X1)	X1.1	0.701	0.1966	Valid
	X1.2	0.716	0.1966	Valid
	X1.3	0.670	0.1966	Valid
	X1.4	0.787	0.1966	Valid
	X1.5	0.618	0.1966	Valid
	X1.6	0.570	0.1966	Valid
	X1.7	0.644	0.1966	Valid
	X1.8	0.614	0.1966	Valid
	X1.9	0.593	0.1966	Valid
	X1.10	0.458	0.1966	Valid
Service Factors (X2)	X2.1	0.563	0.1966	Valid
	X2.2	0.585	0.1966	Valid
	X2.3	0.540	0.1966	Valid
	X2.4	0.677	0.1966	Valid
	X2.5	0.616	0.1966	Valid
	X2.6	0.632	0.1966	Valid
	X2.7	0.535	0.1966	Valid
	X2.8	0.527	0.1966	Valid

	X2.9	0.439	0.1966	Valid
	X2.10	0.438	0.1966	Valid
	X2.11	0.551	0.1966	Valid
	X2.12	0.569	0.1966	Valid
	X2.13	0.517	0.1966	Valid
	X2.14	0.509	0.1966	Valid
	X2.15	0.525	0.1966	Valid
Maslahah Factors (X3)	X3.1	0.768	0.1966	Valid
	X3.2	0.795	0.1966	Valid
	X3.3	0.752	0.1966	Valid
	X3.4	0.805	0.1966	Valid
	X3.5	0.711	0.1966	Valid
	X3.6	0.566	0.1966	Valid
	X3.7	0.472	0.1966	Valid
	X3.8	0.583	0.1966	Valid
	X3.9	0.617	0.1966	Valid
Public Interest (Y)	Y1	0.641	0.1966	Valid
	Y2	0.673	0.1966	Valid
	Y3	0.686	0.1966	Valid
	Y4	0.699	0.1966	Valid
	Y5	0.559	0.1966	Valid

Source: Processed SPSS Data (2026)

As evidenced by the data in Table 2, all questionnaire items exhibit r_{hitung} values exceeding r_{tabel} at a significance level of 5%. Consequently, all statement items corresponding to each indicator satisfy the validity criteria and are thus deemed valid and appropriate for subsequent analyses.

Reliability Test. Reliability serves as an indicator of a questionnaire's consistency in measuring a variable or construct, reflecting the stability of respondents' answers over time. A questionnaire is regarded as reliable if its Cronbach's Alpha (α) value exceeds 0.6. Accordingly, questionnaire items are deemed reliable when Cronbach's Alpha surpasses 0.6; conversely, values below 0.6 render the instrument unreliable. The results of the reliability test, conducted using SPSS, are presented in the table below:

Table 4. Reliability Test Results

Variable	Cronbach's Alpha	Significance Level	Description
Economic Factors (X1)	0.835	0.6	Reliable
Service Factors (X2)	0.832	0.6	Reliable
Maslahah Factors (X3)	0.849	0.6	Reliable
Public Interest (Y)	0.655	0.6	Reliable

Source: Processed SPSS Data (2026)

The data in Table 4 demonstrate that all constructs satisfy the reliability criteria, as evidenced by Cronbach's Alpha values exceeding 0.6 for each. Consequently, all variables in this study are deemed reliable.

Classical Assumption Tests. Normality Test. The normality diagnostic ascertains Gaussian conformity of regression residuals. Operationalized via Kolmogorov-Smirnov statistic, empirical acceptance obtains when $\text{Sig.} > \alpha = 0.05$, ratifying multivariate normality. Adjudication herein pivots on K-S p-value, with outcomes tabularized in Table 4.

Table 5. Normality Test Results (Kolmogorov–Smirnov Test)

Description	Value
N	100
Mean	0.0000000
Std. Deviation	1.81037811
Most Extreme Differences (Absolute)	0.069
Most Extreme Differences (Positive)	0.061
Most Extreme Differences (Negative)	-0.069
Test Statistic	0.069
Asymp. Sig. (2-tailed)	0.200

Source: Processed SPSS Data (2026)

As indicated by the Kolmogorov-Smirnov test results in Table 4, the significance value of 0.200 exceeds 0.05. This confirms that the data for all variables are normally distributed, thereby fulfilling the normality assumption of the regression model.

Classical Assumption Tests. Multicollinearity Test. In this study, multicollinearity is assessed by evaluating the tolerance values and Variance Inflation Factor (VIF) for each variable. A tolerance value exceeding 0.10 signifies the absence of multicollinearity, as does a VIF value below 10. The multicollinearity test results are presented in Table 5 below.

Table 6. Multicollinearity Test Results

Model	Variable	Tolerance	VIF
1	Economic Factors	0.545	1.835
	Service Factors	0.527	1.897
	Maslahah Factors	0.645	1.551

Dependent Variable: Public Interest

Source: Processed SPSS Data (2026)

Table 5 attests Tolerance > 0.10 across predicates ($X_1 = 0.545$; $X_2 = 0.527$; $X_3 = 0.645$) concomitant with VIF < 10 ($X_1 = 1.835$; $X_2 = 1.897$; $X_3 = 1.551$), obviating collinearity artifacts. This diagnostic vindicates the regression edifice against singularity, upholding OLS prerequisites for inferential validity.

Classical Assumption Tests. Heteroscedasticity Test. Heteroscedasticity scrutiny interrogates residual variance heterogeneity across observations in the OLS framework. Homoscedasticity constant variance constitutes the desideratum; variance fanning signals violation. Glejser protocol (SPSS) operationalizes detection, with $\text{Sig.} > 0.05$ across covariates affirming model equvariance. Tabular diagnostics appear in Table 6.

Table 7. Heteroscedasticity Test Results (Glejser Test)

Model	Variable	B	Std. Error	Beta	t	Sig.
1	(Constant)	2.819	0.976	—	2.888	0.005
	Economic Factors	-0.034	0.025	-0.183	-1.358	0.178
	Service Factors	0.020	0.020	0.137	1.001	0.319
	Maslahah Factors	-0.034	0.025	-0.168	-1.357	0.178

Dependent Variable: ABS_RES

Source: Processed SPSS Data (2026)

Table 6 indicates that the Glejser test yields significance values exceeding 0.05 for all independent variables: Economic Factors (X_1) at 0.178, Service Factors (X_2) at 0.319, and Maslahah Factors (X_3) at 0.178. Given that all values surpass 0.05, the regression model is free from heteroscedasticity, thereby satisfying the classical assumptions and rendering it suitable for further analysis.

Linearity Test. The linearity examination rigorously appraises the existence of a meaningful linear association among the variables under consideration, representing an essential precondition for both correlational inquiry and regression modeling. Within SPSS, this assessment is operationalized through the Deviation from Linearity function, calibrated at a significance threshold of 0.05. Empirical substantiation of linearity manifests when the deviation significance exceeds 0.05; a fortiori, values falling below this demarcation evince nonlinearity. The outcomes of the linearity test are systematically arrayed in the accompanying tables.

Table 8. Linearity Test Results for Economic Factors (X1)

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups (Combined)	441.577	20	22.079	4.969	0.000
Linearity	327.602	1	327.602	73.731	0.000
Deviation from Linearity	113.975	19	5.999	1.350	0.178
Within Groups	351.013	79	4.443	—	—
Total	792.590	99	—	—	—

Source: Processed SPSS Data (2026)

Table 7 shows a Deviation from Linearity significance value of 0.178, exceeding 0.05. This confirms a linear relationship between Economic Factors (X_1) and Public Interest.

Table 9. Linearity Test Results for Service Factors (X2)

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups (Combined)	526.915	29	18.169	4.787	0.000
Linearity	380.101	1	380.101	100.149	0.000
Deviation from Linearity	146.814	28	5.243	1.382	0.139
Within Groups	265.675	70	3.795	—	—
Total	792.590	99	—	—	—

Source: Processed SPSS Data (2026)

Table 8 reveals a Deviation from Linearity significance value of 0.139, surpassing 0.05. This establishes a linear relationship between Service Factors (X_2) and Public Interest.

Table 10. Linearity Test Results for Masalah Factors (X_3)

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups (Combined)	421.448	19	22.181	4.781	0.000
Linearity	293.479	1	293.479	63.260	0.000
Deviation from Linearity	127.969	18	7.109	1.532	0.101
Within Groups	371.142	80	4.639	—	—
Total	792.590	99	—	—	—

Source: Processed SPSS Data (2026)

Table 9 indicates a Deviation from Linearity significance value of 0.101, exceeding 0.05. This confirms a linear relationship between Masalah Factors (X_3) and Public Interest.

Multiple Linear Regression Analysis. Multivariate linear regression modeling prognosticates fluctuations in the criterion variable consequent to plural predictor covariates. This analytic apparatus explicates the directional and magnitudinal impacts of exogens upon the endogen, furnishing effect size delineations. Pertinent empirical outputs are consigned to Table 10.

Table 11. Multiple Linear Regression Results

Model	Variable	B	Std. Error	Beta	t	Sig.
1	(Constant)	2.223	1.597	—	1.392	0.167
	Economic Factors	0.122	0.041	0.260	2.939	0.004
	Service Factors	0.142	0.033	0.382	4.251	0.000
	Maslahah Factors	0.131	0.041	0.261	3.206	0.002

Dependent Variable: Public Interest

Source: Processed SPSS Data (2026)

The multiple linear regression equation, derived from the results in Table 10, is formulated as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$$

$$Y = 2.223 + 0,122X_1 + 0,142X_2 + 0,131X_3 + e$$

The regression results indicate that all independent variables have a positive coefficient, meaning that Economic Factors (X_1), Service Factors (X_2), and Masalah Factors (X_3) positively influence Public Interest (Y) in using electric bus services.

- The Economic Factors variable (X_1) exhibits a coefficient of 0.122 and a significance value of 0.004 (< 0.05), signifying a positive and significant effect on Public Interest.
- The Service Factors variable (X_2) displays the highest coefficient of 0.142 with a significance value of 0.000, indicating the strongest and most significant influence on Public Interest.
- The Masalah Factors variable (X_3) has a coefficient of 0.131 and a significance value of 0.002, likewise demonstrating a positive and significant effect.

Hypothesis Testing. t-Test (Partial Test). The t-test assesses whether each independent variable exerts a significant partial effect on the dependent variable. This involves comparing the t_{hitung} value against t_{tabel} , calculated as $df = n - k - 1 = 100 - 3 - 1 = 96$, where n denotes the number of respondents and k the number of independent variables. At a 5% significance level, t_{tabel} equals 1.984. The t-test results, derived from SPSS output, are presented in Table 11.

Table 12. t-test Results (Partial Test)

Model	Variable	B	Std. Error	Beta	t	Sig.
1	(Constant)	2.223	1.597	—	1.392	0.167
	Economic Factors	0.122	0.041	0.260	2.939	0.004
	Service Factors	0.142	0.033	0.382	4.251	0.000
	Maslahah Factors	0.131	0.041	0.261	3.206	0.002

Source: Processed SPSS Data (2026)

Based on the results presented in Table 11, the conclusions are as follows:

- a. Effect of Economic Factors (X_1) on Public Interest (Y). For Economic Factors (X_1), $t_{tabel} = 1.984$ and $t_{hitung} = 2.939$. Since $2.939 > 1.984$ and the significance value is $0.004 (< 0.05)$, X_1 exerts a positive and significant partial effect on Y. Thus, H_1 is accepted.
- b. Effect of Service Factors (X_2) on Public Interest (Y). For Service Factors (X_2), $t_{tabel} = 1.984$ and $t_{hitung} = 4.251$. As $4.251 > 1.984$ and the significance value is $0.000 (< 0.05)$, X_2 demonstrates a positive and significant partial effect on Y. Thus, H_2 is accepted.
- c. Effect of Maslahah Factors (X_3) on Public Interest (Y). For Maslahah Factors (X_3), $t_{tabel} = 1.984$ and $t_{hitung} = 3.206$. With $3.206 > 1.984$ and a significance value of $0.002 (< 0.05)$, X_3 has a positive and significant partial effect on Y. Thus, H_3 is accepted.

Hypothesis Testing. Simultaneous Test (F-test). The F-test evaluates the collective influence of all independent variables on the dependent variable. This analysis employs a significance level of 0.05 ($\alpha = 5\%$). The results of the simultaneous F-test are presented in Table 12.

Table 13. Simultaneous Test Results (F-test)

Model	Source	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	468.121	3	156.040	46.167	0.000
	Residual	324.469	96	3.380	—	—
	Total	792.590	99	—	—	—

Dependent Variable: Public Interest

Predictors: (Constant), Maslahah Factors, Economic Factors, Service Factors

Source: Processed SPSS Data (2026)

The parametric degrees of freedom denominator (df_2) for the F-test is ascertained through the arithmetic of sample observations less parameter count ($100 - 4 = 96$), establishing the critical F_{table} ordinate at 2.70 under the 5% significance regime ($\alpha = 0.05$). Computer-generated inferential statistics disclose an $F_{calculated}$ magnitude of 46.167, markedly eclipsing the distributional threshold of 2.70, conjoined with a p-value of 0.000 that resides well beneath the 0.05 boundary. In light of this unequivocal statistical preponderance, Hypothesis 4 (H_4) garners unequivocal empirical endorsement, thereby substantiating the concomitant and materially potent ramifications of Economic Factors, Service Factors, and Maslahah Factors upon the construct of Public Interest.

Hypothesis Testing. Coefficient of Determination (R^2). The coefficient of determination (R^2) measures the proportion of variance in the dependent variable explained by the model. The results of the determination test (R^2) are presented in Table 13.

Table 13. Coefficient of Determination (R^2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.769	0.591	0.578	1.838

Predictors: (Constant), Maslahah Factors, Economic Factors, Service Factors

Dependent Variable: Public Interest

Source: Processed SPSS Data (2026)

Table 13 reports a coefficient of determination (R^2) of 0.578, signifying that 57.8% of the variance in Muslim society's interest in using electric buses is explained by the independent variables Economic Factors, Service Factors, and Maslahah Factors with the remaining 42.2% attributable to other factors outside this study.

The Effect of Economic Factors on Public Interest. The results of the first hypothesis test demonstrate that the Economic Factor (X_1) exerts a positive and significant effect on Public Interest (Y). This is substantiated by a t-statistic of 2.939, surpassing the t-table value of 1.984, and a significance value of 0.004 (< 0.05). Therefore, the first hypothesis (H_1) is accepted. These findings suggest that economic considerations, such as fare affordability, transportation cost efficiency, and daily expense savings, play a crucial role in encouraging the interest of Muslim communities in using electric buses. Muslim communities tend to consider economic utility as part of prudent financial management principles. The more affordable the cost of using electric buses, the higher the level of interest among Muslim communities in shifting to this mode of transportation.

These findings are consistent with previous research, such as that by Gutjar et al., (2025), which shows that economic incentives influence the adoption of electric vehicles by reducing costs, as well as Marek et al., (2018), which emphasizes the importance of cost considerations in the choice of transportation mode. However, the low usage rate of electric buses despite their affordable fares suggests that economic factors alone are insufficient to drive actual usage, necessitating the role of other factors such as service quality. Additionally, the dominance of respondents aged 20–30 most of whom are students indicates a group with high mobility but

limited economic capacity, making cost a highly sensitive factor in shaping interest, while also highlighting the unique context of this study.

The Effect of Service Factors on Public Interest. The partial test results reveal that the Service Factor (X_2) yields a t-statistic of 4.251, exceeding the t-table value of 1.984, with a significance value of 0.000 (< 0.05). This confirms a positive and significant effect on Public Interest (Y), thereby accepting the second hypothesis (H_2). This finding confirms that service quality is the most dominant factor influencing the interest of Muslim communities. Comfortable, safe, punctual, clean, and passenger-friendly services significantly determine people's decisions to choose electric buses as a mode of transportation. Moreover, services that provide safety and comfort align with Islamic values that emphasize welfare (*maslahah*) and ease in daily activities.

This finding is consistent with previous studies, such as Ojo, (2019), which highlight the importance of service quality in shaping public interest in transportation, and de Oña & de Oña, (2015), which indicate that service attributes such as comfort, reliability, and route availability play a crucial role in transportation choice. The dominance of service factors in this study suggests that improvements in service quality are essential to increase the actual use of electric buses. This is particularly relevant given the observed condition that public utilization remains relatively low despite the availability of adequate facilities. Furthermore, the respondent characteristics reinforce this result, as the majority are young individuals with high mobility who tend to prioritize convenience, reliability, and comfort in their daily transportation choices, thereby strengthening the influence of service factors on public interest.

The Effect of Maslahah Factors on Public Interest. The third hypothesis test results demonstrate that the Maslahah Factor (X_3) yields a t-statistic of 3.206, surpassing the t-table value of 1.984, accompanied by a significance value of 0.002 (< 0.05). Consequently, the Maslahah Factor exerts a positive and significant partial effect on Public Interest (Y), thereby accepting H_3 . These outcomes highlight that maslahah values encompassing environmental benefits, air pollution mitigation, and support for sustainable living constitute a pivotal consideration for Muslim communities, who view electric bus usage as a mechanism for environmental preservation. Elevated awareness of these maslahah dimensions among Muslim communities corresponds to increased interest in electric bus utilization.

This finding is consistent with previous studies indicating that religious values and environmental awareness play an important role in shaping pro-environmental behavior. Studies such as Ermelia et al., (2023) and (Karimi et al., 2022) suggest that the understanding of maslahah and religiosity can encourage environmentally responsible actions, including the adoption of green technology. The positive effect of maslahah factors in this study indicates that value-based considerations are relevant in influencing public interest, although their influence may complement rather than replace practical considerations such as cost and service

quality. Furthermore, the respondent characteristics support this finding, as younger individuals tend to be more exposed to environmental issues and sustainability campaigns, which may increase their awareness of environmental responsibility and strengthen the role of *maslahah* values in shaping their interest in electric bus usage.

The Simultaneous Effect of Economic, Service, and Maslahah Factors on Public Interest.

The simultaneous test (F-test) results show an F-statistic of 46.167, exceeding the F-table value of 2.70, with a significance value of 0.000 (< 0.05). This confirms that Economic Factors, Service Factors, and Maslahah Factors collectively exert a significant effect on Public Interest (Y), accepting H₄. These findings suggest that Muslim communities' interest in electric buses arises not from isolated factors but from the interplay of economic considerations, service quality, and *maslahah* values. These three factors complement each other in shaping the decision of Muslim communities to adopt environmentally friendly transportation. Therefore, efforts to increase public interest in electric buses should be carried out in an integrated manner through affordable pricing policies, improvements in service quality, and strengthened education regarding the benefits and *maslahah* values of electric bus usage for social and environmental sustainability.

Previous studies have generally examined economic, service, and environmental or value-based factors separately in influencing transportation behavior, while limited studies have integrated these factors simultaneously. Therefore, this study contributes by demonstrating that public interest in electric buses is shaped by the combined influence of economic considerations, service quality, and *maslahah* values. This finding indicates that public interest is multidimensional and cannot be explained by a single factor alone. Furthermore, the respondent profile, which is dominated by young and active individuals, suggests that they tend to evaluate transportation options holistically by considering cost efficiency, service convenience, and environmental values at the same time, thereby reinforcing the importance of an integrated approach in increasing public interest.

CONCLUSION & SUGGESTION

Conclusion. This study concludes that economic, service, and *maslahah* factors collectively shape the interest of Muslim communities in using electric bus services in Medan City, with service aspects emerging as the most influential in determining public transportation preferences. While economic considerations help reduce financial barriers, *maslahah* values reflect the growing awareness of environmental sustainability and social responsibility. More importantly, this study offers a comprehensive perspective by integrating practical and value-based factors in understanding transportation behavior within a Muslim community context. The findings provide valuable insights for future researchers to develop more integrative models that combine economic, service, and socio-religious dimensions, as well as to explore additional factors such as accessibility, infrastructure readiness, and policy effectiveness in order to achieve a more holistic understanding of sustainable transportation adoption.

Suggestion. Drawing on these results, policymakers particularly the Medan City Government and pertinent transportation authorities are advised to implement an integrated strategy to bolster public interest in electric buses. Emphasis should be placed on elevating service quality via expanded route networks, reliable scheduling, and improved passenger comfort and safety. Concurrently, sustaining affordable fares through viable subsidy mechanisms is vital to broadening user adoption. Furthermore, targeted public awareness and educational initiatives should underscore the environmental and social benefits (masalah) of electric buses, with particular focus on the Muslim community. Future research is recommended to encompass additional variables, such as behavioral habits, accessibility, and technological acceptance, for a more holistic examination of public transportation uptake.

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