“The influence of perceived value factors on electric vehicle purchasing intention: The moderating effect of the Lebanese economic crisis”

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THE INFLUENCE OF PERCEIVED VALUE FACTORS ON ELECTRIC VEHICLE PURCHASING INTENTION: THE MODERATING EFFECT OF THE LEBANESE ECONOMIC CRISIS

Abstract

In the wake of Lebanon's economic crisis, the energy crisis, and the resulting high oil-product prices, electric vehicle technology is a lifeline for eco-conscious consumers, promising energy independence and lasting savings. This paper aims to evaluate the effect of perceived value factors on electric vehicle purchasing intention. It evaluates the moderating effect of the Lebanese economic crisis on the relationship between constructs. The study employed a quantitative, deductive approach. Data were collected from 124 potential car buyers via an online questionnaire in 2025, selected using purposive sampling. A pre-screening questionnaire reinforced the actual purchasing intention as an inclusion criterion. The results show that maintenance and technical performance constitute the most influential direct determinant of purchase intention ($\beta = 2.084$; $p < 0.001$), followed by the direct effect of the economic crisis ($\beta = 1.724$). These findings underscore that consumers prioritize reliability and functionality. Financial incentives have a significant effect ($\beta = 1.219$), while media awareness has a more variable positive effect ($\beta = 1.275$). Environmental awareness has a more moderate but still significant direct effect ($\beta = 0.520$). Analysis of moderating effects reveals that the economic crisis strongly amplifies the impact of financial incentives ($\beta = 0.860$) and strengthens the influence of environmental and media awareness, while mitigating the effect of technical performance ($\beta = -0.619$). The intention to purchase electric vehicles is primarily shaped by technical and economic considerations, whereas environmental and informational dimensions play a conditional role, strongly dependent on the crisis context, thereby offering clear guidelines for marketing positioning and supporting public policies.

Keywords environment, financial incentive, economic crisis, media effect, awareness, performance, positioning

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INTRODUCTION

The shift to sustainable transport is a global challenge amid environmental concerns, rising energy costs, and international efforts to reduce greenhouse gas emissions. The transport sector is the main cause of environmental degradation due to petroleum combustion. With 1.3 billion combustion engine vehicles increasing emissions and pollution, a significant mobility alternative is necessary. Electric vehicles (EVs) are a key alternative to traditional cars, offering environmental and technological benefits. However, adoption remains limited, particularly in developing countries such as Lebanon, raising questions about what truly influences consumer purchase intention beyond promotional claims. EV purchases are limited despite potential benefits for Lebanon. Obstacles include electrical infrastructure issues, lack of maintenance facilities, concerns about EV performance, and financial incentives (Jreige et al., 2021; Haddad & Mansour, 2019).

Despite environmental and technological benefits, electric vehicle adoption remains limited by conflicting perceptions of their value. The gap between environmental awareness and purchase behavior persists (Asadi et al., 2021). Concern for climate issues does not always lead to buying EVs, as financial constraints often override ecological motives (Adamczyk et al., 2023). Financial incentives are insufficient, especially amid declining purchasing power (Alali et al., 2022). Media messaging perceived as overly promotional undermines credibility and fuels negative perceptions. Ongoing doubts about reliability, maintenance, and spare parts affect cost-benefit views (Sanclemente Crespo et al., 2022). Consumers worry about long-term performance and access to services (Xia et al., 2022). These perceptions, combined with economic pressures, reduce the impact of perceived value on buying decisions. Ultimately, the gap between EV value perception and actual purchase is widening as consumers focus more on immediate needs due to economic instability. Perceived value, encompassing economic, functional, social, and environmental aspects, shapes purchase intention by reflecting consumers' overall assessment of benefits relative to sacrifices, such as price, risk, and effort. For electric vehicles, this is complex due to high costs, charging issues, tech uncertainty, and battery lifespan. Understanding these factors reveals barriers and drivers of adoption.

This research is significant both theoretically and practically, with social implications. It examines purchase intention through behavioral models, such as the Theory of Planned Behavior by Ajzen, and the adoption of innovative technologies, potentially trying to fill a gap in understanding how perceived value factors influence electric vehicle purchase intentions during economic crises. In practice, it improves understanding of consumer intention by exploring the moderating role of the economic crisis, encouraging policymakers to create financial incentives, expand charging infrastructure, and raise awareness of EV benefits. Societally, promoting EVs improves air quality in Lebanese cities, reduces pollution-related health issues, and supports Lebanon's green economy, advancing the Sustainable Development Goals.

1. LITERATURE REVIEW AND HYPOTHESES

As the fight against climate change has become a global priority, many countries are promoting green solutions in line with the Sustainable Development Goals (SDGs), to promote green mobility (Indana & Pahlevi, 2023). SDG 13 calls for a rapid transition toward renewable energy and the adoption of green technologies (Obaideen et al., 2022). EVs are crucial to this ecological transition; they emit no CO2, thereby reducing their carbon footprint (Roca-Puigròs et al., 2023).

The electric vehicle (EV) market has experienced notable growth (Wangsupphaphol & Chaitusaney, 2022). Leading initiatives included developing an EV ecosystem and boosting demand; financial incentives, such as tax exemptions; and raising awareness through strategic marketing (Xu et al., 2019; Ingeborgrud & Ryghaug, 2019). Price fluctuations, environmental concerns, social influence, media advertising, and cost-effectiveness influence brand selection. Additionally, media and environmental awareness, as well as the ecological advantages, influence the purchasing intention of electric vehicles (Mohammadzadeh et al., 2022). Purchasers prefer electric vehicles (EVs) due to their perceived cost-effectiveness, lower operating costs, reduced environmental impact, and greater sustainability (Goswami, 2022). Consumers are inclined to purchase electric vehicles (EVs) due to their utility and environmental benefits (Krishnan & Koshy, 2021). These purchasing behaviors are supported by many theories.

Davis's Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) provide perspectives on perceived value factors and their effect on purchasing intention (Vrontis et al., 2022). These models primarily focus on technological perceived value while incorporating contextual factors. The TAM model is extended to include perceived value, in addition to perceived usefulness and ease of use (Vrontis et al., 2022). In electric vehicles, perceived usefulness is closely tied to perceived benefits, such as reduced fuel costs and a positive environmental impact. In

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contrast, perceived ease of use is linked to factors such as charging ease, battery life, and maintenance (Chukwuma, 2023). The Theory of Planned Behavior (TPB) emphasizes behavioral, normative, and control beliefs as determinants influencing consumers' purchase intentions (Shalender & Sharma, 2021). This theory has been extended to encompass green and sustainable vehicles, proposing that three principal factors govern the intention to purchase electric vehicles (EVs) (Buhmann et al., 2024). The first factor concerns attitude, in which beliefs about environmental, economic, and technological advantages shape individuals' attitudes. Perceptions of reduced carbon dioxide emissions or fuel savings foster a favorable attitude toward electric vehicles (EVs) and augment purchase intent (Achariyaviriya et al., 2023; Javid et al., 2022). The second factor is the subjective norm, which signifies perceived social pressure to either engage in or abstain from a purchasing behavior. Additionally, the media substantially affect the intention to purchase electric vehicles, with media promotions and governmental campaigns shaping perceptions of EV ownership as a socially responsible act (Lee et al., 2023). The third factor entails perceived behavioral control, specifically perceived ease of use. The Diffusion of Innovation Model (DOI) emphasizes five key factors in the adoption of an innovation: relative advantage, compatibility, complexity, trialability, and observability (Farajnezhad et al., 2021).

Perceived value factors can be classified as environmental, economic, technical, and social. These factors affect consumers' purchasing intention of electric vehicles (EVs) (Chukwuma, 2023). EVs, with minimal or no emissions, are seen as effective responses, underscoring the importance of environmental awareness in consumer decisions. Participants with limited environmental knowledge showed increased positive intent after awareness campaigns (Araújo-Vila et al., 2022).

Environmental awareness drives EV adoption, as concerns over climate change prompt consumers to opt for green solutions (Lieven & Hügler, 2021). On the economic level, high prices are a significant barrier to purchasing electric vehicles (Hardman, 2019; Alali et al., 2022). Financial incentives, such as tax reductions and financing options, can mitigate this obstacle and foster greater EV adoption (Bickert, 2014). These incentives, provided by governmental and financial institutions, are essential in shaping consumers' purchasing intention (Cruz & Tolentino, 2023).

Media awareness significantly influences consumer attitudes and behaviors toward electric vehicles (EVs). Research shows that media influence is considerable, with online recommendations being crucial for EV information (Yeğin & Ikram, 2022; Maso & Balqiah, 2022; Chaturvedi et al., 2023). Engaging consumers through social media can promote eco-friendly choices, as informed consumers tend to make more informed purchasing decisions (Ueda & Ogishi, 2021). Advertising and social media educate consumers, reducing doubts and fostering positive perceptions (Chukwuma, 2023). Nevertheless, a significant impediment to EV purchase is the high cost of spare parts, with performance and maintenance expenses playing a key role in consumer decision-making (Levinson et al., 2023). The lifespan of batteries and their associated replacement costs negatively affect the attractiveness of EVs (Shrivastava, 2024). Factors such as travel distance and the necessity for longer trips affect consumer perceptions (Kolawole & Al-Anbagi, 2019). However, recent research verified that electric vehicles require less maintenance than conventional vehicles, primarily because their electrical systems require fewer repairs (Gurusamy et al., 2023).

Consequently, understanding consumers' perceptions of value factors is essential for identifying the drivers of their adoption and the barriers that limit it. Environmental awareness, financial incentives, media awareness, and maintenance and technical performance are determinants of perceived value that directly influence purchasing intention (Klabi & Binzafrah, 2023). However, these dimensions do not always translate into a positive perception. When deemed insufficient, inappropriate, or lacking credibility, these factors generate a negative perception of value, thereby decreasing purchasing intention (Phoon et al., 2023). Consumers' perceptions of these perceived value determinants are accentuated by declining purchasing power and the uncertainty surrounding consumer choices in unstable environments and economic crises.

Lebanon's economic crisis began in 2019 and has significantly impacted vital economic sectors, in-

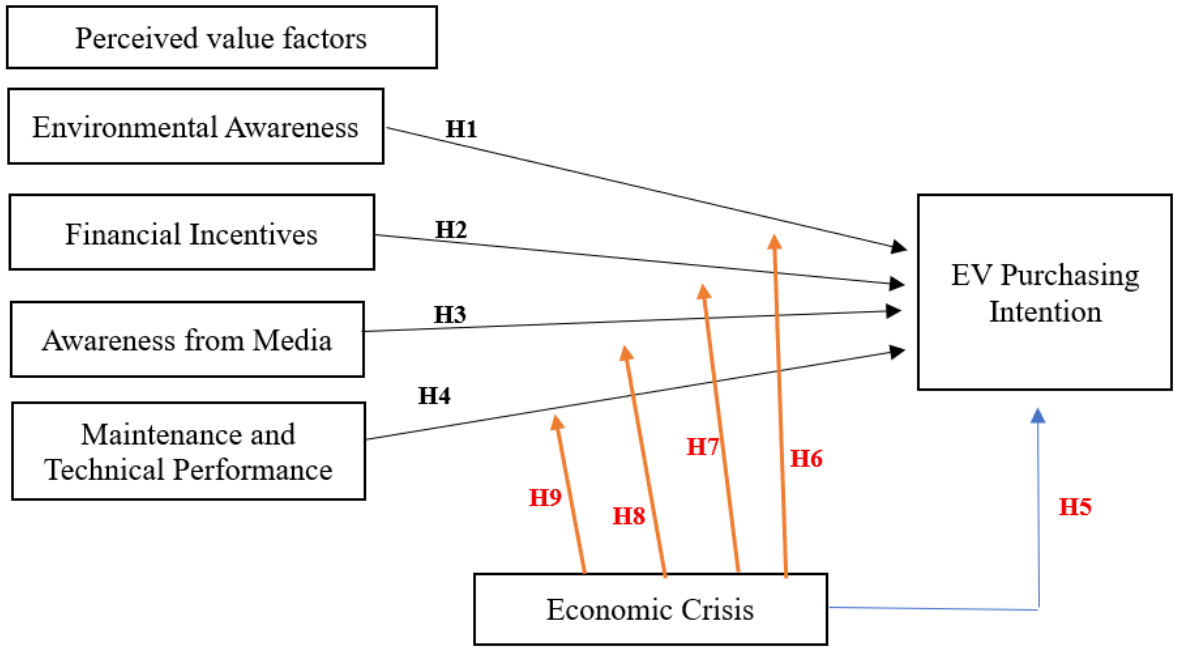

Figure 1. Conceptual framework

cluding the market share of electric vehicles (EVs) (Uwaydah & Kassir, 2024). The economic crisis prompted Lebanese consumers to seek alternative modes of mobility amid a subsequent rise in gasoline prices (Jreige et al., 2021). Additionally, dollar inflation posed a significant financial challenge, reducing the ability of Lebanese middle-class consumers to afford EVS (Haddad et al., 2018). Lebanon faces an extreme gasoline and fuel crisis. This crisis had extensive consequences on numerous sectors, notably transportation and energy (Julian & Salame, 2022; Jabbour, 2020). Between 2019 and 2022, a recurring phenomenon emerged in Lebanon: lineups of people seeking gasoline at various stations became a daily occurrence. It compels numerous individuals from Lebanon to actively seek a resolution (Corriero et al., 2022). Electric vehicles were among the options widely adopted by many individuals in Lebanon. Nevertheless, the adoption of electric vehicles (EVs) has been hindered by various factors, including exchange rate fluctuations and electricity supply shortages. As a result, purchase intentions for electric vehicles remain low, despite their environmental benefits and efforts to raise awareness.

The limited research on perceived value factors as determinants affecting electric vehicle (EV) purchasing intentions calls for further investigation, as understanding consumer behavior in terms of purchasing decisions and technology adoption is vital to the success of the Lebanese market during economic constraints.

Consequently, this study aims to examine the influence of perceived value factors on electric vehicle purchasing intention among Lebanese consumers. These factors include environmental awareness, financial incentives, media influence, maintenance, and technical performance. Additionally, it investigates the moderating effect of the ongoing Lebanese economic crisis on the relationship between perceived value factors and EV purchasing intention.

Based on the literature review, five direct hypotheses and four moderating hypotheses have been formulated:

H1: Consumers' perceived Environmental Awareness significantly affects their EV Purchasing Intention.

H2: Financial Incentives offered by governments or firms significantly positively affect consumers' EV Purchasing Intention.

H3: Increased Media Awareness significantly increases consumers' EV Purchasing Intention.

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H4: Maintenance and Technical Performance significantly affect consumers' EV Purchasing Intention.

H5: Economic Crisis affects Lebanese consumers' EV Purchasing Intention.

H6: Economic Crisis moderates the statistical association between Environmental Awareness and EV Purchasing Intention.

H7: Economic Crisis moderates the relationship between Financial Incentives and EV Purchasing Intention.

H8: Economic Crisis moderates the influence of Media Awareness on EV Purchasing Intention.

H9: Economic Crisis moderates the statistical influence of Maintenance and Technical Performance on EV Purchasing Intention.

Based on these factors, Figure 1 illustrates the conceptual framework.

2. METHODOLOGY

This paper adopts a positivist philosophy, focusing on the rational study of consumer purchasing intentions as a social phenomenon, drawing on theories such as the Theory of Planned Behavior, the Technology Acceptance Model (TAM), and the Diffusion of Innovations (DOI). Based on previous research integrating these theories, the framework identifies variables that influence the purchasing intentions for electric vehicles (EVs).

Using a descriptive-causal approach, the study examines how perceived value factors, including environmental awareness, financial incentives, media awareness, maintenance, and technical performance, impact the intention to purchase electric vehicles (EVs) in Lebanon, with the economic crisis serving as a moderating variable. A quantitative method employing a deductive approach is used, utilizing a structured online questionnaire for data collection, facilitating broad participant access and efficient analysis.

The questionnaire was administered via SurveyMonkey to gather responses from Lebanese consumers. The online format was chosen for its cost-effectiveness, speed, and ease of data interpretation. A pretest was conducted with a small sample to refine the questionnaire and ensure clarity, followed by a primary data collection phase from January 1, 2025, to March 30, 2025. 124 consumers were selected using purposive sampling. This method was used to match respondents' profiles with the study's goal, focusing on consumers interested in purchasing EVs. The sample was drawn from international car dealerships in Lebanon, reaching those already exposed to and considering EVs. This increased internal validity by reducing bias and setting clear inclusion criteria. A prescreening question asked if they were considering an EV purchase; only those answering yes continued, ensuring responses came from genuine buyers. This strengthened the relevance and alignment of results with the research objectives.

124 potential buyers fully filled out the questionnaire that was distributed to them through a QR code. This method eased the online data collection. These 124 agree that they have a high intention to purchase an electric vehicle. This sample, presented in Table 1, comprises 58.9% men and 41.1% women, representing both genders' points of view. 32.3% of participants are graduates, compared to 42.7% of undergraduates; 13.7% have high school degrees, and 11.3% hold other degrees, reflecting a diverse educational background. Participants' ages ranged from 36 to 45 years (37.1%), 18 to 25 years (25.8%), 26 to 35 years (19.4%), and 46 to 55 years (14.5%).

Ethical principles were followed in this article. The study was approved by Jinan University Lebanon Ethics Committee, which reviewed the research and data collection procedures and consent form. Participation was voluntary; no personal data were collected. Participants were informed of the study's objective and that data would be used for research purposes only. The authors confirm that the data are original, recent, and solely from this survey, with no prior publication. Future data use will follow ethical standards.

Operational definitions, including variable coding, items, and references, are presented in Table 2. All items were evaluated using a five-item Likert scale

Table 1. Demographics

Characteristics	Category	Frequency	Valid percent
Gender	Male	73	58.9
	Female	51	41.1
	Total	124	100.0
Education level	High school	17	13.7
	Undergraduate	53	42.7
	Graduate	40	32.3
	Other degree	14	11.3
	Total	124	100.0
Age	18-25	32	25.8
	26-35	24	19.4
	36-45	46	37.1
	46-55	18	14.5
	Above 56	4	3.2
	Total	124	100.0

from 1 (strongly disagree) to 5 (strongly agree). Items were adopted from structured questionnaires; however, their wording was adapted to the Lebanese context to ensure clarity, comprehensibility, and conceptual validity.

The collected data and the research hypotheses were tested in two steps. The first step involved a purification process followed by Principal Component Analysis (PCA) to purify the measurement scales (Farajnezhad et al., 2021). The purification phase of scales relied on an Exploratory Factor Analysis. Factorability is supported by the Kaiser-Meyer-Olkin test (KMO >0.7) and Bartlett's sphericity test (sig< 0.05). The interpretation of EFA is based on the rotation method. Varimax rotation was

Table 2. Operational criteria

Factors	References of items	Indicators
(E) Environmental Awareness	Five items were adopted from Ling et al. (2021); Verma et al. (2020)	• Air pollution reduction • Low carbon emission • Catalytic converters • Ecological batteries • Resource consumption reduction
(F) Financial Incentives	Five items were adopted from Wang et al. (2019) and Xue et al. (2021)	• Affordability • High price • Discounts and packages • Payment facilities • Price expectation
(M) Awareness from the Media	Five items were adopted from Broadbent et al. (2021), Di Foggia (2021), Liu and Cirillo (2018), and Melzer and Zech (2018)	• Social media promotion • Local media promotion • Media encouragement • Sustainability awareness • Media reliability
(V) Maintenance and Technical Performance	Five items were adopted from Levinson et al. (2023), Sharmila et al. (2022), and Singh et al. (2020)	• High maintenance cost • Expensive spare parts • Horsepower performance • Daily use suitability • Trip planning
(EC) Economic Crisis	Five items were adopted from Jreige et al. (2021) and Haddad et al. (2019)	• Economic degradation • Gas outage solution • Electricity cuts • Exchange rate increase • Customs fees
(EV) Purchasing Intention	Five items were adopted from Adamczyk et al. (2023), Xu et al. (2019), and Cruz and Tolentino (2023)	• Maintenance cost barrier • Spare parts barrier • Lack of service centers • Warranty benefits • Battery replacement cost

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used to maximize the correlation coefficients between the most correlated variables. The first level of interpretation of the factor solution consists of retaining the highest correlation coefficients between initial variables and factors (loadings). The usual rule is to retain loadings greater than 0.50. The second level of interpretation corresponds to the correlation between an item and its initial factor. The reliability of each construct was evaluated using Cronbach's Alpha >0.7. The second step involved specifying the structural model using AMOS V24. It establishes the conceptual framework by identifying the nature of the variables (latent or observable, exogenous or endogenous) and the type of constructs (Herwin & Nurhayati, 2021). The CFA has identified the correlations and structural links between the constructs. Fitness indices such as the CFI, NNFI and RMSEA were calculated. The hypotheses were tested using structural equation modeling (SEM). The moderating effect was measured using the Garvin slope (low and high graphs) based on the beta coefficients (Vongurai, 2020).

3. RESULTS AND DISCUSSION

This section embraces results analysis. The descriptive analysis comprises the normality distribution test, reliability, and validity. The inferential data were calculated using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to determine the factors influencing EVs' purchasing intentions. This section concludes with a structural equation analysis that tests the research hypotheses and validates the conceptual framework.

Table 3 presents the descriptive statistics (mean, standard deviation, median, skewness, and kurtosis) for all variables studied.

The sample embraces 124 potential buyers. The descriptive statistics showed that the data were normally distributed. The mean, median, and standard deviation are within acceptable ranges. Therefore, it confirms that Lebanese respondents used the five-point Likert scale to assess the questions. For example, environmental awareness has a normal distribution (mean = 4.3; standard deviation = 0.5; median = 4.4). The skewness and kurtosis tests on the data indicated that the highest values were 0.27 for the skewness test and 1.9 for the kurtosis test. These results met the recommended thresholds.

Internal consistency coefficients, such as Cronbach's Alpha and the Kaiser-Meyer-Olkin (KMO) measure, are used to assess the scale's reliability and validity (Table 3). KMO coefficients above 0.6 verify the internal sampling adequacy. Alpha coefficients above 0.6 indicate acceptable internal consistency between statements. This analysis is relevant to observing the reliability and validity before conducting the PCA (Bchennaty et al., 2024).

As presented in Table 4, the correlation coefficients are acceptable. The variables are relatively correlated. The correlation matrix detected that environmental awareness and EV purchasing Intention are moderately correlated, with a Pearson coefficient of 0.556. In contrast, awareness from media and EV purchasing intention have a strong positive correlation of 0.63. The results indicate that buyers with higher social media awareness are more likely to purchase electric vehicles. The

Table 3. Descriptive statistics

Descriptive indicators		Environmental Awareness	Financial Incentives	Awareness from the Media	Maintenance and Technical Performance	Economic Crisis	EV Purchasing Intention
N	Valid	124	124	124	124	124	124
	Missing	0	0	0	0	0	0
Mean		4.36	3.16	3.14	3.69	3.66	3.57
Median		4.40	3.20	3.20	3.60	3.80	3.60
Std. deviation		0.506	0.560	0.709	0.484	0.673	0.679
Skewness		-0.248	–0.075	–.004	.044	–0.073	0.277
Std. error of skewness		.217	0.217	0.217	.217	.217	0.217
Kurtosis		-.921	1.954	0.323	–.303	–0.096	–0.220
Std. error of kurtosis		.431	.431	0.431	0.431	0.431	0.431

Table 4. Correlations

Variables	(1)	(2)	(3)	(4)	(5)	VIF	Tolerance
Environmental Awareness (1)	1					1.085	0.922
Financial Incentives (2)	0.224	1				1.256	0.796
Awareness from Media (3)	0.319	0.365**	1			1.299	0.770
Maintenance and Technical Performance (4)	0.122	0.340**	0.293**	1		1.207	0.829
Economic Crisis (5)	−0.221*	−0.474**	−0.582**	−0.280**	1	1.148	0.871
EV Purchasing Intention (6)	0.556**	0.469**	0.630**	0.356**	−0.737**	–	–

economic crisis has shown a moderately negative correlation with influencing factors, with a Pearson correlation coefficient ranging from -0.2 to -0.5. This correlation indicates that purchasing intention decreases as the economic crisis intensifies. VIF values are below the critical value of five. These values showed no multicollinearity in the data, verifying that the regression model is fit.

Principal Component Analysis (PCA), presented in Table 5, identifies underlying constructs and summarizes data variation and group-related variables. Varimax rotation clarifies the distribution of variance among factors. The analysis confirms the internal consistency of variables and ensures adequate sampling.

As shown in Table 4, the analysis identified four items for "awareness from social media" and eliminated only one. Retained items have a high factor loading of 0.7 and satisfactory KMO and Cronbach's Alpha values. Environmental awareness was ranked second. It has retained four out of five items. The factors influencing EVs' purchasing intention explained a Total Variance Explained (TVE) of 60% of the initial data. To improve the quality of the structural analysis of economic crises (moderator factor), EC5 was removed. This

Table 5. Factor coefficients

Coding	Factor loadings	Extraction	α	AVE/ √AVE	KMO	TVE
Awareness from the Media					0.745/	59.92 = 60%
M4	0.766	0.611	0.801	0.586 0.766		
M2	0.745	0.591				
M1	0.732	0.620				
M5	0.665	0.523				
Environmental Awareness						
E2	0.844	0.721	0.773	0.623 0.789		
E1	0.804	0.750				
E4	0.603	0.498				
E3	0.575	0.524				
Maintenance and Technical Performance						
V2	0.762	0.666	0.710	0.610 0.781		
V1	0.710	0.607				
V3	0.693	0.556				
Financial Incentives						
F1	0.834	0.707	0.732	0.608 0.780		
F3	0.572	0.544				
F4	0.558	0.572				
Economic Crisis						
EC1	0.871	0.759	0.874	0.677 0.823	0.891	60.91= 62%
EC3	0.838	0.702				
EC2	0.805	0.648				
EC4	0.546	0.598				
EV Purchasing Intention						
U1	0.910	0.910	0.846	0.868 0.932	0.886	75.49 = 75.5%
U2	0.883	0.883				
U3	0.810	0.810				

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item had the lowest correlation with the studied variable. The value of Cronbach's Alpha increased to 0.87, indicating improved internal consistency. The economic crisis has reached a Total Variance Explained (TVE) of 62% and a KMO of 0.89, both exceeding the recommended thresholds. The EV purchasing Intention has reached a TVE of 75.5% with a KMO of 0.88, which exceeds 0.6. The PCA confirmed that the perceived value factors are multidimensional constructs, whereas the economic crisis and EV purchasing Intention are unidimensional constructs.

The structural model in Figure 2 analyzes the relationships between latent variables and their indicators. It evaluates goodness-of-fit indices, and the tested model fits the observed data well. With an RMSEA of 0.078, the model has a good fit. A Chi-square of 2.9 indicates that the model is adequate, and the difference between the observed and predicted data is reasonably small. The Goodness-of-Fit Index (GFI) (0.966 > 0.9) indicates that the model fits the data very well. The AGFI (0.990 > 0.9) confirms that the model fit is excellent, indicating that, even given the model's complexity, the observed data align well with it. The Incremental Fit Index (IFI) (0.974 > 0.9) advocates that the tested model significantly improves the fit over the base model. The Comparative Fit Index (CFI) (0.965 > 0.9) indicates that the model has a very good fit and effectively represents the data. The Normed Fit Index (NFI) (0.951 > 0.9) endorses that the model fits the data well, reflecting an adequate fit.

Figure 2 shows that all structural correlations are significant. Results are tolerant towards these critical values (threshold), especially when assessing a complex model with several variables. For example, Media Awareness (M2, M1, M5) has regression weights close to 1, indicating that these indicators highly correlate with the latent variable "Media Awareness." EV Purchasing Intention includes three latent variables (U1, U2, U3). U1 has a high weight (1.148), indicating that its representation is an indicator of car purchase intention. A CR value greater than 1.96 indicates that the relationship is statistically significant at the 5% level ($p < 0.05$). All CR values are well above this threshold.

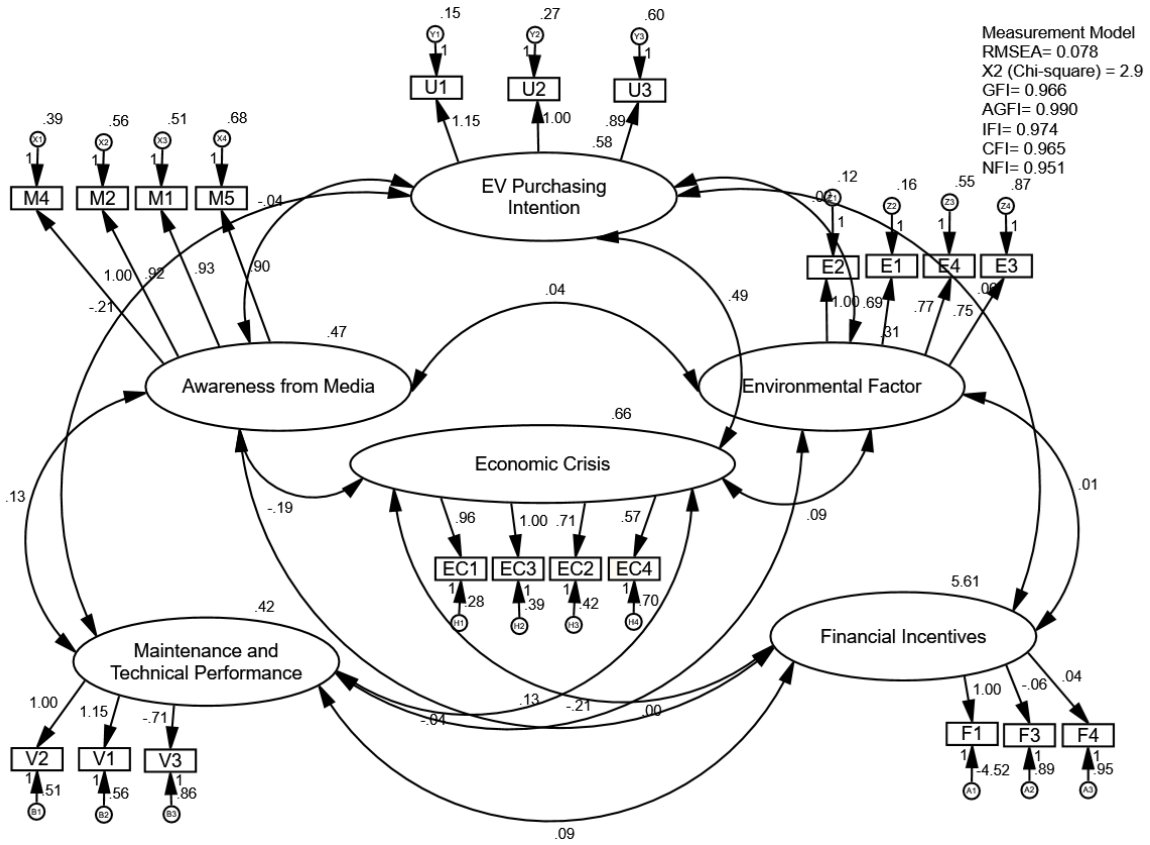

Figure 2. Structural model

Table 6. Regression weights

Variables	Estimate	S.E.	C.R.	P	Hypothesis supported
Environmental Awareness → EV Purchasing Intention	0.520	.013	4.021	0.00	*H1*
Financial Incentives → EV Purchasing Intention	1.219	.148	8.255	0.00	*H2*
Awareness from the Media → EV Purchasing Intention	1.275	.341	3.741	0.00	*H3*
Maintenance and Technical Performance → EV Purchasing Intention	2.084	.179	11.658	0.00	*H4*
Economic Crisis → EV Purchasing Intention	1.724	.263	6.562	0.00	*H5*
Environmental Awareness X Economic Crisis → EV Purchasing Intention	0.329	.041	7.924	0.00	*H6*
Financial Incentives X Economic Crisis → EV Purchasing Intention	0.860	.002	47.448	0.00	*H7*
Awareness of the Media X Economic Crisis → EV Purchasing Intention	0.800	.088	2.906	0.00	*H8*
Maintenance and Technical Performance X Economic Crisis → EV Purchasing Intention	-.619	.050	12.324	0.00	*H9*

In this case, all indices' values exceed the critical values (GFI = 0.966, NFI = 0.951, and CFI = 0.965), above the recommended threshold of 0.9 (Younis et al., 2024). The CFI and NNFI values are above 0.8, as expected. The RMSEA value is 0.078. This value is suitable, falling within the range of 0.05 to 0.08. All fitness indices indicate that the tested model fits the observed data well. GFI, Adjusted Goodness-of-Fit Index (AGFI), IFI, CFI, and NFI all indicate an excellent fit. Hence, the research model is well-structured and authentically represents the relationships between variables. Therefore, the model fits the data well. An informed decision on the regression weights is made based on the following statistical indices.

Table 6 presents significant direct and moderating effects that explain the intention to purchase electric vehicles. This table confirms the robustness of the estimated model.

Environmental awareness has a positive and significant effect on purchase intention (β = 0.520; CR = 4.021). *H1* is supported. Financial incentives have a significant effect on EV purchasing intention (β = 1.219; CR = 8.255). *H2* is supported. Media awareness also positively influences purchase intention (β = 1.275; CR = 3.741). *H3* is supported. Technical performance and maintenance requirements appear to be the most powerful explanatory factor (β = 2.084; CR = 11.658). *H4* is supported. The economic crisis has a significant direct effect on purchase intention (β = 1.724; CR = 6.562). Purchasing intention is affected by economic risk. *H5* is supported.

For the moderating effects: The interaction between environmental awareness and the economic crisis is positive and significant (β = 0.329); hence, economic constraints increase the importance of environmental arguments. *H6* is supported. The interaction between financial incentives and economic crises has a high coefficient (β = 0.860), indicating a strong reinforcing effect of financial aid during economic crises. *H7* is supported. Media awareness is more strongly influenced during crises (β = 0.800), but to a more moderate degree. *H8* is supported. The interaction between technical performance and economic crises is negative: β = –0.619; consequently, high technical requirements may be perceived as an additional economic risk in an unstable environment. *H9* is supported.

Figure 3 presents the moderating effect of economic crisis, with both high and low effects of the Garvin slope.

Graph (1) in Figure 3 shows that the economic crisis moderates the relationship between environmental awareness and electric vehicle (EV) purchasing intention. The slope is significantly steeper during periods of severe economic crisis (y = 1.698x + 2.177) than during periods of mild crisis (y = 0.382x + 0.703), which corroborates the positive moderating effect observed in the model (β interaction = 0.329). The effect of environmental awareness on EV purchasing intention is intensified during economic crises.

Graph (2) highlights a substantial moderating effect of the economic crisis on the relationship between financial incentives and the intention to purchase electric vehicles (EVs). Under the condition of a mild economic crisis, the relationship between financial incentives and purchase intention is positive but moderate. The relatively shallow slope (β = 0.718) reflects a limited sensitivity of pur-

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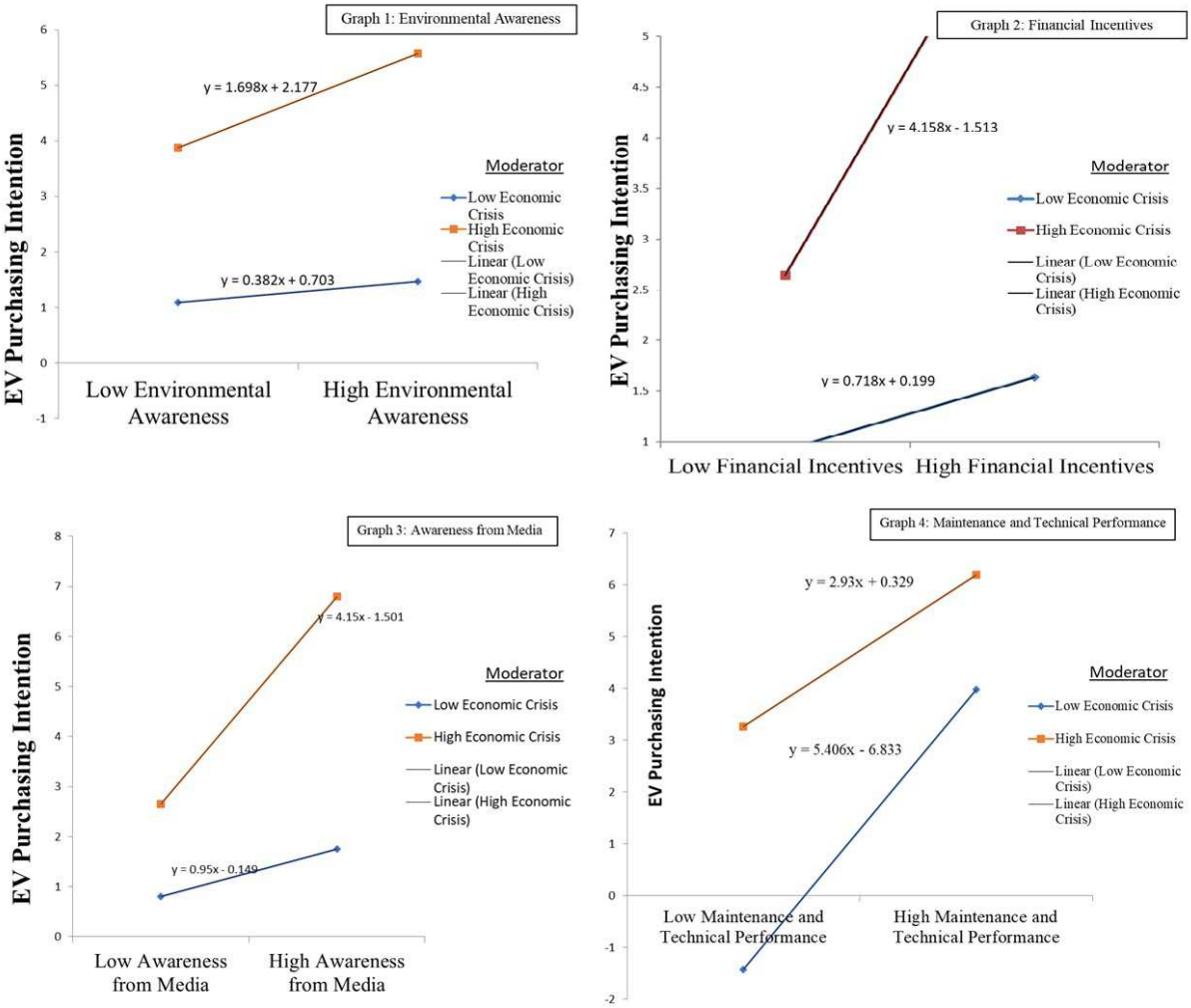

Figure 3. Economic Crisis (Garvin slope)

chase intention to changes in financial incentives. Conversely, when the economic crisis is severe, the slope of the relationship increases dramatically (y = 4.158x – 1.513). The slope (β = 4.158) is nearly six times the value observed in a mild crisis.

Graph (3) endorses the moderating effect of the economic crisis on the relationship between media awareness and EV purchasing intention. The steeper slope during periods of high crisis (y = 4.15x – 1.501) compared to periods of low crisis (y = 0.95x – 0.149), corresponds to the estimated positive interaction (β = 0.800). Therefore, this effect is amplified during periods of severe economic crisis and is less pronounced during periods of low economic crisis.

Graph (4) illustrates the moderating effect of economics on the relationship between maintenance, technical performance, and EV purchasing intention. The negative coefficient (-0.619) indicates that the economic crisis attenuates this relationship. The marginal effect of technical performance depends on the level of crisis. The major hypothesis on the positive effect is accepted. It indicates that, during a severe economic crisis, technical sophistication may be a risky financial commitment.

Environmental awareness, financial incentives, media awareness, maintenance, and technical performance directly influence EV purchasing intention. These influences are reinforced during economic crises. Regarding the direct effects, technical performance and maintenance requirements are the strongest determinants of purchase intention (β = 2.084). Functional criteria, such as maintenance costs, dominate the process of evaluating the perceived value of electric vehicles. The

economic crisis has a substantial direct effect on purchase intention (β = 1.724). This means that the more severe the economic crisis, the more consumers intend to purchase electric vehicles, probably for long-term economic profitability.

Environmental awareness is statistically significant, with β = 0.520. Environmental awareness significantly boosts purchase intention, and this effect intensifies when the economic context reinforces the search for long-term sustainable solutions. Environmental awareness strengthens the attitudinal coherence between personal values and purchasing behavior. For financial incentives, β = 1.219. The effect is statistically robust. Results reflect the central role of perceived cost reduction in high-involvement investment decisions, confirming that subsidy and tax relief mechanisms reduce barriers to adoption. The effect of media awareness is evident, as it influences perceptions of the economic and technical benefits of information, thereby influencing purchase intention. Media exposure shapes the perception of benefits, and its influence becomes more decisive when economic uncertainty increases sensitivity to information.

These results imply a clear prioritization of levers for action. Technical performance represents the foundation of the value proposition, but its communication must be accompanied by a demonstration of cost control during a crisis. Financial incentives are the most sensitive lever to the economic context and must be strengthened when the economic situation deteriorates. Media campaigns become more effective when they combine economic arguments with concrete benefits rather than purely symbolic messages. Finally, the environmental dimension, while significant, must be integrated into a logic of profitability and financial security in order to have a lasting influence on purchasing decisions.

The interaction between environmental awareness and the economic crisis indicates that economic constraints amplify the impact of environmental arguments when they are associated with sustainable benefits. The interaction between financial incentives and economic crises significantly amplifies the role of financial aid during periods of economic stress. The interaction between technical performance and economic crises suggests that high technical requirements may be perceived as an additional financial risk in an unstable environment.

Results suggest that the market development strategy for electric vehicles should first emphasize the technical reliability, while at the same time focusing on the total cost of ownership. Financial incentives should, in the context of an economic crisis, be the major levers used, dynamically adapting to the economic cycle. Campaigns targeting the media should combine both types of arguments, while ecological arguments used as a standalone cannot succeed in the absence of demonstrations of economic arguments. Finally, the demonstration of the product's technical reliability should go hand in hand with promoting the importance of controlling costs to avoid the risk of negative perceptions of the vehicle's sophistication on the grounds of increased crises.

Previous research converges on the importance of awareness factors in the adoption of electric vehicles (Singh et al., 2020; Alali et al., 2022). The majority of research demonstrated a strong positive correlation between media awareness, environmental awareness, financial incentives, and purchase intention (Broadbent et al., 2021; Goel et al., 2023). Additional research reinforced this perspective by identifying media awareness as a key lever for bridging the attitude-behavior gap, particularly in high-stakes financial decisions. These studies identified media information as a key driver of pro-environmental intentions. However, the current results indicate that its influence remains less than that of technical and economic factors, contradicting prior studies that present media awareness as a major determinant (Xia et al., 2022; Chang, 2023). Results endorse a different hierarchy of determinants in the Lebanese context. Media awareness does indeed help to reduce the gap between attitude and behavior, but this contribution remains contingent on tangible economic considerations.

Results fully confirm these correlations for media and environmental awareness, as well as for financial incentives, which emerge as robust predictors of purchase intention. These factors explain moderate variance, contradicting (Asadi et al., 2021). The data in this study revealed a more pronounced effect of media awareness (β = 0.42), corroborating a recep-

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tive cultural. Media awareness does indeed act as a behavioral catalyst. Our analyses succeed the conclusion of previous research, validating that charging infrastructure, although essential, has a moderate effect ($\beta = 0.28$) in the presence of strong awareness (Wangsupphaphol & Chaitusaney, 2022). In the present study, technical performance and maintenance requirements implicitly incorporate these functional concerns and appear as the most influential determinant of purchase intention (Shalender & Sharma, 2021). Hence, in the Lebanese context marked by a prolonged economic crisis, consumers place greater importance on overall reliability and operating costs than on the availability of infrastructure (Puma-Benavides et al., 2021). This study highlights a reconfiguration of the determinants of electric vehicle purchase intent, where economic and technical factors predominate over purely informational or environmental dimensions (Morton et al., 2016). An original contribution that repositions marketing priorities towards awareness campaigns.

This study identifies several limitations and suggests future research directions. A major challenge is consumer reluctance to participate in the survey, as many find it irrelevant, especially in Lebanon, where EVs are not yet widely adopted. The study employs a cross-sectional approach, meaning data were collected once, which limits our understanding of how consumer perceptions evolve over time. Future research could benefit from a longitudinal approach to track changes in consumer behavior from initial awareness to actual purchase, addressing the "green gap" between intention and action. Investigating the actual shift in consumer perceptions after experiencing an electric vehicle (EV) is a promising area of research. Analyzing psychological barriers to EV adoption in detail is valuable, and this can be achieved through qualitative methods, such as interviews. This would provide deeper insights into consumer resistance and help formulate effective awareness strategies.

CONCLUSION

This article examined the influence of perceived value factors on the purchasing intention for electric vehicles among Lebanese consumers. It has inspected the moderating effect of the ongoing Lebanese economic crisis on the relationship between these constructs. The findings validated that purchase intention is mainly structured around economic and functional factors. Maintenance and technical performance are identified as the most influential direct factors, while the economic crisis is seen as a significant structuring factor for the entire model. Moreover, media awareness and financial incentive factors are also seen as having considerable positive effects, especially at times when economic conditions slow down consumer demand. Marketing practitioners have strong motivations for engaging their digital potential and campaign practices to respond to a crisis, targeting fuel economy and range drivers for a high probability of conversion at these times. Marketing practitioners are encouraged to work with banks to deliver green loans, hence leveraging purchase intention. In contrast, while being significant, environmental awareness is seen as playing a more complementary role, with more pronounced effects being seen at times when the economic crisis makes consumers more sensitive to long-term benefits. Marketing practitioners are also encouraged to incorporate SDGs into their eco-responsible ads, work with NGOs for zero-emission consumer events, and create brand loyalty among millennials based on climate impacts.

With the Lebanese crisis serving as a trigger for the economic viability of EVs, attention is shifting towards creating brand awareness and incentives for these vehicles. This may also be a potential method for generating ROI based on increased sustainable market share. These findings have led to the conclusion that the usage of electric vehicles in an unstable economic environment is less based on attitudinal variables and more a rational function based on the overall perceived value of these products. They highlight the necessity for promoting various types of strategies for the promotion of the automotive field in the market, while taking into consideration the economic conditions and the technical reliability that an EV may provide for the consumer. Future research endeavors may attempt to expand this model into more similar economic scenarios to test the long-term validity of the findings, as well as add potential variables to the model itself to understand the role of technology confidence and perception of financial risk as a significant factor for the end user.

AUTHOR CONTRIBUTIONS

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Writing – review & editing: Mahmoud Edelby, Riad Alchami.

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APPENDIX A

Questionnaire

This survey is part of an academic research project aimed at improving the understanding of the purchasing intention of consumers toward electric vehicles as new forms of sustainable mobility.

Your participation is entirely voluntary. The responses collected are strictly anonymous: no personally identifiable information is requested or recorded, and the data will be analyzed only in aggregate form. The information collected will be used exclusively for scientific purposes and will not be used for any commercial purposes. By completing this questionnaire, you confirm that you have read and understood the objective of the study, understand the nature of the questions asked, and freely agree to answer them. You are informed that you may withdraw your participation at any time, without justification and without any consequences.

We sincerely thank you for your time in participating in this survey. Your contribution is essential for enriching the academic understanding of purchasing behavior related to electric vehicles and for informing future decisions by market participants and policymakers.

Thank you for your interest in this study on the factors influencing the intention to purchase electric vehicles in the current economic context in Lebanon. The questionnaire is addressed to consumers considering the purchase of an electric vehicle.

Pre-screening question

Do you personally plan to purchase an electric vehicle in the near future (within the next 12 to 24 months)?

☐ Yes, I am considering the purchase of an electric vehicle.
☐ No, I am not considering the purchase of an electric vehicle. (survey ends)

Automatic message for negative answers:

"Thank you sincerely for your interest and for taking the time to complete this survey. As this study focuses exclusively on the intention to purchase electric vehicles, there is no need to continue the questionnaire if you are not considering this purchase."

Table A1. Demographics

Characteristics	Category	Choice
Gender	Male	
	Female	
	Total	
Education level	High school	
	Undergraduate	
	Graduate	
	Other degree	
	Total	
Age	18-25	
	26-35	
	36-45	
	46-55	
	Above 56	

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For each of the following statements, please indicate the extent to which you agree by selecting one of the responses below:

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Table A2. Items

Items	Environmental Awareness (E)						
E1	The use of electric cars (EVs) can reduce air pollution	1	2	3	4	5
E2	The use of EVs has low carbon emissions and therefore protects the environment	1	2	3	4	5
E3	Electric cars have high-functioning catalytic converters that reduce toxic gases resulting from fuel combustion	1	2	3	4	5
E4	Electric vehicles possess electric batteries that reduce environmental harm	1	2	3	4	5
E5	Using EVs reduces natural resource consumption, for instance, fuel and gas.	1	2	3	4	5
Items	**Financial Incentives (F)**					
F1	I can afford to pay the price of an EV	1	2	3	4	5
F2	EV prices are higher than those of traditional cars	1	2	3	4	5
F3	I am motivated to buy an EV due to the attractive discounts and packages	1	2	3	4	5
F4	The conditions of payment facilities inspire me to buy an EV	1	2	3	4	5
F5	I'm planning to buy an EV because prices will decrease in the next five years	1	2	3	4	5
Items	**Awareness from the Media (M)**					
M1	Social media is promoting the procurement of electric vehicles.	1	2	3	4	5
M2	The Lebanese Media promotes the convenience of purchasing an EV in Lebanon.	1	2	3	4	5
M3	The media encourages individuals to switch to EVs and contribute to a sustainable future.	1	2	3	4	5
M4	As a consumer, I am aware from social media advertising that electric cars are sustainable.	1	2	3	4	5
M5	Social media sites are reliable sources of information concerning electric cars and EVs.	1	2	3	4	5
Items	**Maintenance and Technical Performance (V)**					
V1	Electric vehicles (EVs) typically incur higher maintenance costs than gasoline-powered cars.	1	2	3	4	5
V2	EV spare parts are expensive compared to gasoline-operated cars	1	2	3	4	5
V3	EVs have the needed horsepower for mountain trips	1	2	3	4	5
V4	EV is not suitable for daily use due to the lack of charging stations in Lebanon	1	2	3	4	5
V5	While using an EV, I should plan my trip carefully due to battery restrictions	1	2	3	4	5
Items	**Economic Crisis (EC)**					
EC1	I intend to buy an EV due to the degradation of the Lebanese economy	1	2	3	4	5
EC2	EV is an effective solution during the Gas outage in Lebanon	1	2	3	4	5
EC3	I cannot buy an EV car due to the long periods of electric cuts in Lebanon	1	2	3	4	5
EC4	EVs are expensive in Lebanon due to additional costs incurred from high Lebanese customs fees	1	2	3	4	5
EC5	EVs are expensive in Lebanon due to additional costs incurred from increases in Lebanese customs fees	1	2	3	4	5
Items	**EV Purchasing Intention (U)**					
U1	Buying an EV is practical because maintenance is readily available.	1	2	3	4	5
U2	I am planning to buy an EV car because the needed spare parts are available	1	2	3	4	5
U3	Warranty benefits are essential criteria for buying an EV in the future	1	2	3	4	5
U4	I'm interested in purchasing EVs due to the availability of maintenance and repair centers in Lebanon	1	2	3	4	5
U5	Battery replacement is expensive for EVs, which is a purchasing constraint.	1	2	3	4	5