The Impact of Green Marketing Mix Practices on Customer's Purchase Intention of Electric Vehicles in Palestine

The Mediating Role of Green Perceived Value

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ABSTRACT

This research aims to investigate the impact of a green marketing mix, involving green promotion and green pricing support practices, on the consumer's intention to purchase Electric Vehicles (EVs) in Palestine, with the mediation role of Green Perceived Value (GPV). A quantitative method was used in this research, where relevant data were collected from a random sample via a structured distributed questionnaire which was answered by 53 respondents. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used for the analysis. The model revealed that the green promotion and green price support practices, as well as GPV have a positive impact on customer intention to purchase EVs. Moreover, the results confirmed that GPV partially mediates the relation between green marketing mix practices and customer intention to purchase EVs. The results of this research present a guideline for marketing decision makers in automobile dealerships to improve customer EV purchase intention.

Keywords-electric vehicles; green marketing mix; green purchase intention; green perceived value

I. INTRODUCTION

There is a growing debate concerning effective interventions for promoting green considerations among various markets to reduce the human impact on the environment. Transportation remains among the most notable sectors for consideration, given the role vehicles play in environmental degradation due to the burning of fossil fuels.

According to the International Energy Agency IEA [1], CO_2 emissions increased by 3% in 2022 compared to the average annual rate of increased emissions by transport, 1.7%, before 2022. Transportation is responsible for over a third of CO_2 emissions originating from sectors related to end-use products. Addressing the issue of pollution, hybrid vehicles and EVs have emerged as potential alternatives for consumers to consider shifting from the traditional petroleum sources.

As a developing country, Palestine faces immense socio-political challenges, with energy and transportation experiencing the greatest impact of rising costs of living, war, and political uncertainty. Furthermore, there has also been a significant increase in vehicle fleets in Palestine at an annual rate of approximately 18,260 vehicles [2]. The Palestinian territories have faced additional significant challenges in terms of energy availability. This complex situation came from the lack of adequate reserves of conventional energy sources, such as oil and natural gas [2]. This means that Palestinians have to rely heavily on the high-cost imports for their energy needs. This relatively high cost emerges owing to many factors, including imported vehicle costs and geopolitical factors, which impact the price of energy resources in the region. According to the Palestinian Central Bureau of Statistics [3], the Palestinian transportation sector generated approximately 2,597,000 tons of carbon dioxide equivalent (CO_2 eq.) in 2021, which represents 67% of the total energy emissions among all sectors. Progressively, there is a need for Palestine to shift from petroleum-based energy sources in the transport sector to renewable solutions, as an approach to reducing the environmental impact. Among the most effective approaches is the employment of green marketing to increase interest in purchasing and using hybrid vehicles and EVs. Green marketing is an important practice that is aimed at consumers who are further inclined to products and services that are more environmentally friendly, encouraging others to be so.

Consumer purchasing behaviors refer to the characteristics of cues exhibited by consumers while selecting a specific product [4]. Notably, consumers are currently shifting their focus to products with reduced environmental impact. Therefore, green marketing approaches remain a promising solution for increased sales of hybrid vehicles and EVs [5]. However, promoting the adoption of environmentally friendly solutions requires strategic public awareness of the benefits of green solutions in the transport sector. Engaging the public in sustainable and green transport solutions, and thus promoting the adoption of hybrid vehicles and EVs in the transport sector is still a critical task. In the transport field, green practices focus on establishing clean solutions as the main energy source, facilitating its conservation and reducing emissions [6]. Therefore, green marketing can be used as an effective measure to convince consumers to shift towards hybrid vehicles and EVs when they decide to purchase automobiles. In response, there is an increasing attention to EVs in providing solutions to the public transport sector in Palestine. Hybrid vehicles and EVs are promising candidates for replacing traditional taxis across the West Bank region of Palestine as they are eco-friendlier and more reliable. Furthermore, the growing number of commuters on the road establishes an ideal opportunity for encouraging individuals to shift to hybrid vehicles and EVs. Achieving sustainable development depends on active participation and inclusion in reducing the environmental negative impact through making green sensitive considerations in all activities [7]. Nevertheless, green values remain relatively new to be adopted among Palestinians. In [8], it is explained that electrifying 20% of the freight sector in the West Bank could reduce energy costs by $66 million annually and decrease the CO_2 emissions by 13%, calling for more sharing on the sustainability benefits of the transport solution.

There are a few studies that have explored the environmental and economic benefits of transportation sector electrification in Palestine. The significance of this research basically lies in creating a comprehensive model for assessing the impact of the common green marketing practices of promotion and price support on customer EV purchase intention, whereas the role of GPV as a mediating variable is examined. Studying the impact of green marketing on EV purchase intentions provides valuable insights into consumer behavior in the context of sustainable and environmentally friendly choices. This knowledge can guide marketers and decision makers in automobile dealer firms in tailoring their strategies to align with consumer preferences. Furthermore, studying the impact of green marketing on the customer's intention to purchase EVs in Palestine is crucial for guiding automobile companies (dealers) to develop marketing strategies that are aligned with consumer preferences, environmental regulations, and the overall shift toward sustainable and eco-friendly transportation. Additionally, the results of such research could enable those in governmental positions to either introduce or not incentives and policies to facilitate sustainable practices in the transport sector, including the adoption of EVs. The research findings can provide insights into the effectiveness of such initiatives and identify areas for improvement.

II. LITERATURE REVIEW

A. Sustainability

Sustainability is a concept adopted for the effective planning of ecology for future generations. Butland Commission defines sustainability as "the assurance that human needs are satisfied today without harming the ability to fulfill the needs of a future generation" [9]. According to [10], the main pillars used to understand sustainability are social, economic, and environmental.

B. EVs in Palestine

The automobile industry in Palestine has undergone significant development and transformation over time. Initially, automobile ownership in the region was limited, primarily due to economic and political factors [6]. However, in the late 20th century and early 21st century, there was a noticeable increase in the demand for automobiles. During the early years, vehicle import and manufacturing were hampered by the political instability in the region. Despite the ongoing political challenges, the industry has made significant progress in providing better transportation options for the Palestinian population. Authors in [8] disclosed that Palestine has seen a transformation, that is, an increased awareness regarding environmental and economic factors. This has called for the

adoption of sustainable systems of transport using both electric and hybrid vehicles. However, the occupation of Israel has set restrictions that affect the movement of goods and people within the region [6].

Within the Palestinian context, authors in [2, 6-8], conducted assessments of the future environmental situation in Palestine in case of partial replacing internal combustion engine cars with hybrid vehicles and EVs. The assessments included the anticipated environmental effects, especially the reduction of harmful GHGs and their impact on air quality. Authors in [6] stated that in 2030, substituting 20% of internal combustion engine vehicles with hybrid ones and EVs is projected to result in a decrease of 4.66% in CO_2 emissions and a reduction of 13.31% in N_2O emissions. Authors in [2] indicated that the Palestinian transport market was expected to adopt these sustainable plans as a better model of countering GHGES to the environment. In recent years, the availability of other EVs has also grown, with various automakers offering EV models. However, the higher initial cost of EVs remains a barrier for their widespread adoption in the Palestinian society, and good marketing strategies could play a role in this issue. The electrification of transport includes promoting the use of EVs while regulating environmental pollution and covering the challenge of emissions in Palestine. Palestine is surrounded by unstable political aspects, affecting other transport means, such as railway and air, leaving the road as the main transport option [6].

All these studies recommend that policies targeting the reduction of GHGEs give priority to advancing both public and private transportation systems. They stress the significance of substituting diesel and gasoline vehicles with eco-friendly alternatives, like EVs. However, it is worth noting that none of these or other research studies sufficiently tackle the issue, as they are mainly assessment studies not thoroughly addressing problem-solving measures. There is a notable absence of a discussion regarding the problem from the perspectives of businesses or customer intentions. However, it is hopeful that this research could contribute to directing decision-makers, particularly business managers in the related field, to formulate their marketing strategies accordingly.

C. Green Marketing

Green marketing is a strategy used to promote services and products within the business environment. It involves developing and promoting components that have a reduced environmental impact and appeal to consumers concerned about environmental issues [11]. The focus of the automobile industry is on green marketing practices used to support the sale of eco-friendly vehicles to the environment [12]. The major characteristics of these vehicles will include fuel efficiency, reduced emissions, and energy efficiency. Authors in [13] used descriptive analysis as their main methodology. It was demonstrated that green marketing influences consumer purchase decisions. Green practices are effective in influencing consumer decisions regarding sustainable environmental goals, drawing customer's attention to the fact that green cars will reduce gas emissions, hence contributing to resolving the problem of climate change in the future [14].

D. Green Promotion

Promotion campaigns entail public relations, direct marketing, sales promotion, Green Advertisements (GADV) and Green Education (GEDU) campaigns. Authors in [15] supported that green marketing will involve stakeholder evaluation to attain sustainability and protection of natural resources. They also claimed that green promotion can strengthen the strategic placement to enhance the competitive advantage. Companies can employ green promotion strategies to convey the eco-friendly advantages of their products and services. This can be achieved through advertising environmental attributes, highlighting ongoing sustainability initiatives, and incorporating environmental benefits into their product offerings to raise their customers' environmental awareness and their likelihood to make a purchase [14], with green cars being the leading examples of green products.

E. Green Pricing Support

Green products are frequently priced higher than non-green ones. This does not always imply that they cost more, especially when all expenses are taken into account. Green products typically cost more at the initial stage, but lead to reduced long-term expenses. Regretfully, a comparatively greater up-front expense deters purchases and becomes a barrier for many customers [14]. However, consumers need to be persuaded to pay a higher price through advertisements with strong messages to further justify these necessary activities. Financial incentives are vital for purchasing eco-friendly vehicles, making them more affordable for consumers. In [16], it was found that financial incentives positively influence a country's EVs market share.

F. GPV

Green products undergo evaluation in the eyes of customers, a process known as GPV. In this context, the expectation is that the positive value associated with green products should outweigh the negative, providing customers with ample reasons to choose them. GPV holds particular significance as it marks the starting point for customers' considerations when selecting products [17]. Other works indicated a positive correlation between GPV and Green Purchase Intention (INT), as well as that environmental awareness is heightened through promotional campaigns, and the impact of perceived value on green product adoption intention is substantially increased when accompanied by financial incentives [18].

G. Hypotheses and the Research Model

In the context of the above discussion, the implementation of green price support and green promotion strategies by automotive companies and car dealerships is anticipated to positively impact consumers' intentions to make the decision of purchasing EVs. Additionally, some existing research has consistently indicated the substantial mediating role of GPV in specific green marketing practices and their impact on customer purchase intentions. Consequently, the following hypotheses are aimed to be tested in this research:

H1: Green promotion positively impacts customer EV purchase intention in Palestine.

H2: Green price support positively impacts customer EV purchase intention in Palestine.

H3: Green promotion positively impacts customer GPV of EVs in Palestine.

H4: Green price support positively impacts customer GPV of EVs in Palestine.

H5: GPV positively impacts customer EV purchase intention in Palestine.

H6: GPV positively mediates the relation between promotion support and customer EV purchase intention in Palestine.

H7: GPV positively mediates the relation between green price support and customer EV purchase intention in Palestine.

Figure 1 depicts the research model along with the associated hypotheses. The primary focus is on enhancing the understanding of the impact of green promotion and green price support practices on customer EV purchase intention. It is also suggested that gaining more insights into the relation between such green marketing practices and the role of GPV can lead to a deeper understanding of how these factors contribute to the intention of an individual to buy an EV.

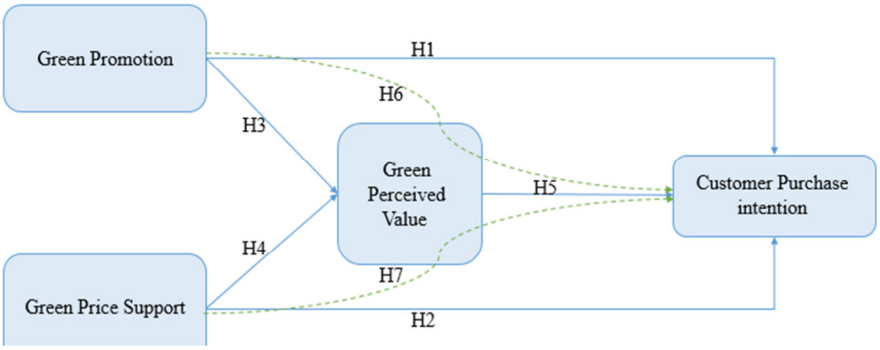

Fig. 1. The research model and proposed hypotheses

III. MATERIALS AND METHODS

A. Methodology

In general, the current research is one of the first exploratory researches that handled the adoption of EVs in Palestine. However, previous researchers have mainly concentrated on assessment studies without thoroughly addressing problem-solving measures. There is a notable absence of discussion regarding the problem from the perspectives of businesses or customer intentions. Accordingly, little is known about the in hand problem. The general exploratory research methodology began with defining a researchable form of the problem of investigating the impact of green marketing practices of green pricing support and green promotion on the customer's intention to purchase EVs, as well as examining the mediating role of GPV on the relation of the mentioned practices and customer's purchasing intention. A critical review of the literature in this field was performed for the related concepts. Based on the literature review, seven main hypotheses were built. For conducting this research, a quantitative methodology was used to examine the relationships among factors that represent an attribute or characteristic of the specified population [19]. An online questionnaire of five sections was designed. The initial section focuses on gathering demographic data, encompassing details, such as age, gender, education, and monthly income. The subsequent sections involve inquiries related to four key constructs: green price support, green promotion, green perceived value, and customer purchase intention. Each of these constructs is composed of multiple indicators. The collected data were analyzed employing the Partial Least Square (PLS) model through Smart- PLS software. PLS-SEM is an effective method used in the data analysis of the current study, as the distribution is not-normal and the sample is relatively small. Thus, it was applied to analyze the data and was mainly divided into two stages: first, the measurement model (outer model) assessment was performed, which includes evaluating reliability and validity measures, and the second stage was the structural model (inner model) assessment, which involves hypothesis testing and model parameter determination. Based on the analysis results, a discussion, a conclusion and related recommendations were introduced.

B. Sampling Techniques and Data Collection

The data required for the empirical assessment of the research model were collected through a well-structured and designed questionnaire. Since the main objective of this research is to examine the impact of green marketing practices of promotion and green price supports on the customer's intention of purchasing EV2 in Palestine, the target population for this study is Palestinians aged of 18 and older which were reached via an online survey. The Thompson formula was employed to acquire a representative sample. At least 385 questionnaires were needed to be distributed as a study sample. However, due to political issues and the related complications that hinder getting the specified sample, a representative sample of 252 respondents was collected and analyzed. The questionnaire comprised five sections. The respondents' demographic data were gathered in the first section. Green promotion practices of GADV, Green Route-Test Drive (GTEST) practices, and GEDU represented the main topic of

the second section. The third section focused on green price support practices of Green Promotional Price (GPP) and Green Financing (GF) programs. The fourth section centered on GPV, while the last section encompassed an inquiry on INT.

C. Measurement Development and Questionnaire Design

In the this research, 27 items were generated to investigate the impact of green promotion and green price support practices, on purchase intention and to assess the mediation role of GPV in the relation of the green practices and customer EV purchase intention. Twelve items were generated to measure green promotion, GADV, GTEST, GEDU, with four items for each. Seven items were used to measure the green price support practices of GPP and GF programs, with three items and 4 items for each, respectively. Five items were utilized to measure the GPV and 4 items were employed to measure the respondent purchase intention. The respondents were asked to choose among the five scores of a Likert scale according to the extent to which their interests, needs, and precaution are affected by the aforementioned practices. The scores were: 1) strongly disagree, 2) disagree, 3) neutral, 4) agree, 5) strongly agree.

IV. RESULT ANALYSIS

A. Descriptive Statistical Analysis

After the data from the 252 survey responses were gathered, organized, and screened through Smart-PLS, they were analyzed. Initially, the data were inputted into an Excel sheet. Following this, they were entered into the Smart-PLS program for analysis. Descriptive statistics of respondent frequency and specific demographic characteristic frequencies were deployed to offer an overview of the data, as described in Table I.

TABLE I. DEMOGRAPHIC DATA

	Item	Options	Frequency	Percentage (%)
1	Gender	Female	119	47.20
		Male	133	52.80
2	Age	18-24	19	7.50
		25-31	81	32.10
		32-38	133	52.80
		39-45	14	5.60
		46 or older	5	2.00
3	Educational level	Less than bachelor degree	29	11.50
		Bachelor degree	161	63.90
		Master degree	57	22.60
		Higher	5	2.00
4	Monthly Income (USD)	<533	28	11.11
		533-933	95	37.70
		934-1333	76	30.19
		1334-1733	19	7.50
		> 1734	34	13.50
		Total	252	100.00

The data of mean standard deviation of the constructs are portrayed in Table II. In order to statistically analyze the data and interpret the results, responses were classified into five scores, which were calculated by dividing the response range by the number of levels (5). The calculation is represented by the following formula: (5-1)/4= 0.8. A score range of [1.00, 1.8) is considered very low, a score range of [1.8, 2.6) is considered low, a score range of [2.6, 3.40) is considered moderate, a score range of [3.4, 4.20) is considered high, and a score range of [4.2-5] is considered very high. A correlation analysis will examine the relationship between green price supports, green promotion practices, GPV, and customer purchase intentions.

TABLE II. DESCRIPTIVE MEASURES OF CONSTRUCTS

Item	Mean	Std. deviation	Effect level
GADV	3.4575	0.8336	High
GTEST	3.5896	0.9115	High
GEDU	3.6226	0.7844	High
GPP	3.6226	0.8971	High
GF	3.5283	0.9337	High
GPV	3.4868	0.8262	High
INT	3.4906	0.7758	High
Total G. Promotion (G. Promotion)	3.5566	0.8502	High
Total G. Price Support (G. Price Support)	3.5755	0.9139	High

B. Assessment of the Measurement Model

The PLS method was used to analyze the collected data applying the Smart PLS software. PLS is a method for modeling structural equations that could help analyze complicated relationships between variables, where traditional regression models face challenges and many shortcomings. To assess the reflective measurement model (inner model), the quality measurements of construct reliability and composite reliability should be examined. The convergent validity is measured by the Average Variance Extracted (AVE). Cross-loadings, Fornell–Larcker criterion, and the Heterotrait–Monotrait ratio (HTMT) are used to describe the discriminant validity.

Convergent validity value is an indication of the degree of correlation among different measures of the same construct, which are positively correlated. In other words, it is an indication of the rate of the correlation between multiple items among a single construct [20]. Meeting these criteria ensures that the indicators effectively represent a measurement of the latent construct and that the construct is considered to have accepted reliability and internal consistency. Reliability measures the consistency among model indicators. The internal consistency is represented by Cronbach's alpha and composite reliability, while the composite reliability examines the consistency of the inner set of indicators for a construct and should be evaluated for all indicators. The composite reliability values are between 0 and 1, the higher the value of CR, the higher is the level of consistency. A value of 0.70 or higher is considered to be acceptable [20]. AVE is calculated by the summation of the value of the squared loadings of the construct items, divided by the number of items. It is acceptable if the AVE value is 0.5 or higher, as this indicates that the underling construct explains more than half of the variance of its entire item [20]. Figure 2 and Table III illustrate the values of these tests, where the convergent validity was confirmed.

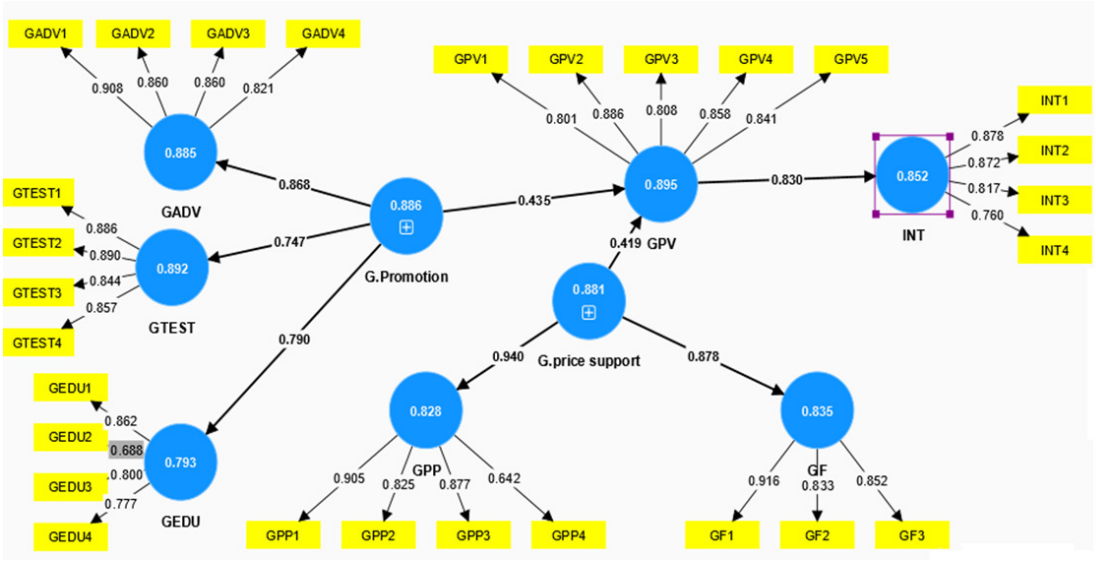

Fig. 2. The utilized measurement model.

TABLE III. MEASUREMENT PROPERTIES OF INDICATIVE CONSTRUCTS

Construct	Number of items	Cronbach's alpha	Composite reliability (CR)	AVE
GEDU	4	0.793	0.816	0.615
GPP	4	0.828	0.832	0.67
GF	3	0.835	0.840	0.753
INT	4	0.852	0.858	0.694
GADV	4	0.885	0.885	0.744
GTEST	4	0.892	0.894	0.756
GPV	5	0.895	0.896	0.705

Outer loading indicates the extent to which the relationship between a construct and its entire item is strong. A higher value of the outer loading suggests that one item has much in common with its latent construct. Smaller outer loadings reveal that the item shares less variance with the underlying latent construct. A common rule of thumb is that a value of 0.708 or higher is an acceptable value. However, a value of 0.6 or higher is accepted in exploratory researches [20]. It has been found that all values of outer loadings are higher than 0.6. This signals a relatively good relationship between a construct and its entire item. Additionally, cross-loadings, Fornell–Larcker criterion, and the HTMT were used to describe the discriminant validity, which refers to the indication of how one construct is empirically different from the others. Additionally, it is a measure of the degree of difference among the overlapping latent constructs. By looking at the cross loading measurement, the factor loading indicators on the assigned construct should have a higher value than its cross loading with other constructs. Also, via cross loading, the discriminant validity measure is confirmed. Another criterion deployed to evaluate discriminant validity is the Fornell–Larcker criterion. This measurement compares the square root of AVE to the correlation among different constructs. One latent construct should be the best explainer of the variance regarding its own entire indicator when compared to the indicators of other latent constructs [21]. This means that the square root of one construct's AVE value should be higher than the correlations with other latent constructs. Table IV presents the Fornell-Lacker measure. It is obvious that the Fornell-Lacker discriminant validity measure is confirmed.

TABLE IV. FORNELL–LARCKER CRITERION

	G. Promotion	G. Price support	GADV	GEDU	GF	GPP	GPV	GTEST	INT
G.Promotion	0.67								
G. Price Support	0.77	0.76							
GADV	0.87	0.62	0.86						
GEDU	0.79	0.55	0.63	0.78					
GF	0.62	0.88	0.48	0.47	0.86				
GPP	0.76	0.94	0.63	0.52	0.66	0.82			
GPV	0.76	0.75	0.59	0.49	0.51	0.80	0.84		
GEST	0.74	0.66	0.42	0.34	0.53	0.64	0.72	0.87	
INT	0.90	0.85	0.74	0.69	0.71	0.82	0.83	0.73	0.83

TABLE V. HETEROTRAIT–MONOTRAIT RATIO (HTMT)

	G. Promotion	G. Price support	GADV	GEDU	GF	GPP	GPV	GTEST	INT
G. Promotion	0.851								0.851
G. Price Support	0.965	0.701							0.965
GADV	0.947	0.619	0.735						0.947
GEDU	0.709	1.039	0.555	0.551					0.709
GF	0.872	1.091	0.743	0.607	0.799				0.872
GPP	0.834	0.826	0.656	0.554	0.593	0.924			0.834
GPV	0.832	0.736	0.476	0.377	0.613	0.755	0.798		0.832
GEST	1.035	0.975	0.861	0.813	0.838	0.98	0.948	0.838	1.035
INT	0.851								0.851

HTMT is an additional criterion to measure discriminant validity. Authors in [22] suggested that the HTMT ratio should be less than 1 to be considered acceptable and indicate good consistency. All calculated HTMT values are listed in Table V. It is apparent that most of the ratios are less than 1 and 3 values are approximately equal to 1, indicating that the discriminant validity is confirmed.

It is worth mentioning that the discriminant validity is evaluated using multiple different methods, not just HTMT ratios. Considering other measures, such as cross-loadings and Fornell–Larcker criterion, they could alter the situation positively.

C. Assessment of the Structural Model

As evidenced above, the reflective measurement model is represented by the measurements of reliability and validity, which are confirmed for the research model. The next step is to analyze and assess the structural model by examining the relationships between constructs through testing the research hypotheses. The main criteria used in PLS-SEM in the assessment of the inner model consist of four key elements: the coefficient of determination (R^2), Path coefficient (β-values), T-statistic values, effect size (f^2), and the predictive relevance of the model (Q^2). R^2 is the main measure utilized to assess the structural model. It represents how much of the variation in a construct could be explained by the connected predictors, R^2 values are within the range from 0 to 1. If the value of R^2 is nearly close to 1, this denotes a high level of predictive accuracy, while the changes in the dependent latent construct are explained by the changes in the independent construct to a greater extent. Conversely, if R^2 is nearly close to 0, it is an indication that there is a very small effect of the changes in the dependent variable, explained by the change in predictor. The values of R^2 for the dependent latent variables of 0.25, 0.5, and 0.75 could be described as high, moderate, and weak, respectively. f^2 expresses the impact of each specified exogenous latent variable on the endogenous construct. It could be another indicator of how much a predictor explains the endogenous latent construct. Authors in [23] stated that values of f^2 equal to 0.02, 0.15, and 0.35, respectively, imply small, medium, and large effect of the exogenous latent construct. In addition to evaluating R^2 and f^2 values, it is required to examine the Stone-Geisser Q^2 criterion. This measure tests the structure model's predictive relevance, representing how the Path model could predict the endogenous variable. The Q^2 value is obtained by the blindfolding procedure. As mentioned in [20], a Q^2 value above zero for a reflective endogenous construct demonstrates that exogenous constructs have predictive relevance for this endogenous construct. Table VI summarizes the results for these measures.

TABLE VI. R^2, COMMUNALITY, AND REDUNDANCY

Endogenous Construct	R^2	R^2 adj	Result	Q^2	f^2	f^2 result
G.Promotion	-	-	-	-	0.183	Medium
G.Price Support	-	-	-	-	0.325	Relatively large
GPV	0.644	0.629	Relatively high	0.241	2.217	Large
INT	0.689	0.683	Relatively high	0.351	-	

After the structure model construct relations were tested by running PLS-SEM algorithm, it is essential to evaluate the model to assess the strength of the relationships among the latent constructs by testing test the β-values. This will be accomplished by running the bootstrapping procedure during which 5000 iterations are applied to the model, as shown in Figure 3. β-values range between -1 and +1. When they are close to +1, this indicates strong positive relationships, whereas the opposite outcome is obtained for the negative values [24]. Figure 3 and Table VII demonstrate the results of the bootstrapping procedure for the structure research model. In order to test the hypotheses and verify the significance of the relationships between the latent constructs, the T-value was determined by running the bootstring procedure with 5000 iterations as sup samples.

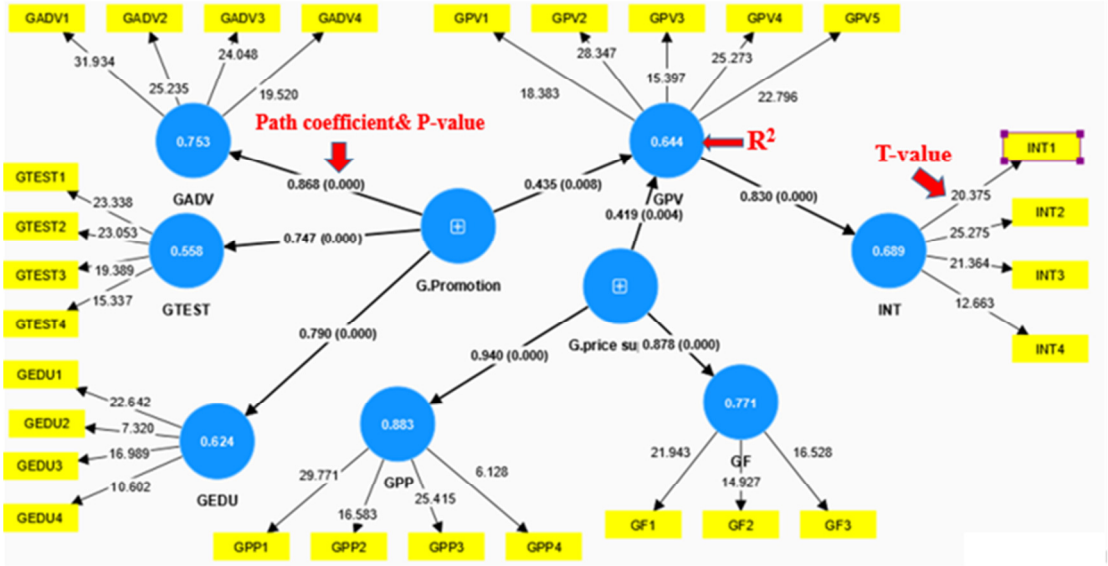

Fig. 3. The PLS bootstrapping model.

TABLE VII. RESULTS OF DIRECT RELATIONS

Path	Hypothesis	β-value	Mean	St Dev	T-value	P-value	Result
G. Promotion →INT	H1	0.508	0.465	0.148	3.441	0.001	Supported
G.Price Support → INT	H2	0.300	0.273	0.140	2.14	0.032	Supported
G.Promotion →GPV	H3	0.435	0.422	0.163	2.664	0.008	Supported
G.Price Support →GPV	H4	0.419	0.437	0.145	2.881	0.004	Supported
GPV→INT	H5	0.830	0.834	0.104	7.947	0.000	Supported

As discussed in [24], the relationship is considered significant when the P-value is below 0.05 and the T-value is equal to or higher than 1.96 at a significance level of 5%.

As observed in Table VII, the analysis results for the proposed hypothesis H1 are: β-value = 0.508, T-value = 3.440, P-value = 0.001, hence H1 is supported. The analysis results for the proposed hypothesis H2 are: β-value = 0.300, T-value = 2.140, P-value = 0.032, hence H2 is supported. This means that there is a significant positive direct relationship between both green promotion practices and green price support practices on customer EV purchase intention. Additionally, the analysis results for the proposed hypothesis H3 are: β-value = 0.435, T-value = 2.664, P-value = 0.008, hence H3 is supported. The analysis results for the proposed hypothesis H4 are: β-value = 0.419, T-value = 2.881, P-value = 0.004, therefore H4 is supported. This means that there is a significant positive relationship between both the green promotion practices and green price support practices on GPV. Furthermore, the analysis results for the proposed hypothesis H5 are: β-value = 0.830, T-value = 7.947, P-value = 0.000, H5 is, thus, supported. There is a positive and significant relationship between GPV and customer purchase intention.

D. Mediating Testing Analysis

The mediation relationship was examined, since assessing the mediator role is of the presented research's significant contributions. Authors in [25] stated that there are two steps in a mediating analysis: First, bootstrapping the indirect effect (total effect), where the relationship between the independent construct and the dependent construct, via the mediator, must be significant. In this research, the relationship between green promotion practices and purchase intention, via GPV was significant. The total effect relation results were β-value = 0.435, T-value = 2.664, P-value = 0.008 for green promotion practices path P12, which is significant, and β-value = 0830, T-value = 7.947, P-value = 0.000 for path P23, which is also significant. The results indicate the significant role of GPV mediator in the relationship between green promotion practices and purchase intention. The total effect relation results, where β-value = 0.419, T-value = 2.881, P-value = 0.004 for green price support practices path P12, which is significant, and β-value = 0.830, T-value = 7.947, P-value = 0.000 for path P23, which is significant. The results once again demonstrate GPV's significance as a mediator in the relationship between green price support practices and purchase intention. Table VIII presents the mediation results.

TABLE VIII. INDIRECT RELATION (MEDIATION) RESULTS

Indirect Effect						
Path	**Hypothesis**	**Mean**	**Std deviation**	**T-Value**	**P-Value**	**Result**
G.Promotion→ INT	H1	0.360	0.157	2.300	0.022	Supported
G.Price Support→INT	H2	0.366	0.131	2.666	0.008	Supported
Bootstrapping the Indirect Effects (Total Effects)						
G.Promotion→ GPV	H3	0.422	0.163	2.664	0.008	Supported
G.Price Support→GPV	H4	0.437	0.145	2.881	0.004	Supported
GPV→INT	H5	0.834	0.104	7.947	0.000	Supported
Specific Indirect Effects						
G.Promotion→GPV→ INT	H6	0.360	0.157	2.300	0.022	Supported
G.Price Support→GPV→ INT	H7	0.366	0.131	2.666	0.008	Supported

In order to test the significance of the GPV mediating effect, the variance accounted for the VAF value is used, representing the ratio between the direct and indirect effects. A VAF value above 80% indicates full mediation, a VAF value of a range of 20%-80% suggests partial mediation, and a value below 20% shows that there is no mediation effect. The VAF value for this research is calculated as: direct effect of green promotion practices on purchase intention = 0.422×0.834=0.350, indirect effect of green promotion practices on purchase intention via green perceived value= 0.361, total effect of green promotion practices on purchase intention = 0.350 + 0.361 = 0.711, and VAF = direct effect/total effect = 0.350/0.711 = 0.49. Consequently, 49% of the total effect of green promotion impact on customer purchase intention is explained via the green perceived value, which points to partial mediation. The analysis results for the proposed hypothesis H6 are: β-value = 0.361, T-value = 2.300, P-value = 0.022. Hence, the indirect effect is significant and H6 is supported. This means that there is a positive mediation relationship for the GPV between green promotion and the customer purchase intention. Furthermore: direct effect of green promotion practices on purchase intention = 0.419×0.834=0.349, indirect effect of green promotion practices on purchase intention via green perceived value= 0.348, total effect of green promotion practices on purchase intention = 0.348 + 0.349 = 0.697, and VAF = direct effect/total effect = 0.350/0.697 = 0.50. Consequently, 50% of the total effect of green support practices impact on customer

purchase intention is explained via customer's green perceived value, which points to partial mediation.

V. DISCUSSION

An effective way to assess the impact of green marketing is by assessing consumer purchasing intention. Understanding this relation leads to the conclusion that the implementation of successful green marketing strategies can directly affect green purchasing intentions and promote responsible purchasing decisions. The proposed model was built based on the literature review, especially on [11], where a conceptual framework was developed to explore the comprehensive influence of green marketing on EV adoption. That is, a conceptual model was developed that assesses the impact of green marketing initiatives on the intentions of prospective EV users. Theoretical contributions and implications for green promotion and green price support were identified, highlighting their substantial role in shaping customer perceptions towards EV.

This research examined the impact of green marketing mix of practices related to green promotion and green price support practices on consumer EV purchase intention with the indirect effect of green perceived value. A mix of specific marketing practices, GADV, GTEST, and GEDU, are representative of the green promotion strategy, while GPP and GF programs represent the green pricing support. The impact on the customer purchase intention was examined in this research. Data were randomly taken from the respondents and were, subsequently, processed through the PLS analysis tool based on the model illustrated in Figure 1. The statistical results of the path analysis, derived from an investigation on the green marketing practices, exhibited that green promotion, green price support, and GPV are positively significant to the purchase intention.

The results also demonstrate a direct positive moderate impact of green promotion on INT, therefore H1 is supported. This is consistent with the findings in [26], according to which companies can employ green promotion strategies to convey the eco-friendly advantages of their products and services through advertising environmental attributes, highlighting ongoing sustainability initiatives, and incorporating environmental benefits into their product offerings. This finding is also consistent with those in [12], where it was revealed that green promotion efforts positively influence the decisions of consumers who are fond of eco-friendly products and services. These efforts persuade consumers to adopt a similar mindset through convincing them that they have the power to affect the environment, just as the environment can shape their behavior.

The results, additionally, disclose that the green price support practice has a relatively moderate direct positive impact on customer intention to adopt EV, therefore H2 is supported. This finding is consistent with findings in [14], where the influence of the green marketing strategy on the growth of green car sales in Jordan was empirically investigated. The study analyzed the data of 332 car dealers during 2010-2014. The results revealed that there is a positive influence of green promotion practices on EV sales, while green price has a negative impact on EV sales. It was claimed that customers will be more inclined to buy an EV when they realize the potential savings associated with a reduced operating cost. It was also concluded that green pricing is a crucial factor in shaping customer intentions to buy EVs and that green price support programs could lead customers to be more likely to consider EVs when they perceive them as cost-effective, thanks to incentives and competitive pricing relative to traditional vehicles. Moreover, the effect of marketing strategies on EV sales was investigated. However, the extent of the sales volume was correlated with customer purchasing decisions. The findings are also in accordance with those in [11], where a conceptual research framework was developed, according to which, green price support practices should be among the suggested green marketing practices, and so affect customer decision of adopting environmentally friendly products, such as EVs, by providing financial incentives, involving rebates, cash discounts, low-interest loan, and maintenance packages to minimize the initial barriers connected with the marketing of these vehicles. The current research results related to the positive impact of green marketing practices on customer EV purchase intention are consistent with those in [16], where it was found that financial incentives are vital for purchasing eco-friendly vehicles, making them more affordable for consumers and that financial incentives positively influence a country's EV market share.

The data analysis results also demonstrate a positive impact of green promotion and green price supporting practices on green perceived value, hence H3 and H4 are supported, with a coefficient of determination R^2 =0.659. This means that 66% of the change in customer perceived value of EV is predicted with the change of green promotion and green price support.

The aforementioned results also exhibit that the GPV positively mediates the relationship between green promotion practices, green price practices, and customer purchase intention, with a relatively high coefficient of determination R^2 =0.689. This means that 69% of the change in customer purchase intention to adopt an EV is predicted with the change of green promotion, free price support, and GPV. The results additionally disclosed a partial mediation role of GPV of 49%-50% for green promotion and green price support practices related to customer purchase intention. This denotes that the 50% of the total effect of green promotion impact on customer purchase intention is explained via GPV, similarly to the effect of green price support, meaning that H6 and H7 are supported. These findings are consistent with the findings in [17], where a research on the mediating role of GPV was conducted. It was shown that GPV holds particular significance, as it marks the starting point for customer considerations when selecting products. Additionally, the findings are consistent with [27], which indicates a positive correlation between GPV and INT. It was stated that as customers place higher value on green products, their trust in purchasing such items also increases. GPV assessment often revolves around a product's functionality, its ability to meet expectations, and its commitment to minimizing environmental impact. Authors in [18] used a quantitative questionnaire method, collecting data from 285 EV users in Korea to identify the significant impact of GPV as a predictor of consumer intention to adopt EVs. The research revealed that economic values are the main motivators

for EV adoption. The present research findings are also in accordance with those in [18], where it was found that environmental awareness was increased by promotional campaigns, and that financial incentives significantly affect driver GPV on purchase intention. The study also demonstrated a significant positive relation between the GPV and EV adoption intention In Korea, concluding that the environmental knowledge is increased by promotional campaigns, and the GPV effect on EV adoption intention is substantially enhanced when accompanied by financial incentives and other green pricing support practices.

VI. CONCLUSIONS

The current research evaluated Green Purchase Intention (INT) through implementing a green marketing mix of green promotion and green pricing support practices. It was conducted on Palestinian customers, having extended the reviewed literature on ecological sustainability. The findings were to a great extent consistent with those of previous reviewed research. It was demonstrated that both green promotion practices and green pricing support have a direct positive impact on customer purchase intention. Additionally, it was revealed that Green Perceived Value (GPV) has a positive mediation role in the relationship between green promotion, green pricing support, and customer purchase intention. Specifically, GPV explained 50% of the total effect of green promotion and green price support practices on customer purchase intention as a partial mediator. In other words, consumers are impacted by the green marketing mix, rendering more environmentally conscious and enhancing their intentions to adopt green vehicles. Thus, GPV has a beneficial impact on consumer purchase intentions. Accordingly, car dealers should build their marketing strategies addressing to Electric Vehicles (EVs), considering promotional campaigns, such as social media advertisements, free test drives, and educational workshops in addition to providing special promotional prices and Green Financing (GF) programs, as they significantly improve the perceived value and customer intention to adopt an EV.

This study makes several unique contributions to the literature on EV adoption in Palestine. Our findings reveal that green promotion, green price support practices, and GPV, all positively influence customer intention to purchase EVs in Palestine. Notably, we found that GPV partially mediates the relationship between green marketing mix practices and purchase intention. These results extend beyond previous environmental assessment studies in Palestine by providing actionable insights for marketing strategies and policy development.

The research also contributes to a deepened understanding of specific green marketing concepts as they are still a relatively new phenomenon in the transportation sector. A comprehensive discussion of the provided practices in the Palestinian context was performed, and thus the literature in this field was expanded.

The current research has a number of practical implications for the managers and owners of automobile dealers and for the decision makers in governmental positions. Decision makers and marketers in the automobile sector should work on enhancing the socio-economic value perception through targeted and specified promotional campaigns to get more conscious environmentally customers. As for governmental contribution, it is crucial in addressing this issue. Based on the present research outcomes, decisions can be formulated that relate to the implementation of programs, legislation, and incentives aiming to encourage citizens to opt for such vehicles. Additionally, collaboration with car dealers can be established to provide them with initiatives to promote these environmentally friendly vehicles.

Future research should build on these findings by exploring additional factors that may influence EV adoption in Palestine, such as infrastructure development and cultural attitudes towards sustainability. Larger-scale studies across different regions of Palestine could provide a more comprehensive understanding of EV market potential. Additionally, longitudinal studies could track how these factors influence actual EV purchases over time, moving beyond purchase intentions to concrete behavior change.

The data were exclusively generated from consumers in Palestine, an occupied country, with an unstable economic situation at both individual and whole community levels. Accordingly, the results of this research may not be easily generalized for other regions, while green marketing is a relatively new and broad phenomenon. The current research performed an examination of a mix of green marketing practices focusing on green promotion and green price support strategies. Other researches may assess the impact of additional related green practices, such as green branding practices and different marketing strategies. In this research, the role of a single mediator, GPV, was examined. Future research could study the mediating effects of other mediators, such as green trust, green awareness, attitudes, and brand image. Furthermore, investigating the government's role as a moderator, could be a significant contributor to this field. Further research directions include testing the moderating effects of consumer characteristics, such as peer influence, self-identification as a green consumer, and self-image. Moreover, Researchers might be interested in conducting longitudinal research to track changes in customer attitudes and behaviors over time. This could help understand the strategic impact of green promotion and green price support practices on customer decision-making.

REFERENCES

[1] IEA, "Transport - Energy System," *International Energy Agency*. https://www.iea.org/energy-system/transport.

[2] H. A. Jafar, I. Shahrour, and H. Mroueh, "Evaluation of Greenhouse Gas Emissions in Conflict Areas: Application to Palestine," *Sustainability*, vol. 15, no. 13, Jan. 2023, Art. no. 10585, https://doi.org/10.3390/su151310585.

[3] "National Greenhouse Gas Inventory in Palestine*, 2021," *Palestinian Central Bureau of Statistics (PCBS*, 2021. https://www.pcbs.gov.ps/Portals/_Rainbow/Documents/Emissions_2021_01.htm.

[4] L. Cui, Y. Wang, W. Chen, W. Wen, and M. S. Han, "Predicting determinants of consumers' purchase motivation for electric vehicles: An application of Maslow's hierarchy of needs model," *Energy Policy*, vol. 151, Apr. 2021, Art. no. 112167, https://doi.org/10.1016/j.enpol.2021.112167.

[5] K. C. Ranjan, H. Kumar, S. K. Mahato, R. Prakash, and S. Gupta, "Accident Avoiding Detection Support System Using Multi Agent System (MAS)," *Advanced Engineering Technology and Application*, vol. 12, no. 1, pp. 17–23, 2023.

[6] F. M. A. Hassouna and K. Al-Sahili, "Future Energy and Environmental Implications of Electric Vehicles in Palestine," *Sustainability*, vol. 12, no. 14, Jan. 2020, Art. no. 5515, https://doi.org/10.3390/su12145515.

[7] F. M. A. Hassouna and M. Assad, "Towards a Sustainable Public Transportation: Replacing the Conventional Taxis by a Hybrid Taxi Fleet in the West Bank, Palestine," *International Journal of Environmental Research and Public Health*, vol. 17, no. 23, Jan. 2020, Art. no. 8940, https://doi.org/10.3390/ijerph17238940.

[8] F. M. A. Hassouna, "Urban Freight Transport Electrification in Westbank, Palestine: Environmental and Economic Benefits," *Energies*, vol. 15, no. 11, Jan. 2022, Art. no. 4058, https://doi.org/10.3390/en15114058.

[9] Y. Politis and E. Grigoroudis, "Incorporating the Sustainability Concept in the Major Business Excellence Models," *Sustainability*, vol. 14, no. 13, Jan. 2022, Art. no. 8175, https://doi.org/10.3390/su14138175.

[10] J. J. Imppola, "Global economy and its sustainability in the globalized world," *SHS Web of Conferences*, vol. 74, 2020, Art. no. 04008, https://doi.org/10.1051/shsconf/20207404008.

[11] A. Bhattacharjee and S. Chakraborty, "The Impact of Green Marketing on Electric Vehicle Adoption: A Critical Sustainability Study in Auto Industry & Model Development," in *Business Research and Innovation*, Gurgaon, India: Management Development Institute, 2021, pp. 231–248.

[12] Z. Tan, B. Sadiq, T. Bashir, H. Mahmood, and Y. Rasool, "Investigating the Impact of Green Marketing Components on Purchase Intention: The Mediating Role of Brand Image and Brand Trust," *Sustainability*, vol. 14, no. 10, Jan. 2022, Art. no. 5939, https://doi.org/10.3390/su14105939.

[13] Md. Nekmahmud, F. Naz, H. Ramkissoon, and M. Fekete-Farkas, "Transforming consumers' intention to purchase green products: Role of social media," *Technological Forecasting and Social Change*, vol. 185, Dec. 2022, Art. no. 122067, https://doi.org/10.1016/j.techfore.2022.122067.

[14] B. M. Eneizan, K. Wahab, and T. Obaid, "Effects of Green Marketing Strategies on Sales Volume of Green Cars," *Singaporean Journal of BuSiness economics, and management Studies*, vol. 5, no. 3, pp. 41–54, 2016.

[15] M. U. Majeed, S. Aslam, S. A. Murtaza, S. Attila, and E. Molnár, "Green Marketing Approaches and Their Impact on Green Purchase Intentions: Mediating Role of Green Brand Image and Consumer Beliefs towards the Environment," *Sustainability*, vol. 14, no. 18, Jan. 2022, Art. no. 11703, https://doi.org/10.3390/su141811703.

[16] W. Sierzchula, S. Bakker, K. Maat, and B. van Wee, "The influence of financial incentives and other socio-economic factors on electric vehicle adoption," *Energy Policy*, vol. 68, pp. 183–194, May 2014, https://doi.org/10.1016/j.enpol.2014.01.043.

[17] D. Alamsyah, W.-Y. Chung, M. Karmagatri, M. Luckieta, and A. Amran, "A Study of Green Perceived Value as Mediation to Green Purchase Intention of Customer," *Journal of Critical Reviews*, vol. 7, pp. 142–146, Jun. 2020, https://doi.org/10.31838/jcr.07.14.25.

[18] M.-K. Kim, J. Oh, J.-H. Park, and C. Joo, "Perceived value and adoption intention for electric vehicles in Korea: Moderating effects of environmental traits and government supports," *Energy*, vol. 159, pp. 799–809, Sep. 2018, https://doi.org/10.1016/j.energy.2018.06.064.

[19] M. A. Kilani and V. Kobziev, "An Overview of Research Methodology in Information System (IS)," *Open Access Library Journal*, vol. 3, no. 11, pp. 1–9, Nov. 2016, https://doi.org/10.4236/oalib.1103126.

[20] J. F. Hair, C. M. Ringle, and M. Sarstedt, "PLS-SEM: Indeed a Silver Bullet," *Journal of Marketing Theory and Practice*, vol. 19, no. 2, pp. 139–152, Apr. 2011, https://doi.org/10.2753/MTP1069-6679190202.

[21] C. Fornell and D. F. Larcker, "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research*, vol. 18, no. 1, pp. 39–50, Feb. 1981, https://doi.org/10.1177/002224378101800104.

[22] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modeling," *Journal of the Academy of Marketing Science*, vol. 43, no. 1, pp. 115–135, Jan. 2015, https://doi.org/10.1007/s11747-014-0403-8.

[23] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences*, 2nd edition. London, UK: Routledge, 1988.

[24] J. F. Hair, G. T. M. Hult, C. Ringle, and M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, CA, USA: SAGE, 2016.

[25] K. J. Preacher and A. F. Hayes, "Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models," *Behavior Research Methods*, vol. 40, no. 3, pp. 879–891, Aug. 2008, https://doi.org/10.3758/BRM.40.3.879.

[26] W. W. A. Dewi, F. Avicenna, and M. M. Meideline, "Purchase Intention of Green Products Following an Environmentally Friendly Marketing Campaign: Results of a Survey of Instagram Followers of InnisfreeIndonesia," *Asian Journal for Public Opinion Research*, vol. 8, no. 2, pp. 160–177, May 2020, https://doi.org/10.15206/ajpor.2020.8.2.160.

[27] Y. Chen and C. Chang, "Enhance green purchase intentions," *Management Decision*, vol. 50, no. 3, pp. 502–520, Jan. 2012, https://doi.org/10.1108/00251741211216250.