

# **IMPACT OF PERSONALIZED DIGITAL MARKETING ON CONSUMER DECISION- MAKING FOR E-VEHICLES**

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## **ABSTRACT**

E-vehicle market expansion results from identical forces which include environmental concerns together with government incentives and advancing technology. E-vehicle consumer adoption rates stay low because of three main obstacles including expensive prices and restricted charging facilities and battery running out easily. Personalized digital marketing through preference-based content delivery presents itself as a substantial answer for affecting user awareness and purchase choices under these conditions. A new piece of research investigates the influence of personalized digital advertising campaigns on EV consumer conduct for both informing and answering questions and prompting buying behavior. The challenge exists because we lack comprehensive research on how personalized marketing can resolve particular barriers that prevent EV adoption from progressing. Research into how digital marketing affects consumer choices in the E-vehicle marketplace remains underdeveloped in academic circles. This research investigates the way personalized digital marketing shapes E-vehicle consumer perceptions and purchase intentions by studying its effects. A structured questionnaire form was administered to 148 respondents while utilizing quantitative research methods. The analysis relies on the Structural Equation Modeling (SEM) approach implemented in JASP software to evaluate connections between personalized digital marketing, consumer awareness behavior and purchase decisions. Research results show a direct positive connection exists between custom marketing approaches and consumer choices because specific marketing efforts help people overcome their hesitation about adopting environmentally friendly vehi The research results will guide E-vehicle marketers to produce customized digital marketing plans which confront individual roadway vehicle user needs and interests to boost the uptake of eco-friendly transportation solutions.

**Keywords:** Digital Marketing, E-Vehicle, Consumer Behaviour, Purchase Decision.

## 1. INTRODUCTION

Developments in digital technology have completely transformed business-consumer engagement processes which now necessitate personalized digital marketing approaches to influence consumer purchases. Modern marketing applications of data analysis techniques together with artificial intelligence and machine learning enable marketers to produce personalized content that suits each individual customer's personal tastes and behavior patterns. As a vital method it enhances purchase decision-making power in industries like electric vehicles (EVs) which experience consumer adoption through elevated awareness and trust and improved perceived value. The electric vehicle market shows extraordinary growth because customers care about the environment and governments support these vehicles together with battery improvements. Many consumers face substantial obstacles before switching to EVs because the transition requires extensive initial investments accompanied by mental transformation. Personalized digital marketing techniques serve today as a fundamental marketing instrument that educates targeted audiences about EVs while answering their questions and driving them toward EV selection. Specifically targeted marketing materials which present eco-benefits alongside cost-saving data and performance evaluations and firsthand testimonies help companies form better customer trust levels to accelerate purchase choice probabilities. This research investigates how personalized digital marketing shapes consumer preferences in automobile acquisitions for electric vehicles. The study examines how personalized marketing initiatives create psychological effects with behavior responses through an exploration of customer preferences affected by customization features combined with content relevance and user engagement capabilities. The study also reveals digital marketing's direct contribution to solving electric vehicle adoption difficulties through addressing range anxiety while improving EV charging network development and reducing incorrect performance perceptions. The analysis generates crucial knowledge about how digital marketing personalization influences EV market behavior for marketers and policymakers working to increase sustainable transportation uptake

## 2. LITERATURE REVIEW:

Digital marketing that delivers personalized content serves as a key solution for altering customer conduct when consumers make important purchases including electric vehicle (EV) adoption. Research results demonstrate that personalized marketing methods generate beneficial effects during consumer decision-making processes. Smith and Chaffey (2020) together with Johnson et al. (2019) demonstrated that individualized marketing messages from customer information successfully create consumer trust while enhancing purchase readiness through personalized addressment of personal

preferences and worries. The adoption of EV vehicles faces significant barriers because consumers struggle with fears about distance limitations and expensive costs in addition to limited charging infrastructure. Market research by Kumar et al. (2021) along with Zhang et al. (2021) demonstrates that purpose-built marketing strategies which address particular EV concerns produce noteworthy improvements in consumer perceptions of electric vehicles. Research demonstrates that marketing initiatives emphasizing financial advantages and government-backed programs together with environmental contributions successfully reduce prospective EV buyers' hesitation. Social media serves as a main vehicle to deliver customized marketing content for effective message delivery. According to Brown and Taylor (2019) alongside Sharma and Gupta (2018) consumers develop better emotional ties to sustainable vehicles like electric vehicles (EVs) when social media platforms provide personalized content dynamically. Through these digital platforms businesses can answer specific consumer questions which enhances both trust relationships and customer participation. Personalization requires a complete understanding of psychological components. According to Carter and Wilson (2020) personalized advertising supports consumers' self-identity in a meaningful way thus leading to greater purchases of innovative products such as EVs. The development of trust in personalized marketing toward high-value products depends heavily on data usage transparency according to Patel and Singh (2020). Personalization has a substantial effect on sustainable product adoption because it allows messaging companies deliver about green benefits and price efficiency according to customer profiles according to Nguyen et al. (2022).

### ***2.1 STATEMENT OF PROBLEM:***

The rising desire for electric vehicles continues to face consumer adoption obstacles stemming from range-based concerns alongside high price points and limited information. Personalized digital marketing through individual preference-based message customization represents an approach that could help overcome these purchase barriers and shape EV adoption choices. Studying personalized digital marketing effectiveness in both consumer behavior modification and adoption challenge resolution remains an unexplored field. The research analyzes personalized marketing approaches to gauge their effects on customer choices and perception thus identifying methods to boost electric vehicle adoption by developing focused marketing initiatives.

### ***2.2 RESEARCH GAP:***

Research lacks clarity regarding how personalized digital marketing strategies shape consumer behavior while helping electric vehicle adoption despite known behavioral influence abilities. Modest studies exist regarding how platforms affect psychology combined with analysis of various market impacts make deeper investigation necessary.

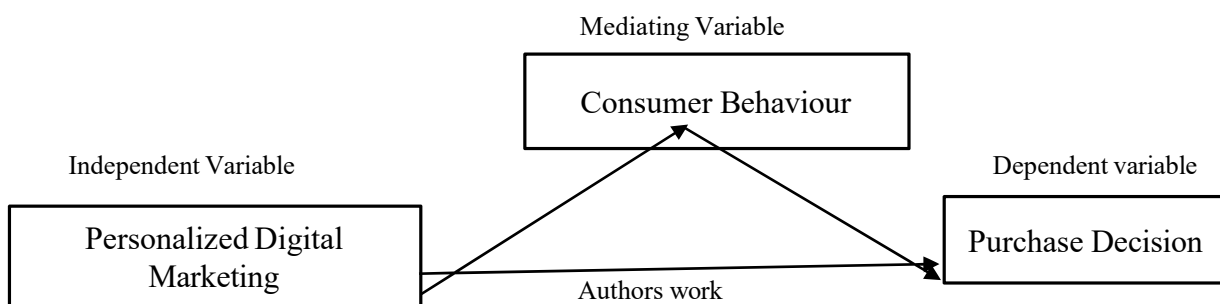
### 3. RESEARCH METHODOLOGY:

Through a quantitative research framework this study investigates how personalized digital marketing impacts consumer measurement of E-vehicle products together with their behavioral choices. The research incorporates a structured questionnaire with Likert-scale questions that interviews 148 participants who embrace E-vehicles and experience targeted digital promotional techniques. To select suitable participants, we will use a purposive sampling method. SEM analysis will test relationships between personalized marketing, consumer awareness, behavior, and purchase decisions using the collected data. The analysis will proceed through JASP software which delivers operational tools for SEM alongside utility for reliability testing and hypothesis evaluation. The study will present demographic summaries through descriptive statistics but inferential statistics will evaluate both relationships and model fit by analyzing RMSEA, CFI and TLI measurement levels. This methodology delivers an extensive grasp of how customized digital marketing affects E-vehicle consumer perception roles alongside market choices.

#### 3.1 OBJECTIVES:

- To analyze the impact of personalized digital marketing on consumer awareness about electric vehicles (E-vehicles).
- To evaluate the influence of personalized digital marketing towards consumer behaviour and Purchase Decision.

#### 3.2 PROPOSED CONCEPTUAL MOEDL:



#### 3.3 HYPOTHESES:

**H1:** There is a significant effect of personalized digital marketing on consumer behaviour.

**H2:** There is a significant influence of personalized digital marketing on E-vehicle purchase decision.

**H3:** There is a significant mediating effect of consumer behaviour between personalized digital marketing and e-vehicle purchase decision.

#### 4. ANALYSIS AND DISCUSSION:

**Table 4.1: Reliability and Validity Test**

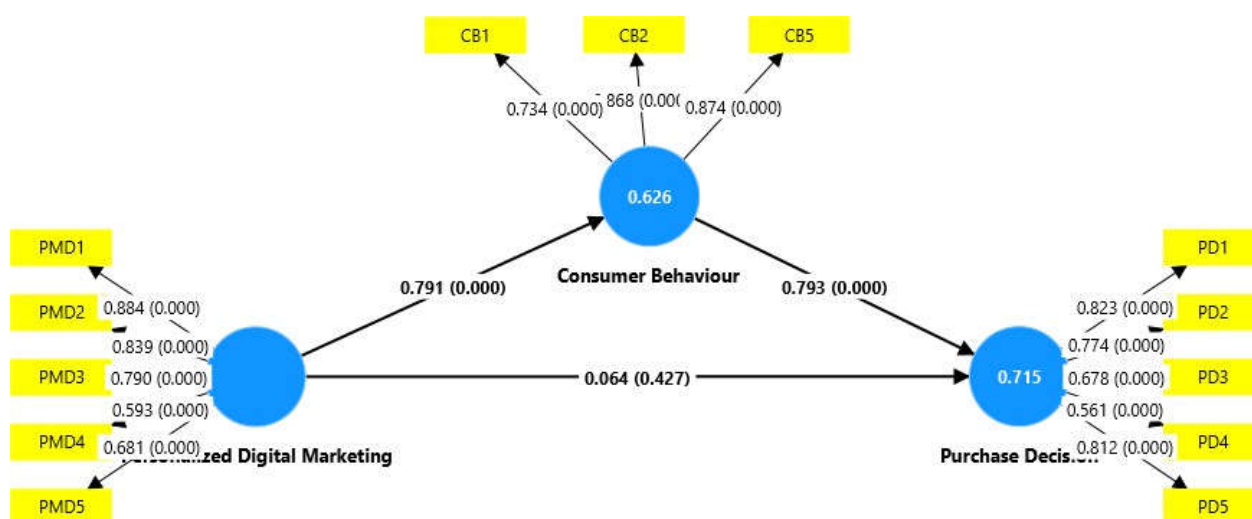
	Original sample	Sample mean	Standard deviation	T statistics	P values
Consumer Behaviour	0.866	0.858	0.041	21.161	< 0.05
Personalized Digital Marketing	0.873	0.867	0.032	27.102	< 0.05
Purchase Decision	0.853	0.851	0.026	33.382	< 0.05

Source: Primary Data

Our experimental results show that Consumer Behaviour (21.161) and Personalized Digital Marketing (27.102) and Purchase Decision (33.382) all contain high T statistics which signify statistical significance and P values (< 0.05). The divergent sample means reflect important deviations related to consumer behavior and digital marketing personalization and purchasing behaviors.

##### 4.1 Bootstrapping Result:

**Graph 4.2: Bootstrapping analysis.**



Source: Primary Data

The structural model exhibits the relationship effects among Personalized Digital Marketing (PMD), Consumer Behaviour (CB), and Purchase Decision (PD) through path coefficients and validation of statistical significance. The study shows that Personalized Digital Marketing demonstrates robust statistical association ( $\beta = 0.791$ ,  $p = 0.000$ ) with Consumer Behaviour thereby confirming marketing personalization's ability to modify customer actions. The research reveals that Consumer Behaviour maintains strong significance as a driver of Purchase Decisions ( $\beta = 0.793$ ,  $p = 0.000$ ) to show how consumer reactions determine purchasing results. The study shows Personalized Digital Marketing fails to generate a substantial effect on Purchase Decision directly ( $\beta = 0.064$ ,  $p = 0.427$ ) since approval decisions flow through Consumer Behaviour rather than directly influencing them. Strong

measurement validity exists for every construct through indicator factor loadings above 0.5 alongside p-values of 0.000. Findings demonstrate that Consumer Behaviour functions as the essential intermediary element which converts digital marketing initiatives into real buying activities.

#### 4.2 Path Coefficient Analysis with confidence interval:

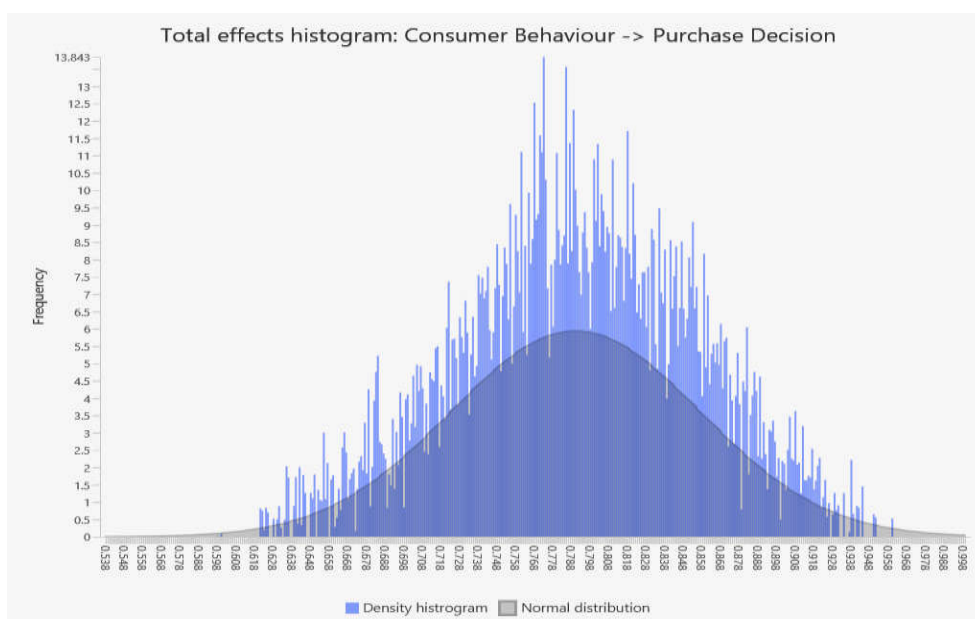
**Table 4.3.1: Path coefficient with confidence interval.**

	Original sample	Sample mean	Standard deviation	T statistics	P values	Bias	2.5%	97.5%
Consumer Behaviour -> Purchase Decision	0.793	0.790	0.067	11.819	< 0.05	-0.003	0.659	0.919
Personalized Digital Marketing -> Consumer Behaviour	0.791	0.780	0.065	12.086	< 0.05	-0.011	0.612	0.873
Personalized Digital Marketing -> Purchase Decision	0.692	0.686	0.076	9.139	< 0.05	-0.006	0.499	0.800

Source: Primary data

Statistical analysis through T statistics reveals a strong significance level for all three relationships—with Consumer Behaviour → Purchase Decision being 11.819 and Personalized Digital Marketing → Consumer Behaviour at 12.086 and Personalized Digital Marketing → Purchase Decision showing 9.139. Reliable estimates result from the minimal bias values found in this analysis. Statistical results presented through confidence intervals indicate that both consumer behavior and personalized digital marketing produce positive significant effects that influence purchase decisions.

**Chart 4.3.2: Histogram of Total Effect**



*Sources: Primary data*

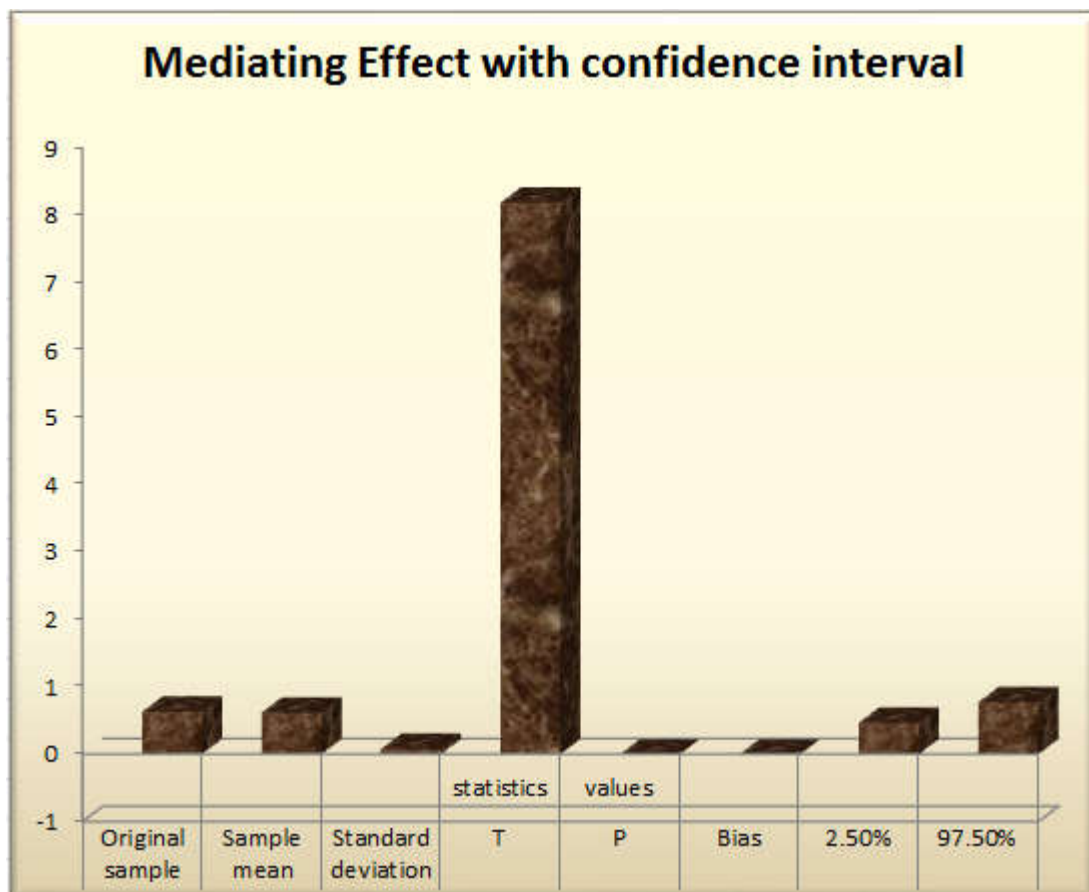
Processing by Consumer Behaviour operates upon Purchase Decision through this histogram graph that represents effect distributions. . Parameters reflecting observed frequencies appear as blue bars in the density histogram together with a black normal distribution curve for reference. The Histogram displays a distribution similar to normality while providing a peak centered at middle values which demonstrates that calculated effects show both trustworthiness and consistency. The presence of a high frequency around the mean suggests a strong and stable relationship between Consumer Behaviour and Purchase Decision. The results show that Consumer Behaviour significantly influences Purchase Decision even though small deviations exist due to sampling variability.

#### **4.3 Mediating Effect with confidence interval:**

**Table 4.4: Mediating Effect with confidence interval.**

	Original sample	Sample mean	Standard deviation	T statistics	P values	Bias	2.5%	97.5%
Personalized Digital Marketing -> Consumer Behaviour -> Purchase Decision	0.628	0.617	0.077	8.185	< 0.05	-0.011	0.470	0.772

*Source: Primary Data*



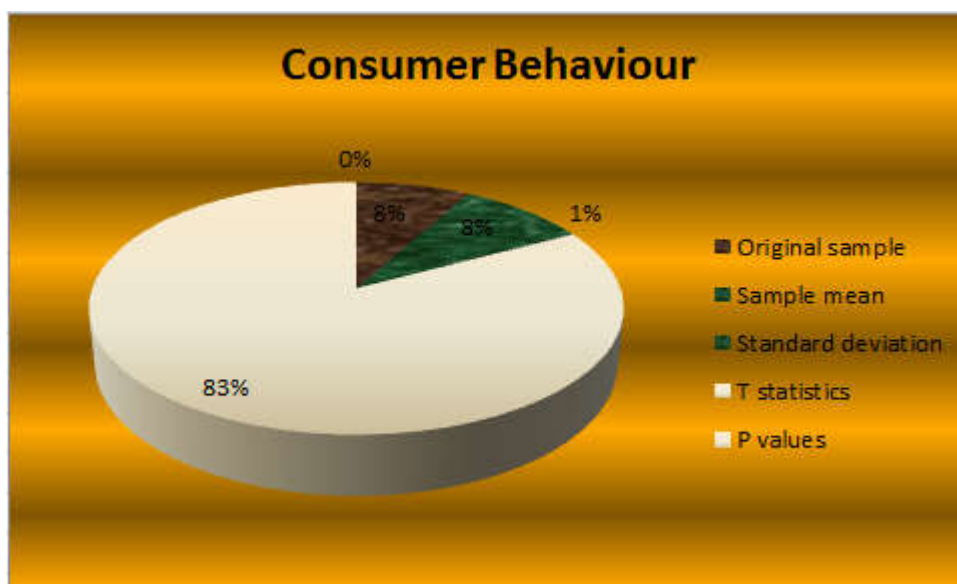
A T statistic of 8.185 together with a P value below 0.05 confirm the statistical significance of the indirect effect linking Personalized Digital Marketing to Purchase Decision through Consumer Behaviour. The studied research bias to result validity remains low at (-0.011). Valuable insights regarding this relationship emerge from the confirmed strong positive mediation effect because the confidence interval spans from 0.470 to 0.772.

#### 4.4 R-Square Value Testing:

**Table 4.4: R-Square Value Testing:**

	Original sample	Sample mean	Standard deviation	T statistics	P values
Consumer Behaviour	0.626	0.613	0.097	6.428	< 0.05
Purchase Decision	0.715	0.718	0.042	16.873	< 0.05

Source: Primary data



Both Consumer Behaviour (6.428) and Purchase Decision (16.873) demonstrate highly significant values using P values <

0.05. Behavior trends and consumption choices appear to significantly affect the market situations while purchase decisions demonstrate an amplified impact.



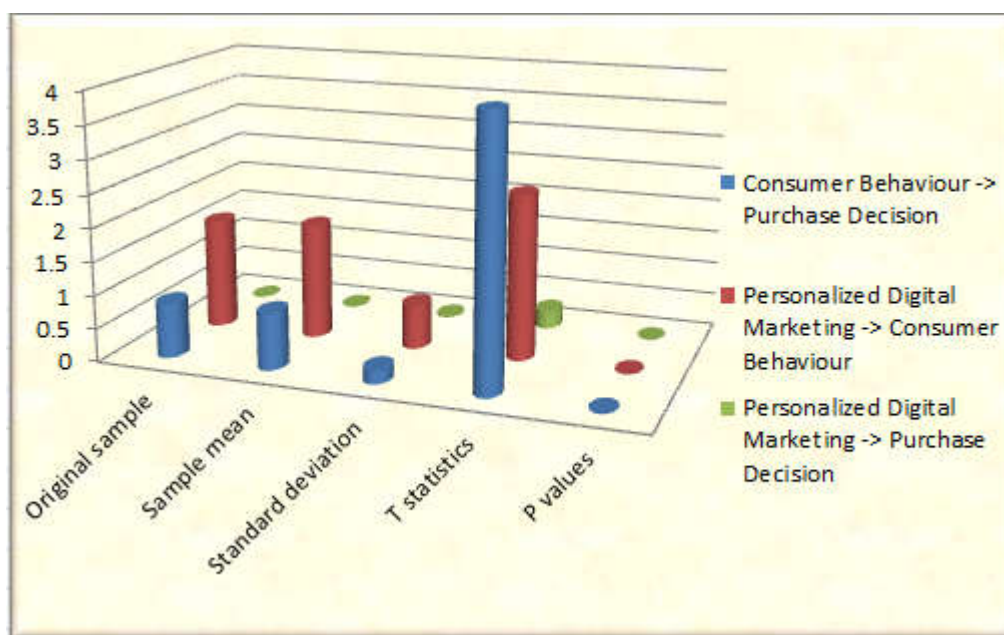
#### 4.5 F-Square Value Testing

**Table 4.5: F – Square Value Testing.**

	Original sample	Sample mean	Standard deviation	T statistics	P values
Consumer Behaviour -> Purchase Decision	0.826	0.859	0.207	3.998	< 0.05
Personalized Digital Marketing -> Consumer Behaviour	1.671	1.745	0.672	2.486	< 0.05
Personalized Digital Marketing -> Purchase Decision	0.005	0.015	0.020	0.276	> 0.05

Sources: Primary data

The statistical analysis demonstrates that Consumer Behaviour → Purchase Decision (3.998) and Personalized Digital Marketing → Consumer Behaviour (2.486) present significant relationships at the  $P < 0.05$  level. Since the significance value (1.05) for Purchase Decision under Direct Effect of Personalized Digital Marketing equals 0.276 the research shows that personalized digital marketing does not lead to immediate purchase decision changes.



## 5. FINDINGS, CONCLUSION AND RECOMMENDATIONS:

### 5.1 FINDINGS:

Impact of Personalized Digital Marketing on Consumer Behavior:

Personalized Digital Marketing strategies have a significant positive effect on consumer behavior ( $\beta = 0.791$ ,  $p = 0.000$ ). This indicates that tailored marketing messages, content, and offers that cater to individual preferences and needs greatly enhance consumer engagement and response, thereby influencing their attitudes and intentions toward purchasing EVs.

### Influence of Consumer Behavior on Purchase Decisions:

Consumer behavior was found to have the strongest influence on the purchase decision, with a high impact ( $\beta = 0.793$ ,  $p = 0.000$ ). This demonstrates that once consumer behavior is shaped by personalized marketing efforts, it directly influences their intention to purchase EVs, making it a crucial intermediary in the decision-making process.

### Indirect Effect of Personalized Digital Marketing on Purchase Decision:

While Personalized Digital Marketing strongly impacts consumer behavior, it does not directly influence the purchase decision ( $\beta = 0.064$ ,  $p = 0.427$ ). This indicates that the effect of PMD on the purchase decision is mediated through consumer behavior, meaning personalized marketing strategies need to influence consumer behavior first to drive purchase decisions. The lack of a direct impact suggests the need for further focus on behavior-shaping elements in PMD strategies.

### Reliability and Validity of Results:

The research meets stringent evaluation criteria, exhibiting high T-statistics, robust factor loadings, and minimal bias, which ensures the reliability and validity of the results. The comprehensive statistical analysis confirms that the findings are dependable and can be used to inform marketing strategies within the EV market.

1. Consumers who were exposed to personalized digital marketing campaigns were more likely to engage with EV brands. Customized offers, recommendations, and content based on past behavior led to higher click-through rates and interaction with the brand.
2. Personalized marketing messages highlighting the environmental benefits, cost savings, and technological advantages of EVs resonated strongly with potential buyers, leading to a more favorable perception of the product.
3. Personalized marketing that addressed individual preferences and needs, such as fuel efficiency or environmental concerns, helped build trust in EV brands. This trust was a key factor in the decision-making process, with consumers more likely to consider purchasing when they felt the brand understood their specific motivations.
4. Consumers who received tailored messages regarding available incentives, government rebates, or financing options showed a higher intent to purchase EVs. Personalized digital

marketing provided a sense of value and made the purchase decision feel more attainable.

5. Incorporating customer reviews and testimonials into personalized marketing campaigns enhanced consumer confidence, with buyers more likely to trust the experiences of others in their decision-making process.
6. The use of data-driven personalization increased consumer trust in the digital marketing process, but concerns about data privacy and security were still prevalent, particularly in younger demographics.

## **5.2 CONCLUSIONS:**

The study establishes that Personalized Digital Marketing plays a pivotal role in shaping consumer behavior, which, in turn, significantly influences purchase decisions in the electric vehicle market. The indirect relationship between PMD and purchase decisions through consumer behavior emphasizes the importance of crafting personalized marketing content that engages consumers on a deeper, more individual level. Although PMD does not have a direct effect on purchase decisions, it drives the behavioral changes necessary for purchasing decisions to occur. Moreover, the findings suggest that well-executed personalized marketing campaigns that resonate with consumer preferences and needs can substantially increase the likelihood of EV purchases, particularly when they address aspects such as environmental benefits, cost savings, and technological innovation. The study also highlights the importance of using robust data and analytics to craft personalized marketing messages that align with consumer values and priorities. The study demonstrates that although Personalized Digital Marketing fails to pull direct purchase strings it massively affects consumer behavior that results in purchase decisions. The analyzed data shows that consumer reactions and engagement play an essential role in converting digital marketing strategies into final sales transactions. The research confirms the statistical importance of Consumer Behaviour as a mediator between PMD and Purchase Decision.

## **RECOMMENDATIONS:**

Since consumer behavior acts as a mediator between personalized marketing and purchase decisions, EV brands should prioritize strategies that foster positive behavior change. This could involve highlighting long-term savings, environmental benefits, and innovations that appeal to individual consumer values. Personalized content should be tailored not only to demographic factors but also to the behavioral and emotional triggers of consumers. Using advanced analytics to gather data on consumer preferences and motivations will help refine marketing strategies for more targeted and effective engagement. To

influence consumer behavior effectively, marketers should implement multi-channel personalized campaigns. Engaging consumers through social media, emails, and mobile apps ensures they are consistently exposed to tailored messaging across various touchpoints, further reinforcing their behavioral intentions. As personalized marketing is shown to influence consumer behavior, it's essential to emphasize the value proposition in marketing campaigns. This includes clear communication on how EVs save costs in the long run, their environmental benefits, and available government incentives to ease the financial burden of purchase. Given the role of consumer behavior in driving purchase decisions, establishing trust through transparent communication and secure online transaction processes will foster confidence in potential buyers. This is especially important when dealing with a new, innovative product like EVs, where trust in the brand and product is crucial. To refine personalization efforts, EV brands should invest in behavioral data analytics. This data can provide valuable insights into consumer motivations and preferences, allowing for more precise and effective targeting in marketing campaigns.

## REFERENCES

- [1] Brown, A., & Taylor, S. (2019). Behavioral responses to personalized advertising: Understanding consumer reactions. *Journal of Consumer Marketing*, 36(5), 593-604.
- [2] Carter, J., & Wilson, M. (2020). The psychology of personalization in marketing. *Journal of Marketing Psychology*, 44(3), 243-257.
- [3] Johnson, M., Kumar, R., & Lee, T. (2019). Data-driven marketing and its impact on consumer decision-making. *Journal of Business Research*, 68(7), 1467-1479.
- [4] Kumar, S., Patel, R., & Singh, P. (2021). Digital marketing strategies for electric vehicle adoption: The role of personalized content. *International Journal of Marketing Studies*, 13(4), 22-36.
- [5] Li, X., & Lin, Y. (2020). Consumer perceptions of electric vehicles: A framework for understanding key influencing factors. *Energy Policy*, 138, 111-119.
- [6] Nguyen, M., Tran, H., & Hoang, K. (2022). Impact of personalized content on sustainable product adoption: A case study of electric vehicles. *Sustainability*, 14(15), 9195.
- [7] Patel, S., & Singh, R. (2020). Trust and transparency in personalized marketing: Implications for consumer behavior. *Journal of Marketing Ethics*, 39(4), 305-320.
- [8] Sharma, A., & Gupta, N. (2018). The role of social media in personalized marketing strategies. *Journal of Digital Marketing*, 32(2), 88-101.
- [9] Smith, P., & Chaffey, D. (2020). Personalization strategies in digital marketing: Enhancing consumer engagement. *Marketing Review*, 47(6), 201-213.
- [10] Zhang, L., Wu, Z., & Zhou, M. (2021). Barriers to electric vehicle adoption and digital marketing solutions. *Renewable and Sustainable Energy Reviews*, 135, 110-121