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HOW DOES PERSONALIZATION OF THE PRODUCTS AFFECT CONSUMERS' ATTITUDES TOWARD THE PRODUCT

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ABSTRACT

In the present marketing landscape, brands are competing for attention, and companies are eager to build closer relationships with their consumers. This study extends the scope of personalization by deeply embedding consumers into the core of the products they engage with, enhancing their experience through personalized interactions. The drivers of consumer interest in personalized products and the ways in which personalization shapes overall experiences remain unclear in existing findings, particularly when consumers exhibit unexpected reactions. The research discusses how product personalization affects consumer's emotions and attitudes toward products, how businesses can effectively utilize product personalization to drive sales growth, and the psychological drivers underlying the influence of product personalization. This approach exceeds the limitations of traditional personalization strategies and unlocks a novel avenue for marketing. Identity engagement is a phenomenon where consumers experience an extreme sense of connection with products that reflect their unique identities. When brands design things that reflect their unique personality, it creates a bond, and this connection is beyond ordinary marketing tricks. This experimental study confirmed that personalized products convey significantly stronger positive attitudes compared to non-personalized products. Identity engagement and product type influence how consumers emotionally engage with and perceive products, shaping their behavior. Personalization is more effective when consumers feel a strong personal connection to the product, allowing marketers to tailor strategies for greater impact and increase their sales. By understanding consumers' individual interests, brands create a feeling that the consumer belongs to their community, not just their market.

Keywords: Attitude towards Product, Emotional Engagement, Identity Engagement, Product Personalization, Product Type

1. Introduction

Consumers now prioritize individuality over simply buying products, compelling brands to adopt personalization strategies to meet these evolving preferences. Technological advancements have made personalized experiences a key marketing tool (Chandra et al., 2022). To succeed, brands must focus on authentic interactions and a consumer-centric approach to build strong relationships, turning satisfied customers into brand advocates. While personalization is widely studied, the factors influencing consumer acceptance and desire for such offerings remain unclear (Herbas & Frank, 2019).

There are conflicts of findings such as inconsistencies between stated intentions and actual behavior of the consumer, psychological drivers behind the personalization's impact on consumer experience, and how businesses can effectively utilize product personalization to drive sales growth. Bridging these gaps through in-depth research and experimentation is very important to understanding the true influence of personalization and its effect on consumer behavior (Lambillotte et al., 2022). To address this, the study aims to examine how product personalization affects consumers' emotional engagement and attitudes towards products, how businesses can effectively utilize product personalization to drive sales growth and find the psychological mechanisms underlying the influence of product personalization (Adel et al., 2023).

2. Literature Review

This study finds the relationship between identity engagement, product type, emotional engagement, and attitude toward products by drawing on two key theories: Uniqueness Theory and Self-Determination Theory (SDT). Uniqueness Theory argues that individuals actively seek to maintain and amplify their sense of individuality, often through products and brands that express their uniqueness and differentiate them from others (Abosag et al., 2020). Meanwhile, SDT underscores the importance of intrinsic motivation and the fulfillment of basic psychological needs like autonomy, competence, and relatedness in driving engagement and behavior (Legault, 2017). The study builds specific hypotheses based on both Uniqueness Theory and Self-determination Theory to further explore this connection.

2.1. Identity Engagement

Identity engagement is defined as the extent to which an individual aligns themselves with a specific social group or community and incorporates this affiliation into their self-concept. This should be significantly impacted by products with unique features, as unique theory suggests (Abosag et al., 2020). To measure identity engagement, we added uniqueness by embedding the respondent's face with the

product and assuming this affects the respondent's emotional engagement, and that identity engagement influences emotional engagement which supported the hypothesis.

H1: The presence of identity engagement would get the consumers emotionally engaged with the product.

Uniqueness theory proposes that a consumer's perception of a product's uniqueness or distinctiveness positively influences their attitude towards that product. This is attributed to the increased value and self-reflection associated with unique products. Further solidifying this link is the concept of identity engagement, which refers to the extent to which a consumer identifies and engages with a specific product. Consumers with higher levels of identity engagement are more likely to see themselves reflected in the product and associate with the beliefs and social expectations through the product (Fernandes & Moreira, 2019). Based on these concepts, the study hypothesizes that identity engagement fosters a more positive attitude towards the product.

H2: Identity engagement influences consumers' attitudes toward the product.

2.2. Product Type

Generic products are the products that are commonly used regardless of personal engagement as opposed to personal products. Personal products refer to items intended for individual consumption or personal use (Prendergast & Marr, 1997). Building on Self Determination Theory (SDT) and its emphasis on fulfilling core needs for autonomy, competence, and relatedness, this study proposes that product type significantly influences emotional engagement (Legault, 2017). Products offering personalization and control satisfy the need for autonomy while providing learning opportunities to enhance competence. Moreover, products fostering social connection address the need for relatedness. Therefore, the study hypothesizes a positive correlation between product type and emotional engagement.

H3: The product type would get the consumers emotionally engaged with the product.

Building on Self Determination Theory (SDT), which emphasizes that fulfilling needs for autonomy, competence, and relatedness fosters positive emotions and meaningful engagement (Ryan & Deci, 2006). This study proposes that product type significantly impacts attitude towards products. Products are offering personalization to satisfy the need for autonomy, while those providing learning opportunities enhance competence. Furthermore, products fostering social connection address the need for relatedness. Therefore, the study hypothesizes a positive relationship between product type and consumer attitude.

H4: The product type influences consumers' attitudes towards the product.

2.3. Attitude Towards Products

Attitude towards a product encompasses a consumer's overall evaluation and emotional response to the product (Kotler & Keller, 2006). This evaluation considers product characteristics and value, leading to positive or negative sentiments. The study suggests that individuals seek products that enhance their sense of uniqueness and value, with emotional engagement fostering stronger connections and improving attitudes. Identity engagement further deepens this bond as individuals align products with their personal values (Ahmadi & Ataei, 2022). While emotional engagement is key, individual values and experiences also significantly influence this relationship.

H5.a: Identity engagement influences attitude towards the product through emotional engagement with the product.

2.4. Emotional Engagement

Emotional engagement is defined as the emotional bond that individuals establish with a particular product or service, which can result in heightened levels of engagement, loyalty, and the cultivation of favorable perceptions toward the product (Fernandes & Moreira, 2019). Consumers form emotional connections with products, significantly influencing their behavior (Cova & Dalli, 2009). Emotional engagement impacts consumer perception, willingness to pay, and recommendation likelihood, and the Uniqueness theory suggests that unique products are more likely to evoke strong emotional engagement in consumers (Petty & Cacioppo, 1986).

H5.b: Product type influences attitude towards the product through emotional engagement with the product.

2.5. Proposed Conceptual Framework

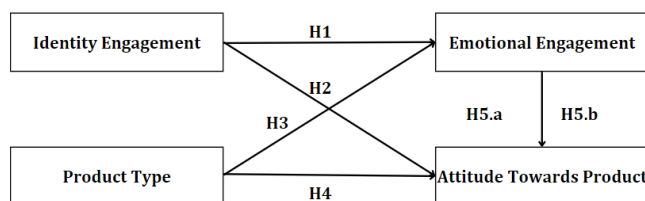


Figure 1: Proposed Conceptual Model.

The study examines the impact of two independent variables, identity engagement and product type, on two dependent variables: attitude towards the product and emotional engagement. In here emotional engagement is a dependent variable and acts as a partial mediator too. The study aims to analyze the direct and interactive effects of independent variables on dependent variables to gain a deeper understanding of their influence on consumer behavior. The direct

effects of identity engagement and product type on attitude towards products are still critical. Even with partial mediation, direct effects can offer valuable insight into the underlying mechanisms.

Analyzing both mediated and direct effects allows for a more thorough understanding of their interplay. Overall, direct effects can enhance the understanding of the relationship by complementing the mediated effects, leading to a more nuanced perspective.

3. Methodology

The study utilized a true experimental design to assess how product personalization affects consumer attitudes and emotional engagement, focusing on two product types 'personal products' and 'generic products', and two identity engagement categories: 'with identity engagement' and 'without identity engagement.' Participants were undergraduate students from the University of Moratuwa's Faculty of Information Technology representing prospective customers. To ensure research validity and reliability, pretest and pilot tests were conducted to refine the instruments (Tanner, 2018). In the main experiment, participants were randomly assigned to different conditions, enabling measurement of the personalization impact while enhancing the reliability of the results. This approach effectively captured the influence on consumer behavior (Bellhouse, 2005).

3.1. Pretest

A pretest was conducted to validate a set of 20 products for an experiment, targeting prospective customers but using a sample of 36 postgraduate students (20 males, 16 females) from the Department of Management of Technology at the University of Moratuwa. The products included personal care (perfume, body wash, moisturizer, shampoo, shaving cream), tech (smartphones, laptops, headphones, tablet, smartwatch), household (air freshener, detergent, kettle, washing powder, vacuum cleaner), and generic items (cement, salt, milk powder, fan, wall clock). Using reliability analyses and factor loading tests, the products were evaluated with dummy image placeholders. Initially, products with the highest average values were selected, aiming for gender-neutral appeal. However, perfume was most preferred by males (Mean 4.84) and smartphones by females (Mean 5.19). A within-subject analysis compared the top six products, leading to the final product set: wall clock, milk powder, fan (Generic) and perfume, smartphone, and smartwatch (Personal). Within-subject analysis was used to accurately compare product preferences by allowing the same participants to evaluate multiple items, reducing individual variability and highlighting distinct preferences across different product categories.

3.2. Pilot Test

The pilot test at the University of Moratuwa's Faculty of Information Technology involved 12 academic staff members to refine the experimental design and process rather than collect data. Conducted in the Behavioral Science Lab with volunteers from three departments, the test admitted a maximum of two participants per day to ensure optimal conditions and minimize disturbances. The focus was on validating the experimental design through internal and external evaluations, including clarity of instructions, time allocation, and bias detection. The successful pilot confirmed the feasibility and effectiveness of the design, leading to its finalization for the main experiment.

3.3. Experimental Conditions

Throughout the experiment, there are four experimental conditions, namely the personalized personal product group, non-personalized personal products group, personalized generic products group, and non-personalized generic products group, serving as the four treatment groups in the study.

In the personalized personal products condition (group 1), respondents randomly assigned to this group will encounter the image of their own face and will be exposed to a set of three personal products. This condition specifically examines the variables of identity engagement (presence) and product type (personal). Moving to the second condition (group 2), the study investigates the absence of identity engagement and the presence of personal product type. Here, respondents will not observe their own face on the product but will be exposed to a set of personal products. Transitioning to the third condition (group 3), the research explores the presence of identity engagement and the product type being generic. Respondents in this group will encounter their own face on the product and will be exposed to a set of generic products. Finally, in the last condition (group 4), the study examines the absence of identity engagement and the generic product type. Respondents in this group will not see their own faces on the product and will be exposed to a set of generic products.

3.4. Real-Time Face Detection

In the experiment, real-time face detection was utilized in conditions 1 and 3 to manipulate identity engagement by integrating participants' faces into product images. Participants assigned to these groups clicked an 'enter' button, activating their webcams to capture their images, which were then isolated and embedded into the visuals. The personalized product images were automatically downloaded as zip files, completing the manipulation without further interaction. This study highlights real-time face detection as an innovative method to enhance identity engagement, offering a more immersive experience compared to personalized content or avatars. Providing dynamic visual

identity acknowledgment fosters a stronger sense of personal recognition and connection, reinforcing participants' feelings that the product representation is genuinely reflective of themselves (Marathe & Sundar, 2011).

3.5. Experimental Design

The chosen experimental approach is a 2x2 factorial design, known for its efficacy in studying the impact of two independent variables on dependent variables. Notably, this design facilitates the examination of interaction effects, where the influence of one independent variable on the dependent variable varies based on the other independent variable. The factorial design incorporates two independent variables: identity engagement and product type, each having two levels. Identity engagement encompasses products with and without identity engagement, while product type includes generic and personal products. The design addresses both levels of these independent variables, namely identity engaged (Present) and non-identity engaged (Absent) for identity engagement, and generic and personal product categories for product type.

The experiment assessed identity engagement by incorporating each respondent's photo while omitting another's to confirm the absence of engagement. This tested identity engagement at two levels: with and without identity engagement. To investigate product type, the experiment used both personal and generic product categories. The 2x2 factorial design included personalized personal products, non-personalized personal products, personalized generic products, and non-personalized generic products.

3.6. Experimental Procedure

Upon arriving at the designated location, participants were seated comfortably and exposed to a series of product images based on their assigned treatment group. The session will commence with a trial image, followed by a neutral video serving as a baseline. Subsequently, participants will be presented with a sequence of product images. Each image will initially appear as a preview, followed by the previewed image accompanied by four statements; I feel rewarded by this product, I feel excited by this product, I feel this product personally appealing to me and I feel this product is designed especially for me. Participants will be required to assess their feelings about the product using the provided scale. This process will continue until the end of the experiment. The anticipated total duration of the experiment, inclusive of preparation time, is estimated to be 15 minutes.

The experiment registered 354 participants in response to an open invitation. Participants were selected based on a volunteer approach, employing the systematic random sampling method. This probability

sampling technique involves selecting members of a population at regular intervals, starting from a random point. By ensuring an equal chance of selection for each population member, this method is commonly used to create a representative sample. To broaden the volunteer base, enhance diversity and motivation, and mitigate participant bias, a poster was designed, advertised, and utilized to encourage volunteer registration within the Faculty of Information Technology.

3.7. Ethical Consideration

Upon arrival at the behavioral science lab, participants were seated and given an information sheet detailing the study's purpose and procedures. After reviewing the sheet and addressing any questions, participants received a consent form outlining their rights, which the researcher explained thoroughly. Participants were then given a minute to relax before the experiment began. Afterward, a debriefing session was held to answer any remaining questions and reassure participants that their photographs would not be used without authorization.

4. Data Analysis

Data analysis revealed a significant connection between identity engagement, product type, and their effects on emotional engagement and consumer attitudes. High identity engagement combined with personalized products led to stronger emotional connections, highlighting the importance of integrating identity engagement into product design and marketing. This approach enhances brand loyalty and purchase intentions, providing businesses with a competitive advantage.

4.1. Demographics

The experiment included a total of 132 respondents, comprising 70 males and 62 females. Regarding age distribution, there were 49 participants in the 18-20 age group, 35 in the 21-23 age group, and 38 in the 24-26 age group.

4.2. Descriptive Statistics

The descriptive statistics for Emotional Engagement reveal a mean value of 3.9025, a standard deviation of 1.20428, and a slightly skewed distribution with a slightly more peaked shape than normal. These findings indicate a moderate level of variability in emotional engagement within the sample. In contrast, the descriptive statistics for attitudes towards products show a mean value of 3.6039, a standard deviation of 1.02538, and a slightly left-skewed distribution with a slightly flatter shape than normal. Similarly, there is a moderate amount of variability in attitudes towards products among the sample.

4.3. Normality Test

Normality test assumption is crucial in statistical analysis, ensuring the validity of tests like t-test, ANOVA, and regression, as it necessitates data to follow a normal distribution: violation of this assumption requires alternative approaches like non-parametric tests or data transformations for maintaining analysis integrity.

Table 1: Normality Test Results for Dependent Variables.

Variable	Treatment Group	Shapiro-Wilk Value
Emotional Engagement	Group 1	0.157
Attitude Towards Product		0.090
Emotional Engagement	Group 2	0.163
Attitude Towards Product		0.658
Emotional Engagement	Group 3	0.864
Attitude Towards Product		0.199
Emotional Engagement	Group 4	0.035
Attitude Towards Product		0.272

Based on the Shapiro-Wilk tests with p-values (except the emotional engagement in group 4) exceeding the 0.05 significance level and fail to reject the null hypothesis that the sample comes from a normally distributed population. Therefore, we can conclude that the sample data is likely normally distributed.

4.4. Equal Group Size

The statistical software program GPower recommended a minimum sample size of 128 participants for an experiment. However, 132 participants were recruited for the study, exceeding the recommended minimum. These participants were then assigned to 4 conditions, with 33 participants in each condition.

4.5. Homoscedasticity Test

In statistics, a homoscedasticity test checks if a dataset's error term variance is constant across all independent variable levels, which is crucial for various tests like linear regression and ANOVA.

Table 2: Homoscedasticity Test Values for Dependent Variables.

Variable	Leven's Test of Equality of Error Variances (Based on Trimmed Mean)
Emotional Engagement	0.443
Attitude Towards Product	0.133

A thorough examination of the data confirmed the presence of homoscedasticity.

4.6. Analysis of Variance

Between-subjects effects tests will determine if the means of groups defined by "Identity Engagement", "Product Type", and their interaction differ significantly on "Emotional Engagement" and "Attitudes Towards Product".

Table 3: Two-by-Two ANOVA Test Results.

Source	Dependent Variable	Significant Value
Identity Engagement	Emotional Engagement	0.502
	Attitude Towards Product	0.009
Product Type	Emotional Engagement	0.000
	Attitude Towards Product	0.000
Identity Engagement*Product Type	Emotional Engagement	0.054
	Attitude Towards Product	0.984

Unfortunately, no evidence was found to support the idea that there is increased emotional engagement due to the identity engagement of the product.

4.7. Pairwise Comparison

Pairwise comparison is a research method used to compare multiple entities.

Table 4: Pairwise Comparison of Variables.

Indep. Var.	Dep. Var.	Identity Engagement (i)	Identity Engagement (j)	Mean Diff	Signif. Level
Identity Engagement	Emotional Engagement	Personal	Non-Personal	0.134	0.502
		Non-Personal	Personal	-0.134	0.502
	Attitude Towards Product	Personal	Non-Personal	0.435	0.009
		Non-Personal	Personal	-0.435	0.009
Product Type	Emotional Engagement	Personal	Generic	0.739	0.000
		Generic	Personal	-0.739	0.000
	Attitude Towards Product	Generic	Personal	0.696	0.000
		Personal	Generic	-0.696	0.000

Emotional engagement plays a vital role in fostering positive attitudes toward products, highlighting the need for product design and marketing strategies that evoke positive emotions, even without personal connections. The study found that personalized products significantly boost emotional engagement compared to generic products, positioning personalization as a key strategy for enhancing user experience and brand loyalty. While both identity engagement and product type impact consumer behavior, their effects on emotional

engagement and attitudes are more intricate than initially expected, indicating a need for further research. Hypotheses H2, H3, and H4 were supported, while H1, H5a, and H5b were not. The findings emphasize emotional engagement as a crucial driver of consumer attitudes, suggesting brands should leverage personalized design to foster positive user experiences.

The analysis indicated no significant relationships among Identity Engagement, Emotional Engagement, Product Type, and Attitudes Towards the Product, with P-values of 0.502, 0.054, and 0.984, respectively, leading to the failure to reject the null hypothesis. Potential unexamined variables may influence results but could be too subtle for the current sample size to detect, suggesting the need for larger samples or more sensitive measures. Future research should enhance understanding of these relationships by increasing sample sizes, refining measurement tools, controlling confounding variables, and exploring non-linear relationships to clarify interactions.

5. Conclusion

This study provides valuable insights into consumer behavior and the effectiveness of product personalization strategies. The findings suggest that personalization can be more effective for consumers who feel a stronger personal connection to the product, indicating that marketers can leverage this connection to enhance the effectiveness of their strategies. The findings show that personalized products significantly boost emotional engagement compared to generic products, highlighting the positive impact of personalization on consumer attitudes. This addresses the research question of how product personalization influences emotional engagement and attitudes. For businesses, leveraging data-driven personalization strategies can drive sales growth, as emotional engagement is identified as the key factor shaping consumer attitudes which answers the research question of psychological drives underlying the influence of product personalization. This opens opportunities for brands to leverage personalized product design to elevate the user experience, strengthen customer relationships, and ultimately drive sales growth. Despite limitations like potential biases and unexamined variables, the research provides a strong foundation for understanding identity engagement in product personalization. Future studies should focus on exploring different contexts, using diverse methods, and considering ethical aspects to better analyze the relationship between identity, personalization, and consumer behavior.

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