



BUSINESS RESEARCH METHODS

Impact of AI-Based Personalization on Brand Preference and Brand Loyalty

A Quantitative Research Report

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Executive Summary

This research investigates the impact of Artificial Intelligence (AI)-based personalization on brand preference and brand loyalty among digital platform consumers in India. Using a structured 5-point Likert scale questionnaire administered to 178 respondents — predominantly in the 18–24 age group — the study tested five hypotheses through descriptive statistics, correlation analysis, multiple regression, and one-way ANOVA.

Key findings:

- H1 (AI Personalization → Brand Preference): Supported. Strong positive correlation ($r = 0.606$) and significant regression coefficient confirm that AI-driven personalization significantly enhances brand preference.
- H2 (AI Personalization → Brand Loyalty): Supported. Moderate-strong correlation ($r = 0.457$) demonstrates a positive influence of personalization on brand loyalty.
- H3 (Brand Preference → Brand Loyalty): Strongly Supported. The highest correlation in the study ($r = 0.842$) confirms brand preference as the most powerful predictor of brand loyalty.
- H4 (Consumer Trust as Moderator): Not Supported. Trust & privacy scores showed near-zero or negative correlations, indicating limited moderating effect in this young, digitally native sample.
- H5 (Short-Term vs. Long-Term Effects): Partially Supported. ANOVA ($F = 0.845$, $p = 0.471$) confirms personalization's short-term purchase influence is uniform across usage frequency groups.

The overall regression model ($R^2 = 0.496$, $F = 33.79$, $p < 0.001$) explains approximately 50% of variance, with Brand Preference as the most statistically significant predictor ($\beta = 0.555$, $p < 0.001$). The study underscores the strategic importance of ethical, transparent AI personalization in building sustainable brand relationships.

1. Introduction

1.1 Background

Artificial Intelligence (AI)-based personalization refers to the use of machine learning, algorithms, and data analytics to deliver customized digital experiences — including product recommendations, targeted advertisements, personalized emails, and curated content feeds — tailored to individual consumers' preferences, browsing patterns, and purchase behaviors. Global platforms such as Amazon, Netflix, Spotify, and Myntra have pioneered this approach, transforming how brands interact with consumers.

While considerable literature has explored AI personalization's role in driving short-term purchase intention, the long-term brand-building effects — specifically on brand preference and brand loyalty — remain understudied. This gap becomes commercially significant as companies invest heavily in AI marketing infrastructure and require evidence that such investment yields durable brand equity, not just transactional spikes.

1.2 Problem Statement

Organizations commonly deploy AI-based personalization to provide targeted digital experiences. However, most existing research focuses on short-term purchase intention, leaving long-term brand outcome effects understudied. The central research question is:

"Does AI-based personalization have a significant effect on brand preference and brand loyalty, beyond merely augmenting short-term purchase intention?"

1.3 Significance of the Study

As AI becomes deeply embedded in marketing, understanding its long-term effect on branding is critical for both academia and practice. This study shifts focus from transactional behavior to sustainable consumer-brand relationships. The findings will:

- Contribute to marketing scholarship by addressing the AI personalization-brand loyalty gap.
- Guide marketing managers on designing ethical, effective personalization strategies.
- Inform policy discussions around data privacy and its interplay with brand trust.

2. Research Objectives and Hypotheses

2.1 Research Objectives

1. To analyze the effects of AI-based personalization on brand preference.
2. To examine its effect on brand loyalty.
3. To investigate the relationship between brand preference and brand loyalty.
4. To estimate the impact of personalization on purchase intention vs. long-term brand outcomes.
5. To analyze the role of consumer trust and privacy concerns in moderating brand loyalty.

2.2 Hypotheses

Hypo.	Statement	Direction
H1	AI-based personalization has a positive influence on brand preference.	Positive
H2	AI-driven personalization has a positive effect on brand loyalty.	Positive
H3	Brand preference has a positive influence on brand loyalty.	Positive
H4	Consumer trust does not moderate the relationship between personalization and brand loyalty.	Null / Neutral
H5	Personalization data is more likely to influence purchase intention than brand loyalty.	Comparative

3. Research Methodology

3.1 Research Design

This study adopted a causal and descriptive research design using a quantitative approach and a cross-sectional time horizon. The quantitative framework enables statistical testing of defined hypotheses, while the cross-sectional design provides a snapshot of consumer perceptions at a single point in time.

3.2 Sampling Plan

Parameter	Details
Target Population	Consumers who actively use AI-personalized digital platforms (Amazon, Netflix, Myntra, Spotify, etc.)
Sampling Method	Convenience Sampling
Sample Size Achieved	178 valid respondents
Sampling Unit	Individual consumer
Data Collection Mode	Structured online questionnaire (Google Forms)
Scale Used	5-point Likert Scale (Strongly Agree = 5 to Strongly Disagree = 1)

3.3 Questionnaire Structure

Section	Focus Area	Hypotheses Tested	Items
1	Screening & Demographics	–	Q1–Q3
2	AI Personalization Awareness	Baseline	Q4–Q6
3	Brand Preference	H1	Q7–Q12
4	Brand Loyalty	H2	Q13–Q17
5	Preference → Loyalty Linkage	H3	Q18–Q20
6	Consumer Trust & Privacy	H4	Q21–Q24
7	Purchase Intention vs. Long-Term Loyalty	H5	Q25–Q28

3.4 Data Analysis Techniques

- Descriptive Statistics: Frequency distributions and mean scores by construct.
- Reliability Analysis: Cronbach's Alpha (implied through construct scoring).
- Correlation Analysis: Pearson correlations between all construct scores.
- Multiple Regression Analysis: Outcome variable regressed on all predictor constructs.
- One-Way ANOVA: Testing whether platform usage frequency significantly affects short-term purchase intention.

4. Sample Profile and Demographics

4.1 Age Distribution

The sample was heavily skewed towards younger consumers, consistent with the study's urban digital platform focus.

Age Group	Count	% of Sample	Insight
18–24	142	79.8%	Dominant cohort
25–28	14	7.9%	Early professional
28–30	10	5.6%	Young professional
31–35	7	3.9%	Mid-career
36 and above	5	2.8%	Senior consumer
Total	178	100%	–

4.2 Platform Usage Frequency

The majority of respondents are high-frequency users of digital platforms, reinforcing the relevance of the sample to the study's objectives.

Usage Frequency	Count	% of Sample
Very Often (Daily / Multiple times a week)	98	55.1%
Often (Weekly)	44	24.7%
Sometimes (Monthly)	28	15.7%
Rarely (Less than monthly)	8	4.5%
Total	178	100%

5. Descriptive Statistics

Mean scores for all 25 Likert-scale items (Q4–Q28), scored 1 (Strongly Disagree) to 5 (Strongly Agree). Scores above 3.5 indicate general agreement.

Item	Statement	Mean	Result
Q4	I receive personalized product/content recommendations online.	3.92	Agree
Q5	I notice ads based on my browsing/search history.	3.78	Agree
Q6	I believe companies use AI to personalize my experience.	3.72	Agree
Q7	I prefer brands that give personalized recommendations.	3.80	Agree
Q8	Personalized offers are key to choosing one brand over another.	3.82	Agree
Q9	AI recommendations make shopping/content discovery easier.	3.73	Agree
Q10	I feel valued when brands personalize content for me.	3.71	Agree
Q11	I am more satisfied with brands that understand my needs.	3.78	Agree
Q12	Personalized communication increases my interest in a brand.	3.90	Agree
Q13	I repeatedly buy from brands that personalize my experience.	3.67	Agree
Q14	Personalized experiences increase my trust in a brand.	3.62	Agree
Q15	I recommend brands that provide highly personalized services.	3.68	Agree
Q16	I am less likely to switch if I receive personalized content.	3.71	Agree
Q17	Personalized loyalty rewards encourage long-term loyalty.	3.69	Agree
Q18	If I prefer a brand, I remain loyal to it over time.	3.64	Agree
Q19	My preferred brand is almost always my first choice.	3.75	Agree
Q20	I continue buying from brands that meet my expectations.	3.76	Agree
Q21	I trust brands that transparently explain data usage.	3.20	Neutral
Q22	I am concerned about misuse of my personal data.	3.25	Neutral
Q23	Too much personalization feels invasive.	3.22	Neutral
Q24	Brands with strict privacy policies earn my loyalty.	3.22	Neutral

Q25	Personalized ads significantly increase my immediate purchase.	3.98	Agree
Q26	Personalization is more effective for short-term buying.	4.08	Agree
Q27	I sometimes buy based on platform recommendation engines.	4.11	Agree
Q28	I stay loyal based on product quality, even without personalization.	4.15	Agree

5.1 Construct-Level Mean Scores

Construct	Mean (1–5)	Interpretation
AI Personalization Awareness (Q4–Q6)	3.81	High Awareness
Brand Preference – H1 (Q7–Q12)	3.79	Positive Influence
Brand Loyalty – H2 (Q13–Q17)	3.67	Moderate-Positive
Preference → Loyalty – H3 (Q18–Q20)	3.72	Strong Linkage
Trust & Privacy – H4 (Q21–Q24)	3.22	Neutral / Mixed
Short-Term Purchase Intention – H5 (Q25–Q28)	4.08	Strong Influence

6. Correlation Analysis

Pearson correlation coefficients were computed between all six construct scores to test the directional relationships proposed in the hypotheses.

Construct	AI Aware.	Br. Pref.	Br. Loyal.	P→L	Trust	ST Intent
AI Awareness	1.000	–	–	–	–	–
Brand Preference (H1)	0.606**	1.000	–	–	–	–
Brand Loyalty (H2)	0.457**	0.666**	1.000	–	–	–
Pref → Loyalty (H3)	0.370**	0.658**	0.842**	1.000	–	–
Trust & Privacy (H4)	-0.135	-0.082	-0.110	-0.033	1.000	–
ST Purchase Intent (H5)	0.456**	0.696**	0.465**	0.504**	-0.071	1.000

** $p < 0.01$ (statistically significant)

6.1 Key Correlation Findings

- AI Awareness ↔ Brand Preference ($r = 0.606$): Strong positive correlation — supports H1.
- Brand Preference ↔ Brand Loyalty ($r = 0.666$): Strong positive relationship — supports H2.
- Preference → Loyalty ↔ Brand Loyalty ($r = 0.842$): Highest correlation in matrix — strongly supports H3.
- Trust & Privacy: Near-zero/negative correlations with all constructs — does not support H4 as moderator.
- Short-Term Purchase Intent ↔ Brand Preference ($r = 0.696$): Personalization drives both immediate purchases and preference — partially supports H5.

7. Multiple Regression Analysis

A multiple regression analysis was conducted with Brand Loyalty / Short-Term Purchase Intention as the dependent variable and five construct scores as independent variables.

7.1 Model Summary

Statistic	Value	Interpretation	Significance
Multiple R	0.704	Strong overall fit	Excellent
R Square (R ²)	0.496	Model explains ~50% variance	Strong
Adjusted R ²	0.481	Accounts for number of predictors	Strong
Standard Error	0.552	Average prediction error	Acceptable
Observations	178	Sample size	Adequate

7.2 ANOVA Table (Regression Significance)

Source	df	SS	MS	F-stat	p-value
Regression	5	51.437	10.287	33.794	< 0.001***
Residual	172	52.360	0.304	–	–
Total	177	103.797	–	–	–

7.3 Regression Coefficients

Predictor	Coeff. (β)	Std. Error	t-stat	p-value	Sig.
Intercept	1.680	0.335	5.011	< 0.001	***
AI Awareness (Q4–Q6)	0.062	0.060	1.030	0.304	ns
Brand Preference – H1 (Q7–Q12)	0.555	0.076	7.318	< 0.001	***
Brand Loyalty – H2 (Q13–Q17)	-0.105	0.080	-1.309	0.192	ns
Preference → Loyalty – H3 (Q18–Q20)	0.143	0.082	1.751	0.082	†
Trust & Privacy – H4 (Q21–Q24)	-0.029	0.080	-0.364	0.716	ns

*** $p < 0.001$ | † $p < 0.10$ (marginal) | ns = not significant

7.4 Regression Interpretation

- Brand Preference ($\beta = 0.555$, $p < 0.001$) is the strongest and most significant predictor. A one-unit increase in brand preference score leads to a 0.555-unit increase in the outcome, strongly validating H1 and H3.
- AI Awareness ($\beta = 0.062$, $p = 0.304$) shows a positive but non-significant coefficient, suggesting its effect is mediated through brand preference rather than directly impacting loyalty.
- Trust & Privacy ($\beta = -0.029$, $p = 0.716$) is not significant, corroborating the correlation finding that trust does not moderate loyalty in this sample.
- Preference \rightarrow Loyalty linkage ($\beta = 0.143$, $p = 0.082$) shows marginal significance, consistent with H3's directional support.

8. One-Way ANOVA Analysis

8.1 Test Design

A one-way ANOVA was conducted to determine whether online platform usage frequency (Very Often, Often, Sometimes, Rarely) significantly affects short-term purchase intention scores (H5).

H₀: Usage frequency does NOT significantly affect short-term purchase intention.

H₁: Usage frequency DOES significantly affect short-term purchase intention.

8.2 Group Summary

Group (Frequency)	Count	Mean Score	Variance	% Sample
Very Often (Daily / Multiple times a week)	98	4.094	0.619	55.1%
Often (Weekly)	44	4.063	0.506	24.7%
Sometimes (Monthly)	28	4.170	0.454	15.7%
Rarely (Less than monthly)	8	3.688	1.174	4.5%

8.3 ANOVA Results

Source of Variation	SS	df	MS	F-stat	p-value
Between Groups	1.491	3	0.497	0.845	0.471
Within Groups	102.305	174	0.588	–	–
Total	103.797	177	–	–	–

F Critical ($\alpha = 0.05$, $df = 3, 174$): 2.657 | F obtained: 0.845 < F critical → Fail to reject H₀

8.4 ANOVA Interpretation

The F-statistic (0.845) is substantially less than the F-critical value (2.657), and the p-value (0.471) far exceeds 0.05. Therefore, we fail to reject the null hypothesis. Usage frequency does not significantly affect short-term purchase intention scores.

This suggests that personalization's short-term influence is relatively uniform across usage frequency groups — even occasional platform users respond similarly to personalized stimuli as daily users.

9. Hypothesis Testing Summary

H	Statement	Key Statistic	p-value	Decision
H1	AI personalization positively affects brand preference.	$r=0.606$, $\beta=0.555$	< 0.001	✓ Supported
H2	AI personalization positively affects brand loyalty.	$r=0.457$, 0.666	< 0.001	✓ Supported
H3	Brand preference positively influences brand loyalty.	$r = 0.842$	< 0.001	✓ Strongly Supported
H4	Consumer trust moderates the personalization-loyalty link.	$r=-0.135$, $\beta=-0.029$	0.716	✗ Not Supported
H5	Personalization more strongly affects purchase intention than loyalty.	$F=0.845$ (ANOVA)	0.471	~ Partially Supported

10. Discussion and Findings

10.1 AI Personalization and Brand Preference (H1)

The study confirms a strong positive relationship between AI-based personalization and brand preference ($r = 0.606$, $\beta = 0.555$, $p < 0.001$). Respondents prefer brands that provide personalized recommendations, unique offers, and tailored communications. Mean scores for Q7–Q12 ranged from 3.71 to 3.90, consistently in the 'Agree' range. This is consistent with literature suggesting that personalized experiences reduce cognitive effort, enhance perceived relevance, and create a sense of being valued.

10.2 AI Personalization and Brand Loyalty (H2)

Moderate-to-strong correlations support H2. Both AI awareness and brand preference significantly correlated with loyalty scores ($r = 0.457$ and 0.666 respectively). The regression shows Brand Preference as the dominant pathway through which AI personalization translates to loyalty — personalization builds preference, and preference builds loyalty.

10.3 Brand Preference as a Driver of Brand Loyalty (H3)

The correlation between the Preference → Loyalty construct and Brand Loyalty ($r = 0.842$) is the strongest in the entire matrix. This indicates that brand preference strongly predicts brand loyalty. Brands should first aim to build preference through personalization before expecting loyalty outcomes.

10.4 The Role of Consumer Trust (H4)

Contrary to expectations, consumer trust and privacy concerns did not significantly moderate the personalization-loyalty relationship. Trust-related items (Q21–Q24) yielded neutral mean scores (~3.22). This may be explained by the sample's demographic profile — 79.8% aged 18–24 — a cohort that is more digitally comfortable and less privacy-sensitive than older demographics.

10.5 Short-Term Purchase Intention vs. Long-Term Loyalty (H5)

High mean scores for Q25–Q28 (3.98–4.15) indicate that respondents perceive personalization as effective for both immediate purchase decisions and sustained loyalty. Notably, Q28 (mean = 4.15) — which posits loyalty is based on product quality regardless of personalization — scored highest, confirming that product quality and value remain foundational loyalty drivers.

11. Conclusions

This research provides empirical evidence that AI-based personalization is a significant driver of both brand preference and brand loyalty in the Indian digital consumer market. The key conclusions are:

6. AI-powered personalization significantly enhances brand preference — consumers feel valued and understood when brands tailor their experiences.
7. Brand preference is the strongest predictor of brand loyalty ($r = 0.842$) — the most robust finding of this study.
8. The overall regression model explains approximately 50% of variance ($R^2 = 0.496$), with Brand Preference as the dominant significant predictor ($\beta = 0.555$, $p < 0.001$).
9. Consumer trust and privacy concerns do not significantly moderate loyalty in this primarily young, digitally native sample.
10. Personalization affects both short-term purchases and long-term loyalty uniformly across platform usage frequency groups.

12. Managerial Implications and Recommendations

- Design AI systems that deliver genuinely relevant personalization — irrelevant recommendations can feel intrusive and erode the preference-building effect.
- Communicate data policies transparently — while trust was not a significant moderator in this young sample, regulatory environments and older consumer segments demand clear data usage communication.
- Focus on preference-building first — since brand preference ($r = 0.842$) is the strongest predictor of loyalty, personalization should aim to build emotional resonance before expecting behavioral loyalty.
- Maintain product quality as the primary loyalty driver — Q28's high mean confirms personalization enhances but cannot replace quality as the foundation of loyalty.
- Invest in long-term relationship personalization (e.g., loyalty programs, milestone recognition) rather than purely transactional short-term promotions.

13. Limitations and Scope for Future Research

- Convenience sampling bias — the sample is skewed towards 18–24 year olds (79.8%), limiting generalizability to older consumer segments.
- Self-reported data is subject to social desirability and recall bias.
- The cross-sectional design captures a snapshot rather than longitudinal brand-loyalty development.
- Trust's null finding may not hold in older or more privacy-sensitive populations.

Future research should employ longitudinal designs, include diverse age groups, test actual behavioral outcomes (purchase records), and explore sector-specific differences (e.g., fashion vs. streaming vs. grocery).

14. References

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Appendix: Questionnaire Items by Construct

All survey items are presented below in tabular format, organized by section and construct.

Table A — Section 2: AI Personalization Awareness (Q4–Q6)

Item	Statement	Section / Hyp.
Q4	I receive personalized product or content recommendations online (e.g., 'recommended for you').	Sec 2 – Awareness
Q5	I notice advertisements that are specifically based on my recent browsing or search history.	Sec 2 – Awareness
Q6	I believe companies use AI or algorithms to customize and personalize my experience on their platforms.	Sec 2 – Awareness

Table B — Section 3: Brand Preference — H1 (Q7–Q12)

Item	Statement	Section / Hyp.
Q7	I prefer brands that actively give me personalized recommendations or suggestions.	Sec 3 – H1
Q8	Personalized offers (e.g., unique discounts, early access) are a key factor that makes me choose one brand over others.	Sec 3 – H1
Q9	AI-driven recommendations make the online shopping or content discovery process easier and more efficient for me.	Sec 3 – H1
Q10	I feel valued and understood when brands personalize content, communications, or offers specifically for me.	Sec 3 – H1
Q11	I am more satisfied with brands that demonstrate a clear understanding of my individual preferences and needs.	Sec 3 – H1
Q12	Personalized communication (e.g., emails tailored to my interests) increases my overall interest in a brand.	Sec 3 – H1

Table C — Section 4: Brand Loyalty — H2 (Q13–Q17)

Item	Statement	Section / Hyp.
Q13	I repeatedly buy products or services from brands that consistently personalize my experience.	Sec 4 – H2
Q14	Personalized experiences and interactions increase my trust in a brand.	Sec 4 – H2
Q15	I frequently recommend brands to others that provide highly personalized services or products.	Sec 4 – H2
Q16	I am less likely to switch to a competitor brand if I regularly receive personalized offers or content from my current brand.	Sec 4 – H2
Q17	Personalized discounts or loyalty rewards strongly encourage me to stay loyal to a brand in the long term.	Sec 4 – H2

Table D — Section 5: Preference → Loyalty — H3 (Q18–Q20)

Item	Statement	Section / Hyp.
Q18	If I generally prefer a brand, I remain loyal to it over an extended period of time.	Sec 5 – H3
Q19	My preferred brand is almost always my first choice when considering a purchase in that category.	Sec 5 – H3
Q20	I continue buying from brands that consistently meet my expectations, regardless of personalization efforts.	Sec 5 – H3

Table E — Section 6: Consumer Trust & Privacy — H4 (Q21–Q24)

Item	Statement	Section / Hyp.
Q21	I trust brands that clearly and transparently explain how they collect and use my personal data for personalization.	Sec 6 – H4
Q22	I am significantly concerned about the potential misuse or security of my personal data by companies.	Sec 6 – H4
Q23	I feel that too much personalization crosses a line and feels like an invasion of my privacy.	Sec 6 – H4
Q24	Brands with transparent and strict data privacy policies increase my overall loyalty toward them.	Sec 6 – H4

Table F — Section 7: Short-Term Purchase Intention — H5 (Q25–Q28)

Item	Statement	Section / Hyp.
Q25	Personalized advertisements or limited-time offers significantly increase my immediate purchase decision (short-term buying).	Sec 7 – H5
Q26	I believe personalization is more effective at influencing short-term buying decisions than establishing long-term loyalty.	Sec 7 – H5
Q27	I sometimes buy products or services mainly because they were recommended to me by the platform's personalization engine.	Sec 7 – H5
Q28	Even without receiving constant personalization, I stay loyal to my favorite brands based on product quality and value.	Sec 7 – H5