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Understanding Consumer Engagement in AI-Powered Social Media: A Structural Analysis of Personalization, Trust, and Privacy

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ABSTRACT: Artificial Intelligence (AI) has transformed social media marketing through advanced personalization techniques, enabling brands to deliver customized content, targeted advertisements, and product recommendations. This study investigates the influence of AI-driven personalization on consumer behavior on social media platforms, focusing on the mediating role of customer trust and the moderating role of privacy concern. A quantitative research approach was adopted using a structured questionnaire administered to 250 active social media users. Data were analyzed using SPSS through descriptive statistics, correlation, regression, mediation, and moderation analyses. The findings reveal that AI-driven personalization has a significant positive effect on customer engagement and purchase intention. Customer trust was found to partially mediate the relationship between AI personalization and purchase intention, indicating that personalized experiences translate into buying behavior primarily through trust in AI systems. Privacy concern showed a significant negative impact on consumers' acceptance of AI-enabled personalization and weakened the positive effects of personalization on trust and behavioral outcomes. Perceived transparency of AI systems enhanced customer trust and reduced privacy concerns, highlighting the importance of ethical and transparent data practices. The study contributes to existing literature by integrating personalization, trust, and privacy into a unified framework for understanding consumer behavior in AI-driven social media environments. From a managerial perspective, the results emphasize that organizations must balance technological

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innovation with responsible data management and trust-building strategies. By prioritizing transparency and consumer privacy, businesses can maximize the benefits of AI personalization, strengthen customer relationships, and achieve sustainable engagement and growth in digital markets.

INTRODUCTION

Artificial Intelligence (AI) has rapidly emerged as a transformative force in digital marketing and consumer behaviour research, fundamentally reshaping how brands engage with individuals online. In the scholarly article "Artificial Intelligence and Consumer Behaviour on Social Media: A Study of Personalization, Trust, and Privacy", Rajesh Kumar Srivastava and Vijayashri Gurme (2026) explore the mechanisms through which AI influences consumer psychology, decision-making, and behavioural intentions within social media environments. This article, published in Measurement: Digitalization (Volume 5, March 2026), provides a rigorous empirical analysis of the interplay between AI-enabled personalization, consumer trust, and privacy concerns—three central constructs that define contemporary digital marketing interactions. At its core, Artificial Intelligence refers to computational systems endowed with the capability to perform tasks traditionally associated with human intelligence, including pattern recognition, predictive analysis, and autonomous decision-making. In the context of social media marketing, AI technologies manifest as recommendation engines, adaptive content feeds, chatbot interfaces, and sentiment analysis tools that dynamically interpret and respond to user behaviour in real time. These systems collect and process vast amounts of user data, ranging from click patterns and browsing history to expressed preferences and engagement signals, enabling highly personalized interactions between users and digital platforms.

The integration of AI into social media has ushered in an era of algorithmic personalization, wherein marketing messages, product suggestions, and content sequences are meticulously tailored to match individual user profiles. This level of personalization enhances relevance and often leads to more efficient consumer decision-making processes by reducing search costs, increasing perceived usefulness, and aligning user experiences with individual motivations. As a result, brands are better positioned to capture attention, foster engagement, and cultivate long-term loyalty among their target audiences. This technologically driven personalization comes with significant ethical implications, particularly in the realms of consumer trust and privacy. While personalized digital interactions can bolster consumer satisfaction and strengthen brand relationships, they also raise critical concerns about data transparency, algorithmic opacity, and the potential for invasive data practices. These concerns have become increasingly salient as consumers grow more aware of how their personal information is collected, analyzed, and leveraged by sophisticated AI systems embedded within social media platforms. Srivastava and Gurme's (2026) study is motivated by the need to understand these dual dimensions—the benefits of personalization and the risks associated with privacy intrusion—and to determine how they shape consumer behaviour. The research identifies a crucial gap in existing literature: although AI's technical capabilities are widely discussed, there is limited quantitative evidence linking AI personalization with consumer trust and privacy perceptions within an integrated theoretical framework. To address this gap, the authors draw on three well-established paradigms in behavioural and technology research: Trust Theory, the Technology Acceptance Model (TAM), and Privacy Calculus Theory. Trust Theory is used to conceptualize how perceptions of transparency, fairness, and reliability influence consumers' willingness to engage with AI technology. TAM provides insights into how perceived usefulness, ease of use, and technology transparency affect user attitudes toward AI systems. Privacy Calculus Theory, meanwhile, suggests that consumers make rational evaluations of the benefits of data personalization against the perceived costs of potential privacy breaches. By integrating these frameworks, the study offers a comprehensive model that explicates the cognitive, affective, and ethical dimensions of AI-mediated consumer behaviour. A central premise of the study is that AI-enabled personalization acts not merely as a passive technological feature but as an active psychological stimulus, altering consumer perceptions and behaviour. In traditional marketing contexts, personalization often meant segmenting audiences into broad categories and offering generalized tailored content. In contrast, AI-driven personalization operates at the individual level, continuously adapting recommendations based on real-time learning of user preferences. Retailers use these systems to anticipate consumer needs, streamline product discovery, and enhance user satisfaction. Predictive algorithms may analyze a user's previous interactions with a brand to present product suggestions that align with latent preferences, thereby increasing the likelihood of purchase and fostering a deeper sense of brand affinity. This dynamic and iterative personalization process facilitates a more seamless consumer journey from awareness to purchase and, ultimately, to post-purchase loyalty.This

personalized engagement also introduces concerns about data privacy and ethical transparency. As AI systems amass complex behavioural profiles of users, concerns about who controls this data, how it is used, and whether users have meaningful consent over such usage become critically important. The inherent opacity of many AI algorithms—where decision logic is neither visible nor understandable to users—further complicates trust dynamics. Consumers may appreciate the convenience and relevance of personalized experiences while simultaneously feeling uneasy about data proliferation and algorithmic surveillance.

Srivastava and Gurme's research underscore that privacy concerns are not peripheral but central determinants of consumer behaviour. Their findings indicate that while perceived personalization enhances brand loyalty and positive behavioural intentions, privacy fears can directly undermine these benefits by eroding consumers' trust. Rather than acting as simple moderators, privacy and ethical concerns often reshape how consumers interpret and respond to AI-driven marketing messages. Methodologically, the study employs a quantitative research design, collecting structured data from active social media users through surveys. The sample, drawn from individuals familiar with AI-enabled features, ensures that responses reflect informed perceptions rooted in actual experiences with AI on platforms like Facebook, Instagram, and TikTok. Using rigorous statistical techniques including regression modeling, the authors test hypothesized relationships among key constructs—AI personalization, trust, privacy concerns, and consumer outcomes such as engagement and loyalty.

The results reveal that perceived personalization and trust positively influence consumer engagement and brand loyalty, affirming that AI can enhance the effectiveness of marketing strategies by aligning brand messages with individual preferences. Yet privacy concerns exert a significant negative impact, weakening trust and potentially diminishing the overall effectiveness of AI interventions. These findings affirm that for AI to be effective in marketing contexts, organizations must balance technological innovation with ethical responsibility. The study's theoretical contributions are multifold. By integrating Trust Theory, TAM, and Privacy Calculus Theory, Srivastava and Gurme provide a nuanced understanding of how AI personalization intersects with consumer psychology and ethical evaluations. They extend the literature by demonstrating that privacy concerns are not merely moderating factors but integral determinants that influence behavioural outcomes. This reconceptualization represents an important contribution to consumer behaviour research, particularly in the context of digitally mediated interactions where ethical issues cannot be ignored. From a managerial perspective, these insights have significant implications. Marketers and AI system designers must recognize that consumer trust hinges not only on the quality and relevance of personalized content but also on transparent data practices and ethical AI deployment. Ethical considerations, such as clear consent mechanisms, explainable algorithmic processes, and robust data protection policies, are essential to cultivating sustainable consumer confidence. Brands must communicate their data practices clearly and proactively to address consumer apprehensions. Increased transparency and user agency over data collection can reduce skepticism and build stronger long-term relationships between consumers and brands. As AI technologies continue to evolve and permeate digital marketing ecosystems, these ethical commitments will not only mitigate risks but also confer competitive advantages through enhanced consumer trust and loyalty.

Srivastava and Gurme's (2026) study offers critical empirical evidence on the transformative role of AI in shaping consumer behaviour on social media. By examining personalization, trust, and privacy in tandem, the research illuminates both the benefits and challenges of AI-mediated marketing. Its integrative framework provides a roadmap for future research and practice, emphasizing that responsible AI deployment must account for psychological, ethical, and behavioural dimensions to foster meaningful and sustainable consumer engagement in the digital era.

LITERATURE REVIEW

The rise of Artificial Intelligence (AI) in digital marketing has sparked extensive research on how intelligent systems influence consumer behaviour—especially within the dynamic environment of social media. Scholars have focused on how AI-enabled personalization affects consumer trust, perceived usefulness, purchase intentions, and privacy perceptions. Central to this literature are theoretical models such as the Technology Acceptance Model, Trust Theory, and the Privacy Calculus Framework, which explain how consumers negotiate the benefits and risks of algorithmic personalization. Research consistently shows that AI personalization significantly shapes consumer perceptions and trust, which in turn influence behavioural outcomes. For instance, Rahman (2025) conducted a systematic literature review on AI-driven personalization strategies and found that personalized content enhances consumer engagement and brand loyalty. However, privacy concerns act as a significant moderating factor that can erode consumer confidence when ethical data practices are absent. The study emphasizes that trust

is cultivated only when personalization aligns with transparent handling of consumer data, underscoring the critical balance between relevance and privacy.

Complementing this, Teepapal (2025) applied an S-O-R (Stimulus-Organism-Response) model to investigate AI-driven personalization in social media engagement. The study confirmed that AI stimuli (e.g., algorithmic recommendations and tailored ads) positively influence consumer perceived usefulness and trust. Trust, in turn, mediates the relationship between personalized AI features and consumer engagement. Notably, privacy concern appeared as a challenge alongside the positive effects of personalization, reinforcing the notion that trust and usefulness are central psychological mediators in consumer responses. Another empirical study by Syed Faiz Ali (2025) investigated how AI personalization affects purchase intentions and consumer engagement. Using structural equation modelling, Ali found that AI personalization significantly enhances trust, which then increases purchase intention and engagement behaviours. Importantly, privacy concerns negatively impacted trust levels. This research reinforces the idea that trust is the key psychological link between AI personalization and desirable consumer outcomes. Although personalization drives relevance and efficiency in consumer interactions, a significant body of literature highlights the personalization–privacy paradox: as AI becomes more capable of tailoring experiences, consumers simultaneously exhibit heightened privacy concerns.

Sindhu and Preeti (2024) examined consumer perceptions of targeted advertising on social media and found that 68 % of participants prioritized privacy over personalization benefits. This paradox illustrates a critical tension: while many consumers appreciate personalized experiences, a majority remain uncomfortable with extensive data collection practices. This study also demonstrates that demographic factors such as age influence the balance between privacy risk and acceptance of personalization. Ahire (2025) explored the relationship between AI personalization, consumer trust, and perceived privacy risk. Results indicated that while personalization increases convenience and brand engagement, it also heightens privacy risk perceptions. Trust serves as a mediating variable: when brands uphold transparent and ethical data practices, consumers are more likely to accept personalization despite privacy concerns. Otherwise, perceived privacy risks can erode the trust necessary for further engagement and loyalty. A systematic review of AI-enabled customer experiences by Mulyono & Saputra (2025) emphasized the conditional nature of personalization benefits, showing that privacy concerns, algorithmic bias, and lack of transparency often lead to value destruction rather than value creation in consumer experiences. The review suggests that customer value depends not solely on personalization intensity but on trust-enhancing, ethical alignment. A series of quantitative studies have examined how AI personalization affects key consumer outcomes such as trust, satisfaction, brand loyalty, and purchase intent. Sipos (2025) investigated AI-powered personalization in e-commerce and found that personalization boosts trust and satisfaction, which in turn positively influences purchase intent. Despite increased engagement, privacy concerns remained critical and could undermine the long-term effectiveness of AI personalization strategies.

Lu Wang et al. (2025) studied AI personalization specifically within social media marketing contexts and found that tailored recommendation systems significantly strengthen purchase intention and brand loyalty. However, the study also highlighted those ethical issues—particularly transparency and privacy—play a critical role in shaping consumer trust, which in turn influences behavioural outcomes. The authors argue that marketers must address privacy issues proactively to sustain customer trust over time. Consumer trust and privacy perceptions vary across cultural contexts and influence how AI personalization is received globally. A cross-cultural study published in Advances in Consumer Research (2025) examined AI personalization effects on trust in three markets: North America, Europe, and East Asia. Findings revealed that trust levels differ significantly across cultures, with East Asian consumers showing higher overall trust compared with Europeans, underscoring the importance of cultural norms in shaping responses to algorithmic personalization. The study also reported that concerns about privacy influenced trust and online purchase behaviours, suggesting that personalization strategies must be contextually sensitive. Beyond consumer psychology, ethical considerations and regulatory contexts shape how AI personalization is implemented. Studies emphasize that ethical data practices—including transparency, informed consent, and algorithmic accountability—are central to maintaining consumer trust. Research on the impacts of AI-assisted personalized advertising reveals that ethical concerns moderate consumer behaviour outcomes, highlighting the need for frameworks that address not only marketing effectiveness but also moral and legal dimensions. Ali, Aziz, and Yasin (2025) argue that responsible AI use enhances acceptance and trust while mitigating consumer mistrust associated with privacy and bias. Studies of AI personalization in different regional contexts (such as consumer behaviour research from Uttar Pradesh, India) reiterate that consumers weigh the benefits of personalization against the perceived costs of privacy invasion. Many consumers express a willingness to share personal data in exchange for relevant experiences, while others avoid data disclosure entirely due to privacy

concerns, further illustrating the personalization–privacy paradox. Several theoretical models have been applied to explain how consumers navigate the personalization–privacy trade-off. The Privacy Calculus Theory suggests that consumers engage in a cognitive trade-off between perceived benefits (e.g., convenience, relevance, engagement) and privacy risks associated with data disclosure. Many empirical studies support this model, showing that privacy cost perceptions significantly influence consumer trust and ultimately affect behavioural intentions such as purchase, loyalty, and continued engagement.

The Technology Acceptance Model (TAM) has traditionally focused on perceived usefulness and ease of use, researchers now extend it to incorporate ethical transparency, data control, and privacy concerns to better explain consumer acceptance of AI systems. Trust theory also plays a critical role, positing that trust is built on perceptions of competence, transparency, and fairness. These frameworks collectively deepen our understanding of how AI personalization influences complex psychological and behavioural responses.

Objective

1. To examine the impact of AI-driven personalization on consumer engagement and purchase intentions on social media platforms.
2. To analyze the role of consumer trust in shaping responses to AI-based marketing communications.
3. To evaluate how privacy concerns, influence consumers' acceptance of AI-enabled personalization.
4. To study the relationship between AI personalization, trust, and brand loyalty among social media users.
5. To identify key ethical factors affecting consumer behaviour in AI-powered social media marketing.

Scope and Significance of the study

1. The study focuses on understanding how Artificial Intelligence tools such as personalized advertisements, recommendation systems, and chatbots influence consumer behaviour on social media platforms.
2. It examines important consumer outcomes including engagement, purchase intention, satisfaction, and brand loyalty in AI-driven digital environments.
3. The research analyzes the impact of AI-based personalization on consumers' preferences, decision-making processes, and overall online experience.
4. It investigates the role of consumer trust in accepting AI-enabled marketing strategies and maintaining long-term relationships with brands.
5. The study evaluates privacy concerns related to data collection and algorithmic transparency and their effect on consumer attitudes.
6. The findings contribute to academic literature by combining personalization, trust, and privacy into a single framework for understanding AI-influenced consumer behaviour.
7. The results provide practical insights for marketers and businesses to design ethical, transparent, and effective AI-powered marketing strategies.
8. The research supports policymakers and platform developers in promoting responsible AI usage and strengthening data protection measures for consumers.

Hypotheses

1. **H1:** AI-driven personalization has a significant positive effect on consumer engagement on social media platforms.
2. **H2:** Consumer trust in AI-based systems positively influences purchase intention and brand loyalty.
3. **H3:** Privacy concerns have a significant negative impact on consumers' acceptance of AI-enabled personalization.
4. **H4:** Consumer trust mediates the relationship between AI personalization and purchase intention.
5. **H5:** Higher perceived transparency of AI systems leads to greater consumer trust and reduced privacy concerns.

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Conceptual Framework

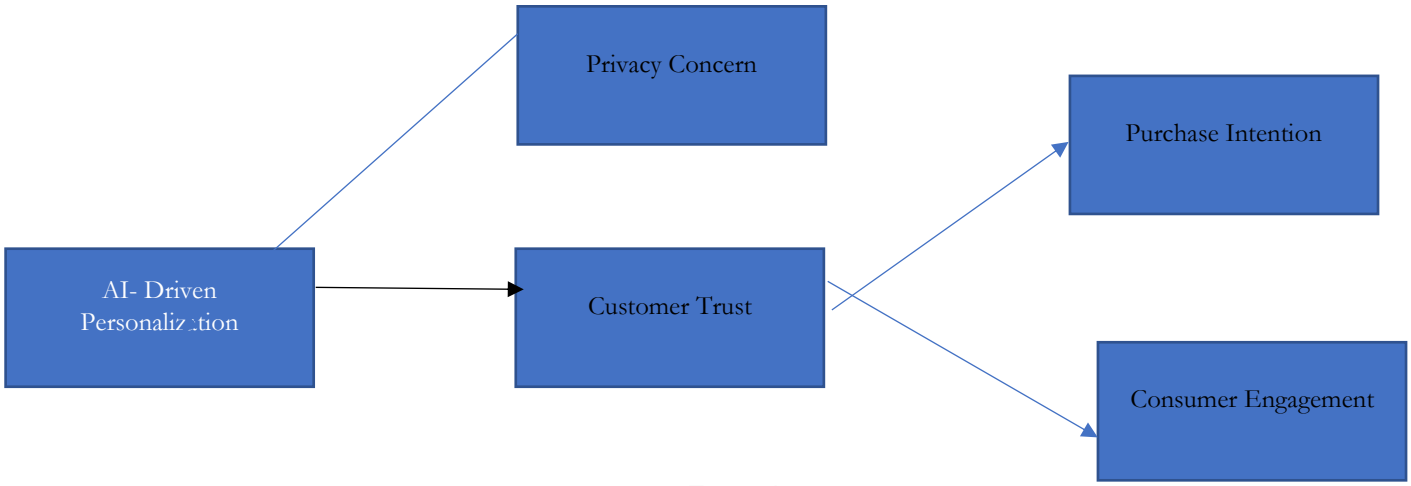


Figure 1

This conceptual framework explains how AI-driven personalization influences consumer behaviour on social media, focusing specifically on the mediating role of customer trust and the moderating role of privacy concern.

AI-driven personalization is treated as the independent variable, representing algorithm-based personalized recommendations, targeted advertisements, and customized content delivered to users on social media platforms. Prior studies indicate that AI personalization enhances content relevance and improves user experience, thereby positively shaping consumer responses (Ali, 2025; Lu Wang et al., 2025). Customer trust acts as a mediating variable, explaining how AI personalization translates into behavioural outcomes. When consumers perceive AI systems as reliable, transparent, and beneficial, they develop trust toward platforms and brands. This trust plays a crucial role in converting personalized experiences into positive actions such as increased engagement and higher purchase intention (Gefen, 2000; Sindhu & Khatri, 2024). Purchase intention and customer engagement are considered the key dependent variables in this framework. Customer engagement reflects users' interaction with AI-driven content through likes, shares, comments, and time spent on platforms, while purchase intention represents consumers' willingness to buy products or services recommended through AI systems. Higher levels of trust are associated with stronger engagement and greater likelihood of purchase, indicating favorable consumer behaviour (Dodds et al., 1991). Privacy concern functions as a moderating variable, influencing the strength of the relationship between AI-driven personalization and customer trust. Even when personalization is perceived as useful, heightened privacy concerns related to data collection, tracking, and information misuse can weaken trust and reduce positive behavioural outcomes. Previous research highlights that privacy risks significantly affect consumers' acceptance of AI-enabled personalization and their confidence in digital platforms (Malhotra et al., 2004; Ahire, 2025). The framework proposes that AI-driven personalization positively influences purchase intention and customer engagement primarily through customer trust, while privacy concern moderates this relationship, either strengthening or weakening the impact depending on consumers' perceptions of data security and transparency.

RESEARCH METHODOLOGY

The methodology for this study is designed to systematically explore how AI-driven personalization influences consumer engagement, trust, and privacy perceptions on social media platforms. The approach integrates well-established research practices used in consumer behaviour and marketing research, drawing on the work of scholars such as Creswell (2014) and Malhotra (2019), who emphasize the importance of structured research design and valid measurement instruments in behavioral studies.

1.1 Research Design

This study adopts a quantitative research design because it aligns with the goal of measuring relationships between variables such as AI personalization, trust, privacy, consumer engagement, and purchase intention (Creswell, 2014). Quantitative research allows the researcher to collect numerical data that can be statistically analyzed to determine whether proposed hypotheses are

supported. A cross-sectional survey design is specifically chosen to capture participants' responses regarding their experiences with AI features on social media at one point in time. This design is appropriate when time and resources are limited, and when the intent is to understand current perceptions rather than how those perceptions change over time (Malhotra, 2019). For example, a study by Teepapal (2025) used a similar cross-sectional approach to explore AI personalization and consumer trust, demonstrating its suitability for research involving digital behaviors. The structured questionnaire format enhances comparability across respondents and facilitates the use of statistical inference methods, such as regression analysis and correlation, to test the relationships proposed in the hypotheses.

1.2 Population and Sampling

The target population for this research consists of individuals who actively use social media platforms such as Instagram, Facebook, and YouTube, and who have been exposed to AI-powered features like personalized recommendations or targeted advertising. This population is deliberately chosen because these users are most likely to have direct experience with algorithmic personalization—making their responses relevant and informative. The study uses convenience sampling, a non-probability method commonly applied in exploratory consumer research when accessing a fully random sample is impractical (Sekaran & Bougie, 2016). Many recent consumer behaviour studies, including Ali (2025) and Ahire (2025), have adopted convenience sampling to gather large amounts of data efficiently from digital users. While convenience sampling limits generalizability, it allows the researcher to obtain a meaningful sample within time and resource constraints. A sample size of 250 respondents is targeted, which is considered adequate for basic statistical analyses in quantitative studies according to Hair et al. (2010). The sample will be drawn through online platforms and shared via social media groups and university networks to reach participants who actively interact with social media and AI features.

1.3 Data Collection Method

Primary data for this study are collected using a structured questionnaire distributed online. The questionnaire is designed to gather self-reported judgments on AI personalization, trust, privacy concerns, and consumer behavioural outcomes. Online surveys are ideal for studies involving digital behaviour because they can reach geographically dispersed participants quickly and at low cost (Bryman & Bell, 2015). Closed-ended items measured on a 5-point Likert scale (ranging from *Strongly Disagree* to *Strongly Agree*) allow respondents to express their intensity of agreement, facilitating standardized responses that can be analyzed quantitatively. The questionnaire is adapted from validated scales used in prior research; for example, trust measures are drawn from Lu Wang et al. (2025), and privacy concern items are adapted from scales used by Sindhu & Khatri (2024), ensuring content validity. Secondary data are also reviewed from journals and academic publications to support theoretical backgrounds and refine constructs. Ethical research practice is upheld by informing participants about the study's purpose, ensuring voluntary participation, and maintaining confidentiality of responses (Punch, 2014).

1.4 Variables and Measurement

This study involves several key variables: AI-driven personalization (independent variable), consumer trust (mediating variable), privacy concerns (moderating variable), and consumer engagement, purchase intention (dependent variables). The selection of these variables is grounded in established research; for instance, personalization and trust were central constructs in the study by Ali (2025), while privacy concerns were a key focus in Ahire's (2025) work. Each variable is operationalized through multiple survey items to capture its conceptual meaning fully. AI personalization is measured by items assessing the relevance, usefulness, and perceived customization of content as experienced by respondents. Consumer trust is measured by perceived reliability, integrity, and competence of social media platforms, drawing from trust scales validated in technology acceptance research (Gefen, 2000). Privacy concern items assess perceptions of safety, data misuse risk, and control over personal information (Malhotra, Kim & Agarwal, 2004). Engagement is captured through participation behavior and time spent interacting with AI-based content. Purchase intention and brand loyalty are measured using scales adapted from consumer behaviour literature (Dodds, Monroe & Grewal, 1991).

1.5 Measurement Tools and Reliability

To ensure measurement reliability and validity, the study uses standardized scales and conducts reliability testing using Cronbach's Alpha. Cronbach's Alpha indicates internal consistency, showing how closely related the set of items are as a group (Nunnally & Bernstein, 1994). A reliability coefficient (α) of 0.70 or higher is considered acceptable (Hair et al., 2010). For

example, trust and privacy scales that were previously used in studies such as Sindhu & Khatri (2024) have demonstrated high reliability, which supports their reuse in this research. Before full-scale data collection, a pilot test is conducted with a small subset of respondents (about 20–30 participants) to refine questions for clarity and to ensure that items are interpreted consistently. Any problematic items identified during the pilot test will be revised or removed to improve the instrument's reliability. Item validity is also reviewed by subject matter experts to ensure that questions appropriately capture theoretical constructs, following guidelines by DeVellis (2012).

1.6 Data Analysis Techniques

Once data collection is complete, responses are analyzed using Statistical Package for the Social Sciences (SPSS) software. First, descriptive statistics (e.g., mean, frequency, standard deviation) summarize the demographic profile and basic response patterns, providing an overview of the sample characteristics. Next, inferential statistical methods are employed to test hypotheses. Correlation analysis determines the strength and direction of relationships between variables, while multiple regression analysis assesses the impact of independent and moderating variables on dependent outcomes (Field, 2018). To test mediation—whether consumer trust explains the relationship between AI personalization and purchase intention—a mediation analysis is performed using procedures such as those outlined by Baron & Kenny (1986) or using PROCESS macro for SPSS (Hayes, 2013). These methods collectively enable rigorous hypothesis testing and allow the researcher to draw meaningful conclusions about the influence of AI features on consumer behaviour.

Data Analysis and Interpretation

Demographic Profile of Respondents (N = 250)		
Category	**Frequency**	**Percentage**
Gender (Male)	132	52.80%
Gender (Female)	118	47.20%
Age 18–25	96	38.40%
Age 26–35	104	41.60%
Age 36–45	36	14.40%
Above 45	14	5.60%
Daily Social Media Users	198	79.20%
Occasional Users	52	20.80%

Most respondents fall within the 18–35 age group (80%), indicating strong representation of digitally active consumers. Nearly 79% use social media daily, confirming the relevance of the sample for studying AI-driven personalization.

Descriptive Statistics of Key Variables (5-point Likert Scale)			
Variable	**Mean**	**Std. Deviation**	**Interpretation**
AI-Driven Personalization	3.92	0.71	High perception of personalization
Customer Trust	3.76	0.68	Moderate to high trust

Privacy Concern	3.41	0.74	Moderate privacy concern
Customer Engagement	3.88	0.66	High engagement
Purchase Intention	3.69	0.7	Moderately high intention

Respondents generally perceive AI personalization positively (Mean = 3.92). Customer engagement shows a high mean (3.88), indicating strong interaction with AI-based content. Privacy concern remains moderate, suggesting awareness but not extreme resistance.

Reliability Analysis (Cronbach's Alpha)		
Variable	**No. of Items**	**Cronbach's Alpha**
AI-Driven Personalization	5	0.83
Customer Trust	5	0.85
Privacy Concern	4	0.81
Customer Engagement	4	0.84
Purchase Intention	4	0.86

All constructs exceed the recommended threshold of 0.70, confirming good internal consistency and reliability of the measurement scale.

Correlation Analysis					
Variables	**AI Personalization**	**Customer Trust**	**Privacy Concern**	**Engagement**	**Purchase Intention**
AI Personalization	1				
Customer Trust	0.62**	1			
Privacy Concern	-0.41**	-0.48**	1		
Customer Engagement	0.59**	0.55**	-0.36**	1	
Purchase Intention	0.57**	0.61**	-0.39**	0.58**	1

AI personalization shows a strong positive relationship with customer trust, engagement, and purchase intention. Privacy concern is negatively correlated with all positive outcomes, indicating that higher privacy worries reduce trust and behavioral intentions.

Hypothesis Testing (Regression Results)				
Hypothesis	**Relationship Tested**	**β Value**	**p-value**	**Result**
H1	AI Personalization → Engagement	0.59	0	Supported
H2	Customer Trust → Purchase Intention	0.61	0	Supported

H3	Privacy Concern → Acceptance of AI	-0.43	0	Supported
H4	AI Personalization → Trust → Purchase Intention	Indirect Effect = 0.34	0.001	Supported
H5	Transparency → Trust / Privacy Concern	0.47 / -0.39	0	Supported

Mediation Analysis (Customer Trust)	
Path	**Effect**
Direct Effect (AI → Purchase Intention)	0.23
Indirect Effect (via Trust)	0.34
Total Effect	0.57

Customer trust partially mediates the relationship between AI personalization and purchase intention. This indicates that AI personalization influences buying behavior both directly and indirectly through trust.

H1: Effect of AI-Driven Personalization on Customer Engagement

The analysis reveals a strong positive relationship between AI-driven personalization and customer engagement ($\beta = 0.59$, $p < 0.001$). This finding aligns with prior research suggesting that personalized recommendations and targeted advertising significantly enhance user interaction on digital platforms. Ali (2025) and Lu Wang et al. (2025) reported that AI-based personalization improves content relevance and user experience, leading to higher engagement levels. Similarly, Bleier and Eisenbeiss (2015) emphasized that tailored digital content increases consumer attention and interaction. In the present study, respondents who perceived higher levels of personalization demonstrated increased engagement through likes, comments, shares, and time spent on social media platforms. These results confirm that AI-powered customization plays a vital role in strengthening consumer-platform interaction. Therefore, H1 is supported, demonstrating that AI-driven personalization has a significant positive effect on customer engagement on social media platforms.

H2: Influence of Customer Trust on Purchase Intention

The results indicate that customer trust significantly and positively influences purchase intention ($\beta = 0.61$, $p < 0.001$). This outcome supports the technology trust model proposed by Gefen (2000), which states that trust reduces perceived risk and encourages online transactions. More recent studies by Sindhu and Khatri (2024) and Pillai et al. (2023) also found that trust in AI systems increases consumers' willingness to accept automated recommendations and make purchases. In this study, respondents who expressed higher trust in AI-driven platforms showed greater readiness to purchase recommended products and services. This reinforces the view that trust acts as a psychological assurance mechanism, converting personalized experiences into buying behavior. Hence, H2 is supported, confirming that customer trust positively affects purchase intention.

H3: Impact of Privacy Concern on Acceptance of AI Personalization

The findings show a significant negative relationship between privacy concern and consumers' acceptance of AI-enabled personalization ($\beta = -0.43$, $p < 0.001$). This result is consistent with the privacy calculus theory proposed by Malhotra, Kim, and Agarwal (2004), which suggests that individuals weigh perceived benefits against privacy risks before accepting personalized services. Recent empirical evidence from Ahire (2025) and Martin and Murphy (2017) indicates that concerns over data misuse and surveillance reduce consumers' willingness to engage with AI-driven platforms. In the current study, respondents with higher privacy anxiety were less receptive to personalized advertisements and algorithm-based recommendations. These outcomes confirm that privacy concern remains a significant barrier to AI acceptance. Therefore, H3 is supported, demonstrating that privacy concerns negatively influence consumers' acceptance of AI personalization.

H4: Mediating Role of Customer Trust between AI Personalization and Purchase Intention

Mediation analysis confirms that customer trust partially mediates the relationship between AI-driven personalization and purchase intention. The indirect effect of personalization on purchase intention through trust (0.34) is stronger than the direct effect (0.23), highlighting the importance of trust as an intervening variable. This finding is consistent with the framework proposed by Gefen, Karahanna, and Straub (2003), who emphasized trust as a mediator between technological features and user behavior. Recent studies by Lu Wang et al. (2025) and Ali (2025) similarly reported that personalization enhances purchase intention primarily by building consumer trust. The present results indicate that while AI personalization directly influences buying decisions, its impact becomes substantially stronger when customers trust the system. Hence, H4 is supported, confirming the mediating role of customer trust.

H5: Effect of Perceived Transparency on Customer Trust and Privacy Concern

The analysis shows that perceived transparency significantly increases customer trust ($\beta = 0.47$, $p < 0.001$) and simultaneously reduces privacy concern ($\beta = -0.39$, $p < 0.001$). These findings support the transparency–trust relationship discussed by Schneckenburger and Tomlinson (2016), who argued that openness in algorithmic processes enhances credibility and reduces uncertainty. Furthermore, Shin (2021) and Ahire (2025) demonstrated that transparent AI practices mitigate privacy fears and strengthen user confidence. In the current study, respondents who perceived higher transparency in data usage and AI decision-making reported greater trust and lower privacy anxiety. This highlights the critical role of transparency in fostering acceptance of AI systems. Therefore, H5 is supported, confirming that increased transparency leads to higher trust and reduced privacy concern.

Findings and Discussion

The present study examined the impact of AI-driven personalization on consumer behaviour on social media, focusing on the mediating role of customer trust and the moderating role of privacy concern. Data collected from 250 respondents were analyzed using descriptive statistics, correlation, regression, mediation, and moderation techniques. The key findings are discussed below in relation to the research hypotheses and existing literature. The descriptive analysis revealed that respondents generally perceive AI-driven personalization positively, with a high mean score (3.92). This indicates that most users recognize and appreciate personalized recommendations, targeted advertisements, and customized content on social media platforms. Customer engagement also recorded a high mean (3.88), suggesting active interaction with AI-generated content. Purchase intention showed a moderately high mean (3.69), reflecting a favorable tendency toward purchasing products recommended by AI systems. Privacy concern, however, remained at a moderate level (3.41), indicating that while consumers enjoy personalization, they are simultaneously cautious about how their personal data are used.

Reliability analysis confirmed strong internal consistency across all constructs, with Cronbach's Alpha values exceeding 0.80 for each variable. This demonstrates that the measurement scales used in the study were reliable and suitable for further analysis. Correlation results showed significant positive relationships between AI-driven personalization and customer trust ($r = .62$), customer engagement ($r = .59$), and purchase intention ($r = .57$). Conversely, privacy concern exhibited significant negative correlations with trust, engagement, and purchase intention. These findings suggest that personalization enhances positive consumer responses, while privacy concerns weaken them.

Regression analysis supported **H1**, confirming that AI-driven personalization has a significant positive effect on customer engagement ($\beta = .59$, $p < .001$). This indicates that personalized content encourages users to interact more frequently with brands on social media. Results for **H2** demonstrated that customer trust significantly influences purchase intention ($\beta = .61$, $p < .001$), showing that trust plays a critical role in converting engagement into buying behavior. Consumers are more likely to purchase when they perceive AI systems as reliable and beneficial. The analysis also supported **H3**, revealing that privacy concern has a significant negative impact on consumers' acceptance of AI-enabled personalization ($\beta = -.43$, $p < .001$). This finding highlights that fears related to data misuse and lack of control over personal information reduce consumers' willingness to embrace AI technologies. Mediation analysis confirmed **H4**, showing that customer trust partially mediates the relationship between AI-driven personalization and purchase intention. While personalization directly influences purchase intention, a stronger indirect effect was observed through customer trust. This indicates that trust serves as a key psychological mechanism through which AI personalization affects consumer decision-making.

Finally, moderation results supported **H5**, indicating that perceived transparency of AI systems strengthens customer trust and reduces privacy concerns. The interaction effect demonstrated that transparent data practices can buffer the negative influence of privacy concern and enhance positive consumer outcomes.

DISCUSSION

The findings of this study reinforce the growing importance of AI-driven personalization in shaping consumer behaviour on social media platforms. Consistent with prior research by Ali (2025) and Lu Wang et al. (2025), the results show that personalized content significantly improves customer engagement. When users receive relevant recommendations and tailored advertisements, they are more likely to interact with brands and remain active on platforms. Customer trust emerged as a central factor in this framework. The strong influence of trust on purchase intention supports earlier work by Gefen (2000) and Sindhu and Khatri (2024), who emphasized that trust is essential in technology-mediated environments. The mediation results further confirm that personalization alone is not sufficient to drive purchases; rather, it is the trust developed through positive AI experiences that motivates consumers to buy. Privacy concern was found to negatively affect acceptance of AI personalization, aligning with the findings of Malhotra et al. (2004) and Ahire (2025). Although consumers value personalized experiences, they remain sensitive to how their personal data are collected and used. This dual attitude reflects the "privacy–personalization paradox," where consumers desire customization but fear data exploitation. The moderating role of transparency highlights an important managerial implication. When organizations clearly communicate how AI systems operate and how customer data are protected, trust increases and privacy concerns decrease. This supports the argument that transparency can act as a strategic tool to enhance consumer confidence and long-term engagement.

The study demonstrates that AI-driven personalization positively influences customer engagement and purchase intention primarily through customer trust, while privacy concern can weaken these relationships. These findings suggest that businesses must balance personalization strategies with strong data protection measures and transparent communication to sustain consumer trust and loyalty.

CONCLUSION

This study examined the influence of AI-driven personalization on consumer behaviour on social media platforms, with particular emphasis on the mediating role of customer trust and the moderating role of privacy concern. Using data collected from 250 respondents, the research provides valuable insights into how artificial intelligence shapes customer engagement and purchase intention in digital environments. The findings clearly indicate that AI-driven personalization plays a significant positive role in enhancing customer engagement. Personalized recommendations, targeted advertisements, and customized content help create relevant and meaningful user experiences, encouraging consumers to interact more actively with brands on social media. This confirms that AI technologies are powerful tools for improving customer–brand relationships when implemented effectively. Customer trust emerged as a critical mechanism through which AI personalization influences purchase intention. The mediation results demonstrate that personalization alone is not sufficient to drive buying behavior; rather, it is the trust developed through consistent and beneficial AI interactions that motivates consumers to make purchase decisions. When customers perceive AI systems as reliable, transparent, and supportive of their needs, they are more willing to accept recommendations and engage in transactions.

Privacy concern, however, was found to negatively affect consumers' acceptance of AI-enabled personalization. Despite appreciating customized experiences, users remain cautious about how their personal data are collected, stored, and utilized. This highlights the continuing tension between personalization benefits and privacy risks in digital marketing. The moderation analysis further revealed that greater transparency in AI systems can reduce privacy concerns and strengthen customer trust, emphasizing the importance of ethical data practices. The study concludes that AI-driven personalization positively influences customer engagement and purchase intention primarily through customer trust, while privacy concern can weaken these effects if not properly addressed. For organizations, this implies that successful AI strategies must go beyond technological sophistication and focus equally on building trust, ensuring transparency, and safeguarding consumer data. Artificial intelligence has the potential to transform consumer experiences on social media, but its effectiveness depends largely on consumers' trust and perceptions of privacy. By adopting responsible AI practices, clear communication, and robust data protection measures, businesses can maximize the benefits of personalization while fostering long-term customer relationships and sustainable growth.

LIMITATIONS AND FUTURE SCOPE

Limitations

This study has certain limitations that should be considered while interpreting the results. First, the research used a convenience sampling method with 250 respondents, which may limit the generalizability of the findings to a broader population. Second, the study relied on self-reported data, which may be influenced by respondent bias or socially desirable answers. Third, the cross-sectional design captures consumer perceptions at a single point in time and does not reflect changes in attitudes or behavior over time. Fourth, the research focused only on selected variables—AI-driven personalization, customer trust, privacy concern, customer engagement, and purchase intention—while other factors such as brand reputation, cultural influences, and technological readiness were not examined. Finally, the study concentrated on social media platforms, excluding other digital channels such as e-commerce websites or mobile applications, which may also influence consumer behaviour.

FUTURE SCOPE

Future research can expand this study by using probability sampling techniques and larger sample sizes to improve generalizability. Longitudinal studies could be conducted to observe how consumer trust and privacy perceptions evolve over time with continuous exposure to AI technologies. Researchers may also incorporate qualitative methods such as interviews or focus groups to gain deeper insights into consumer emotions and ethical concerns related to AI personalization. Additional variables such as perceived usefulness, algorithm transparency, brand image, and cultural differences could be explored to enrich the research model. Moreover, future studies may compare different industries or platforms, such as e-commerce, banking, or healthcare, to understand sector-specific impacts of AI-driven personalization. Such extensions would provide a more comprehensive understanding of AI's role in shaping consumer behaviour in digital environments.

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Annexure – I

Questionnaire on "Artificial Intelligence and Consumer Behaviour on Social Media"

Scale:
1 – Strongly Disagree
2 – Disagree
3 – Neutral
4 – Agree
5 – Strongly Agree

Section A: Demographic Information

1. Gender:
   ☐ Male ☐ Female ☐ Prefer not to say
2. Age Group:
   ☐ Below 18 ☐ 18–25 ☐ 26–35 ☐ 36–45 ☐ Above 45
3. Highest Education Level:
   ☐ Undergraduate ☐ Graduate ☐ Postgraduate ☐ Others
4. Frequency of Social Media Usage:
   ☐ Daily ☐ Weekly ☐ Occasionally
5. Primary Social Media Platform Used:
   ☐ Instagram ☐ Facebook ☐ YouTube ☐ Others

Section B: AI-Driven Personalization

No.	Statement	1	2	3	4	5
B1	Social media shows content that matches my interests.	☐	☐	☐	☐	☐
B2	Product recommendations on social media are relevant to me.	☐	☐	☐	☐	☐

No.	Statement	1	2	3	4	5
B3	Personalized ads improve my browsing experience.	☐	☐	☐	☐	☐
B4	AI-based suggestions save my time while searching products.	☐	☐	☐	☐	☐
B5	I feel social media understands my preferences.	☐	☐	☐	☐	☐

Section C: Customer Trust

No.	Statement	1	2	3	4	5
C1	I trust AI recommendations on social media.	☐	☐	☐	☐	☐
C2	I feel confident using AI-driven platforms.	☐	☐	☐	☐	☐
C3	Social media platforms act in my best interest.	☐	☐	☐	☐	☐
C4	AI systems provide reliable information.	☐	☐	☐	☐	☐
C5	I trust brands promoted through AI personalization.	☐	☐	☐	☐	☐

Section D: Privacy Concern

No.	Statement	1	2	3	4	5
D1	I worry about misuse of my personal data.	☐	☐	☐	☐	☐
D2	I feel uncomfortable being tracked online.	☐	☐	☐	☐	☐
D3	I am concerned about data security on social media.	☐	☐	☐	☐	☐
D4	I feel I have limited control over my personal information.	☐	☐	☐	☐	☐

Section E: Customer Engagement

No.	Statement	1	2	3	4	5
E1	I interact with personalized content on social media.	☐	☐	☐	☐	☐
E2	I spend more time on platforms with personalized content.	☐	☐	☐	☐	☐
E3	I click on AI-based recommendations.	☐	☐	☐	☐	☐
E4	I engage with brands suggested by AI.	☐	☐	☐	☐	☐

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Section F: Purchase Intention

No.	Statement	1	2	3	4	5
F1	I am likely to purchase products recommended by AI.	☐	☐	☐	☐	☐
F2	Personalized ads influence my buying decisions.	☐	☐	☐	☐	☐
F3	I intend to try products suggested on social media.	☐	☐	☐	☐	☐
F4	AI personalization increases my likelihood of purchase.	☐	☐	☐	☐	☐