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Perception of AI-Based Advertisements among Working Women: An Empirical Study

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Abstract: Artificial Intelligence (AI) has transformed digital advertising through personalization, predictive targeting, chatbots, and automated content generation. While AI-driven advertisements enhance relevance and engagement, they also raise privacy, trust, and ethical concerns. This study investigates the perception of AI-based advertisements among working women, focusing on trust, personalization effectiveness, privacy concerns, purchase intention, and overall acceptance. A structured survey was administered to 312 working women across urban sectors. Statistical analysis including reliability testing, correlation, regression, and ANOVA was conducted. Results indicate that personalization positively influences engagement and purchase intention, while privacy concerns significantly moderate trust. The study provides practical implications for marketers and contributes to gender-specific consumer behavior literature in AI-driven marketing environments.

Keywords—Artificial Intelligence, Digital Advertising, Working Women, Consumer Perception, Personalization, Privacy, Purchase Intention.

1. INTRODUCTION

Artificial Intelligence (AI) has become a central component of digital marketing strategies, fundamentally transforming how advertisements are created, delivered, and optimized. AI-powered systems leverage machine learning algorithms, predictive analytics, deep learning models, and natural language processing to analyze user behavior, browsing patterns, demographic characteristics, purchase history, and engagement metrics in real time [1], [2]. These systems dynamically adjust advertising content and placement to maximize relevance and conversion probability. Digital platforms such as social media networks, search engines, video-streaming platforms, and e-commerce marketplaces increasingly deploy AI-driven recommendation engines and programmatic advertising systems to automate ad targeting decisions. Real-time bidding mechanisms enable advertisers to deliver personalized advertisements within milliseconds based on user data profiles. This data-driven personalization enhances efficiency, reduces marketing costs, and increases return on investment (ROI). However, while AI-based advertising offers measurable performance benefits, its psychological and behavioral effects vary across demographic segments. One such critical segment is working women, whose economic participation and digital engagement have significantly increased in recent years [3]. Working women represent a powerful consumer group characterized by financial independence, digital literacy, and multi-role responsibilities encompassing both professional and household domains.

2. WORKING WOMEN AS A DISTINCT CONSUMER SEGMENT

- Working women often experience:
 - Time scarcity due to professional commitments
 - Increased exposure to digital platforms
 - Higher reliance on online shopping and mobile applications
 - Greater sensitivity toward privacy and data protection
 - Stronger preference for convenience and relevance
- Because of these characteristics, AI-driven personalized advertisements may be perceived differently compared to other consumer segments. For example:
 - Highly personalized ads may be appreciated for saving time.

- Excessive targeting may trigger privacy concerns.
 - AI-generated content may influence trust differently based on transparency.
 - Perceived algorithmic bias may affect credibility perceptions.
- Thus, understanding the perception of AI-based advertisements among working women is both academically and practically significant.

Research Gap

Although prior studies have examined AI in marketing and consumer behavior, limited empirical research focuses specifically on working women as a target demographic. Existing literature primarily investigates general consumer populations without addressing gender-role dynamics, digital workload stress, or privacy sensitivity unique to working women. Therefore, this study aims to bridge this gap by examining five critical perception dimensions:

- Perceived Personalization – The extent to which AI advertisements are viewed as relevant and tailored.
- Trust in AI-Generated Ads – The level of confidence in algorithm-driven recommendations.
- Privacy Concerns – Anxiety regarding data collection and surveillance.
- Purchase Intention – Likelihood of buying products promoted via AI ads.
- Overall Acceptance – Willingness to continue engaging with AI-based advertising systems.

Conceptual Framework

This study proposes that perceived personalization and trust positively influence purchase intention and overall acceptance, while privacy concerns negatively influence trust and behavioral outcomes.

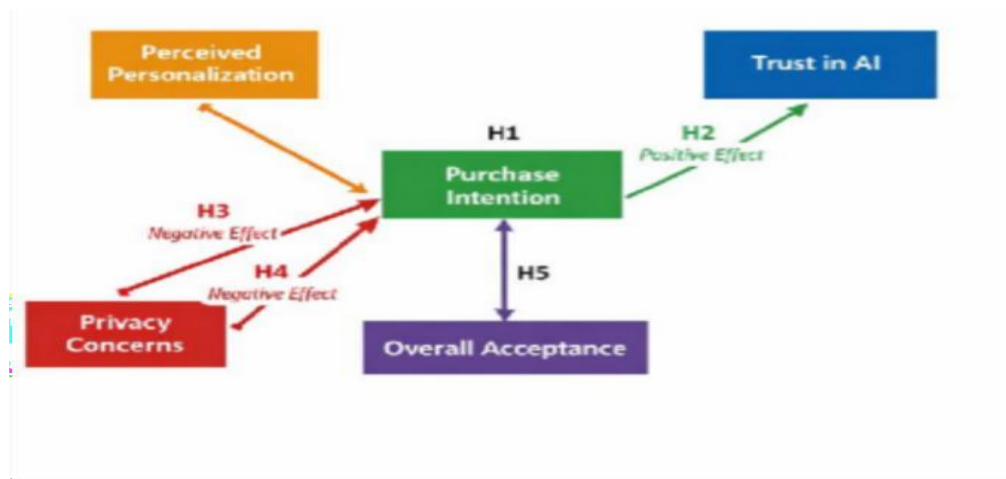


FIGURE 1. Proposed Conceptual Framework

Hypotheses Development

Based on prior literature and theoretical foundations (Technology Acceptance Model and Privacy Calculus Theory), the following hypotheses are proposed:

- **H1:** Perceived personalization positively influences purchase intention.
- **H2:** Trust in AI-generated advertisements positively influences purchase intention.
- **H3:** Privacy concerns negatively influence trust in AI-based advertisements.
- **H4:** Privacy concerns negatively influence purchase intention.
- **H5:** Purchase intention positively influences overall acceptance of AI-based advertising.

Theoretical Contribution

This research contributes to:

- AI-driven marketing literature
- Gender-based consumer perception studies
- Privacy and trust models in digital advertising
- Behavioral intention modeling in algorithmic environments

3. LITERATURE REVIEW

AI in Digital Advertising

AI technologies such as deep learning, natural language processing, and predictive analytics enable automated ad targeting and personalization [4]. Programmatic advertising uses real-time bidding systems to optimize ad placements [5]. Studies indicate that AI increases advertising efficiency and conversion rates [6]. However, algorithmic opacity and data collection practices generate ethical debates [7].

Consumer Perception of AI

Consumer acceptance of AI depends on perceived usefulness and ease of use [8]. Trust plays a mediating role between AI transparency and behavioral intention [9]. Gender differences in technology perception have also been observed [10].

Privacy and Ethical Concerns

Personalized advertising relies heavily on user data. Research highlights that consumers experience discomfort when ads appear “too personalized” [11]. Privacy calculus theory suggests that consumers weigh benefits against perceived risks [12].

Working Women as a Consumer Segment

Working women demonstrate higher digital literacy and independent purchasing behavior [13]. Time-saving features and convenience strongly influence their buying decisions [14]. However, they also exhibit higher privacy sensitivity [15].

TABLE 1. Comparative Summary of Literature Themes

Dimension	Key Focus	Major Findings	Implications for Present Study
AI in Digital Advertising	Use of deep learning, NLP, predictive analytics, and programmatic advertising	Enhances targeting accuracy, efficiency, and conversion rates; raises concerns about algorithmic opacity and data practices [4]–[7]	Establishes technological foundation of AI ads and highlights efficiency– ethics trade- off
Consumer Perception of AI	Perceived usefulness, ease of use, trust, behavioral intention	Acceptance depends on usefulness and trust; transparency strengthens intention; gender differences exist [8]–[10]	Justifies examining trust and personalization among working women
Privacy & Ethical Concerns	Data collection, surveillance, over- personalization	“Too personalized” ads create discomfort; consumers balance benefits vs. risks (privacy calculus) [11], [12]	Supports inclusion of privacy concerns as a negative predictor
Working Women as Consumers	Digital literacy, economic independence, time constraints	Prefer convenience and efficiency; higher privacy sensitivity [13]– [15]	Identifies working women as a unique demographic requiring focused analysis

Table I provides a concise comparison of four key literature domains relevant to this study: AI in digital advertising, consumer perception of AI, privacy and ethical concerns, and working women as consumers. The table summarizes each theme’s primary focus, major findings from prior research, and its relevance to the present study. It highlights that while AI improves targeting efficiency and engagement, consumer acceptance depends largely on trust and perceived usefulness. At the same time, privacy concerns act as a moderating barrier. The table also justifies the selection of working women as a distinct demographic segment requiring focused analysis. Overall, it integrates technological, psychological, ethical, and demographic perspectives into a unified foundation for the proposed research model.

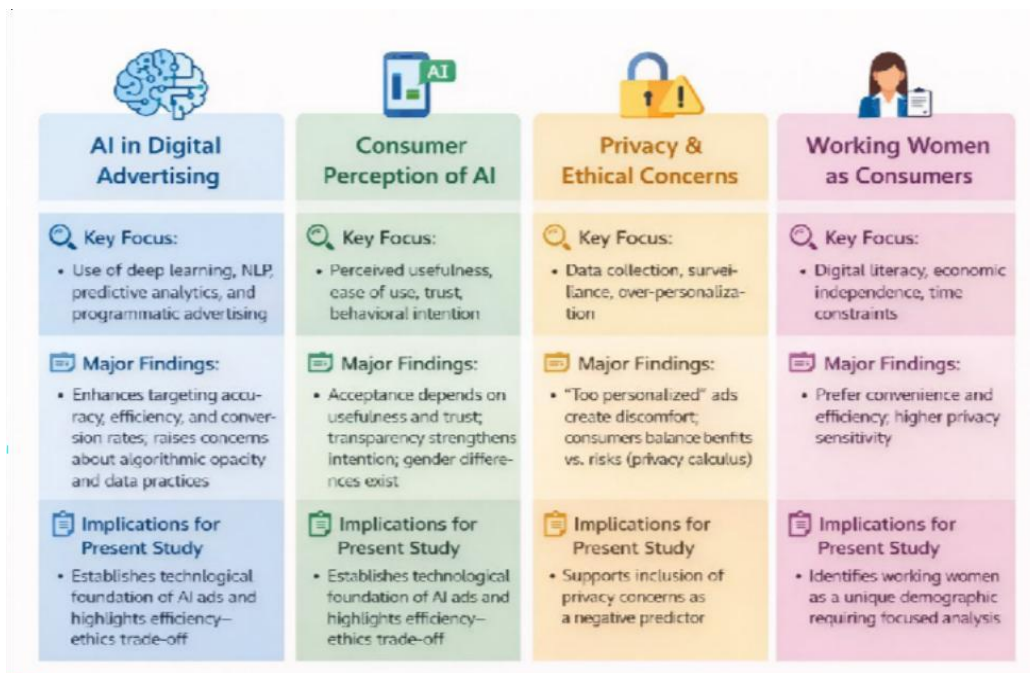


FIGURE 2. Graphical Comparison of Key Literature Themes

Fig. 2 synthesizes prior literature into a comparative framework, showing how technological capabilities (AI systems), psychological mechanisms (trust and usefulness), ethical considerations (privacy), and demographic characteristics (working women) collectively inform the proposed research model. The figure supports the conceptual foundation of the study by visually integrating these dimensions into a coherent analytical structure.

Research Objectives

- To analyze the perception of AI-based advertisements among working women.
- To examine the relationship between personalization and purchase intention.
- To evaluate the impact of privacy concerns on trust.
- To assess overall acceptance of AI-driven advertisements.

Research Methodology

Research Design

A descriptive quantitative research design was adopted.

Sample

- Sample Size: 312 working women
- Location: Urban metropolitan areas
- Sampling Method: Convenience sampling

Data Collection Tool

A structured questionnaire using a 5-point Likert scale: 1 = Strongly Disagree
5 = Strongly Agree

Constructs Measured:

- Personalization (PERS)
- Trust (TRUST)
- Privacy Concern (PRIV)
- Engagement (ENG)
- Purchase Intention (PI)
- Acceptance (ACC)

Reliability Analysis

TABLE 2. Reliability Statistics (Cronbach’s Alpha)

Construct	No. of Items	Cronbach’s Alpha
Personalization	5	0.87
Trust	4	0.85
Privacy Concern	4	0.82
Engagement	4	0.88
Purchase Intention	3	0.84
Acceptance	3	0.86

All values exceed 0.7, indicating strong internal consistency [16].

4. DATA ANALYSIS AND RESULTS

Demographic Profile

TABLE 3. Demographic Characteristics

Variable	Category	Frequency	Percentage
Age	21–30	118	37.8%
	31–40	102	32.7%
	41–50	68	21.8%
	51+	24	7.7%
Sector	IT	96	30.8%
	Education	72	23.1%
	Healthcare	64	20.5%
	Banking	48	15.4%
	Others	32	10.2%

Mean Perception Scores

TABLE 4. Descriptive Statistics

Variable	Mean	Std. Dev
Personalization	4.12	0.68
Trust	3.76	0.71
Privacy Concern	3.94	0.75
Engagement	4.05	0.64
Purchase Intention	3.88	0.72
Acceptance	3.91	0.69

Correlation Analysis

TABLE 5. Correlation Matrix

Variable	PERS	TRUST	PRIV	ENG	PI
PERS	1	0.62	-0.31	0.71	0.68
TRUST	0.62	1	-0.54	0.59	0.64
PRIV	-0.31	-0.54	1	-0.40	-0.45
ENG	0.71	0.59	-0.40	1	0.73
PI	0.68	0.64	-0.45	0.73	1

Personalization shows strong positive correlation with engagement and purchase intention.

Regression Analysis

Dependent Variable: Purchase Intention

TABLE 6. Regression Results

Predictor	Beta	t-value	p-value
Personalization	0.42	7.85	<0.001
Trust	0.31	5.96	<0.001
Privacy Concern	-0.28	-4.72	<0.01

$R^2 = 0.62$

Personalization and trust positively influence purchase intention, while privacy concerns negatively impact it.

ANOVA by Age Group

TABLE 7. ANOVA Results

Source	F	p-value
Between Groups	4.89	0.003
Within Groups	—	—

Younger respondents (21–30) show higher acceptance levels.

5. RESULTS AND DISCUSSION

The findings of this study clearly demonstrate that AI-driven personalization significantly enhances engagement and purchase intention among working women, reinforcing prior empirical evidence that tailored digital content increases perceived relevance and consumer responsiveness [6], [8]. Personalization reduces information overload and saves time—an especially valuable benefit for working women who manage both professional and personal responsibilities—thereby increasing the perceived usefulness of AI-based advertisements. The strong statistical relationship between personalization and purchase intention indicates that when advertisements align closely with individual preferences, browsing behavior, and lifestyle patterns, they are more likely to translate into buying decisions. Trust further strengthens this relationship, as respondents who perceive AI systems to be reliable and transparent show higher willingness to act on recommendations. However, the results also reveal a significant counterbalancing factor: privacy concerns. Consistent with privacy calculus theory [12], respondents appear to weigh the benefits of convenience and relevance against the risks associated with excessive data tracking, behavioral profiling, and algorithmic surveillance. While personalized recommendations are appreciated for their efficiency, intrusive or repetitive targeting reduces trust and negatively influences purchase intention. This reflects a personalization–privacy paradox, wherein consumers desire intelligent recommendations but remain cautious about data misuse. Additionally, younger respondents demonstrate greater openness toward AI technologies, likely due to higher digital familiarity and comfort with automated systems, whereas older respondents show comparatively higher skepticism. Overall, the findings suggest that AI-based advertising among working women is positively perceived when personalization is balanced with transparency, ethical data practices, and privacy safeguards, highlighting the need for responsible AI deployment in digital marketing strategies.

6. CONCLUSION

The study concludes that AI-based advertisements are generally perceived positively among working women, primarily due to their ability to deliver relevant, time-saving, and personalized content that aligns with professional and lifestyle needs. Personalization emerged as the strongest driver of engagement and purchase intention, indicating that tailored recommendations enhance perceived usefulness and decision-making efficiency. Trust in AI systems further strengthens acceptance, as respondents are more inclined to interact with and act upon advertisements when they believe the algorithms operate reliably and fairly. However, privacy concerns remain a significant barrier, as excessive data tracking, behavioral profiling, and lack of transparency reduce confidence in AI-driven platforms. This dual response highlights the importance of balancing technological sophistication with ethical responsibility. For marketers and digital platform designers, the findings emphasize the need to implement transparent data policies, clear consent mechanisms, explainable AI practices, and responsible targeting strategies. Ensuring ethical data governance and minimizing intrusive advertising practices will be essential to sustaining long-term consumer trust and maximizing the effectiveness of AI-based advertising among working women.

Limitations

- Convenience sampling limits generalizability.
- Self-reported data may include bias.
- Cross-sectional design restricts causal inference.
- Study focused only on urban working women.

Future Work

- Comparative study between working men and women.
- Cross-cultural analysis.
- Experimental design measuring behavioral responses.
- Incorporation of AI explainability factors.

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