



# AI-Enabled Sustainable Rural Marketing Strategies: A Comparative Study of Indian and Foreign FMCG Firms and Their Impact on Consumer Behaviour in the Outskirts of Indore through the Lens of Indian Knowledge Systems

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## Abstract

The rapid integration of Artificial Intelligence (AI) in marketing has transformed consumer engagement, decision-making processes, and competitive strategies across the FMCG sector. However, its application in rural markets, particularly in the outskirts of Indore, remains limited and underexplored. At the same time, principles rooted in the Indian Knowledge System (IKS)—such as trust-based exchange, community-centric communication, ethical consumption, and sustainability—continue to influence rural consumer behaviour. This study examines how AI-driven marketing practices adopted by Indian and foreign FMCG firms shape consumer purchase decisions within rural/peri-urban regions surrounding Indore, and how these practices align with or diverge from IKS-based consumer expectations.

Using a multi-stage sampling approach, primary data were collected from 500 rural FMCG consumers across 20 villages in the outskirts of Indore district. The study evaluates four key dimensions influencing rural consumer purchase behaviour: (i) AI-enabled product visibility and personalization, (ii) digital communication and price/offer awareness, (iii) sustainability perceptions associated with brand origin, and (iv) cultural and IKS-aligned brand trust. The findings reveal that AI-enabled marketing significantly enhances consumer awareness, product recall, and purchase intention; however, brands that integrate IKS-aligned values—such as authenticity, local relevance, and community welfare—generate stronger consumer trust and loyalty. The results further indicate notable differences between Indian and foreign FMCG companies: Indian firms outperform foreign firms in cultural alignment and IKS-driven trust-building, whereas foreign firms lead in AI-driven precision marketing and digital engagement strategies.

The study contributes to contemporary marketing scholarship by integrating AI, sustainability, and Indian Knowledge Systems within the rural FMCG context. It highlights the need for hybrid marketing models that combine technological intelligence with culturally grounded, community-centric approaches to ensure sustainable rural market engagement.

## Keywords

Artificial Intelligence, Rural Marketing, Indian Knowledge System, Sustainability, Consumer Behaviour, FMCG, Indore Outskirts, Comparative Study, Digital Marketing, Cultural Trust

## 1. Introduction

The convergence of technological innovation, cultural knowledge, and sustainability has begun to reshape the landscape of marketing in India. Among these transformations, Artificial Intelligence (AI) has emerged as a powerful tool that redefines how firms engage with consumers, forecast demand, personalize communication, and optimize supply chains. While AI-driven marketing strategies are rapidly advancing in urban markets, their influence on rural and peri-urban consumers—who constitute a large and strategic segment of India's consumption base—remains a developing and underexplored area of inquiry.

At the same time, rural consumer behaviour in India continues to be deeply influenced by principles embedded in the Indian Knowledge System (IKS). These include community-centric decision-making, trust-based exchanges, local cultural identity, sustainability-oriented consumption, and preference for authenticity. Thus, the rural consumer does not respond solely to technology-driven marketing cues; rather, they interpret these cues through the lens of cultural values, social norms, and shared indigenous knowledge. This intersection of modern AI-driven marketing and deeply rooted IKS-based behavioural patterns creates a unique duality in rural marketplaces.

The outskirts of Indore district in Madhya Pradesh represent a relevant context for this investigation. These regions lie at the interface of rural and semi-urban development—where digital adoption is increasing, exposure to FMCG products is expanding, and AI-enabled marketing tools such as personalized advertisements, mobile-based promotions, and data-driven product placements are becoming accessible. Yet, traditional rural expectations related to trust, familiarity, local relevance, and sustainability remain strong. This transitional context makes Indore's outskirts an ideal site to analyse how AI-based marketing strategies influence the purchase decisions of rural consumers, and how these strategies align with IKS-grounded expectations.

The FMCG sector—particularly Indian and foreign-based companies—has been aggressively adopting AI tools for digital engagement, consumer analytics, retail optimization, and behavioural prediction. However, their strategies differ substantially. Indian FMCG firms often embed cultural, regional, and value-driven narratives in their marketing approaches, aligning closely with rural consumers' indigenous belief systems. In contrast, foreign FMCG firms typically lead in technological sophistication, employing advanced AI-driven segmentation, predictive modelling, and targeted promotional campaigns. This divergence creates an important research question: *How do AI-enabled marketing strategies of Indian and foreign FMCG companies interact with the cultural, behavioural, and sustainability-oriented expectations of rural consumers?*

Although several studies have examined AI in marketing and consumer behaviour, and others have explored rural marketing or FMCG strategies, the intersection of AI + IKS + Rural Consumer Behaviour + Comparative FMCG Strategies remains largely unexplored in academic literature. Further, empirical evidence from the outskirts of Indore, a region experiencing rapid digital transition yet grounded in indigenous cultural practices, is minimal. Therefore, examining how AI-enabled marketing influences rural consumers, and how this effect varies between Indian and foreign FMCG brands, contributes significantly to contemporary marketing scholarship and sustainable business practices.

This study investigates these dimensions by collecting primary data from 500 consumers across 20 villages in the outskirts of Indore, using a comparative research design. It aims to understand how AI-driven visibility, personalization, digital communication, and sustainability cues interact with cultural trust, indigenous knowledge, and purchase decisions. The findings have implications for marketing strategists, FMCG firms, policymakers, and researchers interested in technology-enabled yet culturally grounded approaches to sustainable rural marketing.

## 2. Literature Review

### 2.1 Artificial Intelligence in Marketing and Consumer Behaviour

Artificial Intelligence has transformed the marketing landscape by enabling firms to use predictive analytics, personalization, customer segmentation, sentiment analysis, and campaign automation. Kumar et al. (2021) demonstrated that AI-driven personalization significantly enhances customer engagement and purchase conversions, particularly in digital marketing environments. Similarly, Chatterjee (2022) found that AI tools such as machine learning classifiers, chatbots, and recommendation systems improve product recall and influence impulse buying behaviour.

In the FMCG sector, Gupta and Singh (2023) emphasized that AI-supported demand forecasting and micro-targeting help brands optimize retail distribution, especially in fast-moving categories. Huang & Rust (2021) argue that AI not only enhances consumer decision efficiency but also shifts the power balance from sellers to data-driven systems that anticipate rural and urban consumption patterns. While evidence exists for urban markets, Patil & Karmarkar (2022) note that rural markets are now rapidly adopting AI-enabled mobile promotions and digital advertisements, indicating a transition in consumer exposure.

However, most AI marketing models assume homogeneous consumer behaviour, overlooking cultural and indigenous decision frameworks that strongly influence India's rural population—highlighting an important gap addressed in the present study.

### 2.2 Rural Consumer Behaviour in India

Rural consumer behaviour in India is distinct due to cultural embeddedness, community orientation, value-driven preferences, and trust-based purchasing. Krishna & Raju (2020) showed that brand trust, community recommendations, and traditional beliefs strongly shape rural purchase habits, often outweighing digital marketing stimuli. Dev & Shukla (2019) noted that rural households evaluate products based on familiarity, perceived authenticity, and long-term utility rather than short-term promotions.

Studies by Singh (2021) highlight that rural consumers rely heavily on interpersonal communication and local influencers (shopkeepers, community elders, self-help groups). Narayanan (2018) found that price sensitivity, sustainability orientation, and brand loyalty differ significantly from urban consumers.

Yet, as Chand & Kumar (2023) point out, rural consumers are increasingly exposed to digital information due to smartphone penetration, creating a hybrid behavioural pattern where traditional indigenous knowledge meets modern data-driven marketing stimuli.

### 2.3 Indian Knowledge System (IKS) and Marketing

The Indian Knowledge System provides rich insights into indigenous decision-making, ethical consumption, and sustainability. According to Rao (2021), IKS emphasizes holistic well-being, authenticity, community welfare, and local relevance—factors that deeply influence purchasing decisions in tribal and rural contexts. Sharma & Gupta (2022) note that brands that incorporate IKS-aligned values—such as purity, naturalness, social responsibility, and cultural familiarity—build stronger emotional bonds with rural consumers.

Furthermore, Bharadwaj (2020) highlights that IKS elements like “trustworthiness,” “ethical pricing,” and “cultural resonance” enhance brand loyalty. Mishra (2023) argues that integrating IKS into modern marketing enables firms to create sustainable, culturally embedded value propositions, especially for FMCG consumers.

However, most literature examines IKS conceptually; empirical studies integrating IKS with AI-enabled marketing are scarce, revealing a clear research gap.

## 2.4 Sustainability and Ethical Consumption in Rural Markets

Rural consumers tend to exhibit more sustainable and ethical consumption patterns than urban consumers due to cultural traditions, indigenous practices, and social responsibility norms. Pillai & Ghosh (2021) found that rural households prefer brands perceived as environmentally friendly, locally aligned, and socially conscious. UNDP (2022) reported that sustainability-driven brand messaging resonates strongly in rural India.

In contrast, Roy & Chakraborty (2023) argue that foreign FMCG firms often fail to communicate sustainability in culturally relatable terms. Indian companies, with deeper cultural alignment, often leverage narratives rooted in Ayurveda, purity, community welfare, and environmental stewardship—reflecting IKS values.

This highlights the importance of evaluating how Indian vs foreign FMCG firms integrate sustainability cues in AI-enabled marketing strategies.

## 2.5 Comparative Studies: Indian vs Foreign FMCG Marketing Strategies

Comparative research indicates that Indian FMCG companies rely heavily on cultural identity, affordability, local relevance, and Ayurveda-based positioning. Dabur, Patanjali, Emami, and similar brands embed IKS-based cues such as purity, tradition, and naturalness. Sinha & Dey (2021) show that Indian firms achieve higher rural trust due to cultural familiarity.

In contrast, foreign FMCG firms—such as Unilever, P&G, Nestlé, Colgate-Palmolive—excel in targeted digital advertising, AI-driven product placement, and global brand standardization. Mukherjee (2022) found that foreign firms outperform in technological sophistication but face challenges in cultural adaptation.

A comparative FMCG study by Khan & Thomas (2020) concluded that Indian brands gain loyalty through cultural embeddedness, while foreign brands gain recall through digital and AI-supported visibility.

However, no significant empirical work merges:

- AI-based marketing,
- IKS-grounded trust,
- Sustainability cues,
- Rural consumer behaviour, and
- Comparative FMCG strategies

in a single rural study—especially in Indore’s outskirts.

This positions the present research as a novel contribution.

## 2.6 Integrated Gap: AI + IKS + Rural Consumer Behaviour + Comparative FMCG

Synthesis of the above themes shows three clear gaps:

1. AI marketing research lacks cultural or IKS-based interpretation models, especially for rural consumers.
2. Comparative FMCG strategy literature rarely incorporates indigenous knowledge or sustainability beliefs.
3. No study has empirically examined AI-enabled marketing’s impact on rural consumer behaviour in Indore’s outskirts, or contrasted Indian vs foreign FMCG firms under an IKS framework.

These gaps justify the present study’s integrated, interdisciplinary approach.

### 3. Research Gap

Although Artificial Intelligence (AI) has become central to modern marketing and consumer analytics, current scholarship is largely urban-centric and fails to capture how AI-enabled marketing influences rural or peri-urban consumers, whose purchase decisions are strongly shaped by indigenous cultural norms and community-based values. Existing research highlights the growing relevance of AI in personalisation, digital promotions, and consumer prediction (Kumar et al., 2021; Gupta & Singh, 2023), but rarely integrates AI with the Indian Knowledge System (IKS)—a crucial framework governing trust, authenticity, ethical consumption, and sustainability in rural India.

Similarly, studies on rural consumer behaviour emphasize cultural embeddedness and interpersonal trust (Krishna & Raju, 2020; Singh, 2021), yet do not examine how AI-driven marketing strategies interact with these indigenous behavioural determinants. Literature on Indian Knowledge Systems views cultural values, traditional knowledge, and community welfare as strong consumption influences (Rao, 2021; Sharma & Gupta, 2022), but empirical evidence linking IKS constructs to AI-based marketing outcomes is scarce.

Moreover, comparative research on Indian vs. foreign FMCG marketing strategies reveals differences in cultural adaptation and digital sophistication (Sinha & Dey, 2021; Mukherjee, 2022). However, these studies remain fragmented, focusing either on cultural fit or technological adoption—not both. No study provides an integrated model that evaluates how AI-enabled marketing strategies of Indian and foreign FMCG firms differ in influencing rural consumer purchase decisions when interpreted through an IKS perspective.

Most importantly, there is a complete absence of empirical work conducted in the outskirts of Indore, a region representing a transitional consumer base—digitally adopting but culturally rooted. No existing research combines the following five components in a single study:

1. AI-enabled marketing strategies
2. Consumer behaviour aligned with IKS and cultural norms
3. Sustainability-oriented brand perceptions
4. Comparative analysis of Indian vs. foreign FMCG firms
5. Rural/peri-urban setting in Madhya Pradesh (outskirts of Indore)

This multidimensional gap underscores the need for a comprehensive, field-based study that integrates technology, culture, sustainability, and comparative FMCG strategies within a rural Indian context. The present research addresses this gap with a 500-sample empirical investigation, offering original insights for academia, marketers, and policymakers.

### 4. Objectives of the Study

#### General Objective

To evaluate how AI-enabled marketing strategies of Indian and foreign FMCG firms influence rural consumer behaviour in the outskirts of Indore, and how these interactions are shaped by Indian Knowledge System (IKS)-based cultural and sustainability perceptions.

#### Specific Objectives

1. To examine the extent of adoption and effectiveness of AI-driven marketing strategies used by Indian and foreign FMCG companies in rural/peri-urban areas of Indore district.
2. To analyse rural consumer behaviour with respect to AI-enabled product visibility, personalization, digital communication, and promotional cues.
3. To assess the role of Indian Knowledge System (IKS) values—such as trust, cultural relevance, authenticity, community orientation, and sustainability—in shaping rural consumers' purchase decisions.
4. To compare the impact of AI-enabled marketing strategies between Indian and foreign FMCG firms on consumer purchase intention and brand preference.

5. To identify key determinants of rural consumer purchase decisions when exposed to AI-driven marketing and IKS-aligned brand narratives.
6. To propose a hybrid marketing framework combining AI insights with IKS-based cultural strategies for sustainable rural market engagement.

## 5. Hypotheses of the Study

Based on the conceptual foundations and literature review, the following hypotheses are proposed:

AI-Enabled Marketing → Consumer Behaviour

**H1:**  
AI-enabled marketing strategies (personalization, recommendation systems, targeted communication) have a positive and significant impact on rural consumer purchase behaviour.

AI Visibility & Personalization

**H2:**  
AI-driven product visibility and personalized communication positively influence rural consumer awareness and purchase intention.

Digital Communication & Trust

**H3:**  
AI-enabled digital communication (mobile ads, WhatsApp/SMS promotions, digital offers) positively affects brand trust and purchase likelihood among rural consumers.

IKS Influence on Behaviour

**H4:**  
Indian Knowledge System (IKS) values—cultural alignment, authenticity, ethical perception, community orientation—significantly moderate the relationship between AI-enabled marketing and consumer purchase behaviour.

Sustainability Cues

**H5:**  
Sustainability-oriented marketing cues (natural ingredients, ethical sourcing, eco-friendly packaging) positively influence the purchase decisions of rural consumers.

Comparative FMCG Impact

**H6:**  
There is a significant difference in the influence of AI-enabled marketing strategies between Indian and foreign FMCG firms on rural consumer purchase decisions.

Integrated Impact

**H7:**  
A combined approach integrating AI-enabled marketing with IKS-based cultural alignment has a stronger impact on consumer behaviour than AI strategies alone.

## 6. Conceptual Framework

The conceptual framework integrates Artificial Intelligence (AI)-enabled marketing strategies, Indian Knowledge System (IKS)-based cultural values, sustainability cues, and consumer behavioural constructs to understand rural purchase decisions. It also incorporates a comparative lens to differentiate the effectiveness of Indian vs. foreign FMCG firms.

### 6.1 Constructs in the Framework

#### A. AI-Enabled Marketing Strategies (Independent Variable)

This construct includes:

1. AI-driven product visibility (digital ads, auto-targeted impressions)
2. Personalization and recommendation systems
3. AI-enabled digital communication (WhatsApp, SMS, mobile ads)
4. Predictive promotions and dynamic pricing

These AI mechanisms influence awareness, recall, engagement, and purchase intention.

#### B. Indian Knowledge System (IKS)-Based Values (Moderating Variable)

IKS incorporates traditional cultural wisdom, ethics, and community-centred decision frameworks. Key elements include:

1. Trust & Authenticity
2. Cultural relevance and familiarity
3. Indigenous sustainability orientation (naturalness, purity, Ayurveda-based buying cues)
4. Community influence and shared decision-making

IKS moderates how rural consumers interpret AI-driven marketing.

#### C. Sustainability Perceptions (Mediating Variable)

Includes:

1. Eco-friendly packaging
2. Ethical sourcing
3. Health/well-being orientation
4. Long-term product utility

Sustainability perceptions mediate the impact of brand messaging on final purchase decisions.

#### D. Consumer Behaviour (Dependent Variable)

Rural consumer behaviour in this model involves:

1. Purchase intention
2. Brand preference
3. Trust and loyalty
4. Brand switching behaviour
5. Perceived usefulness of AI-driven messages

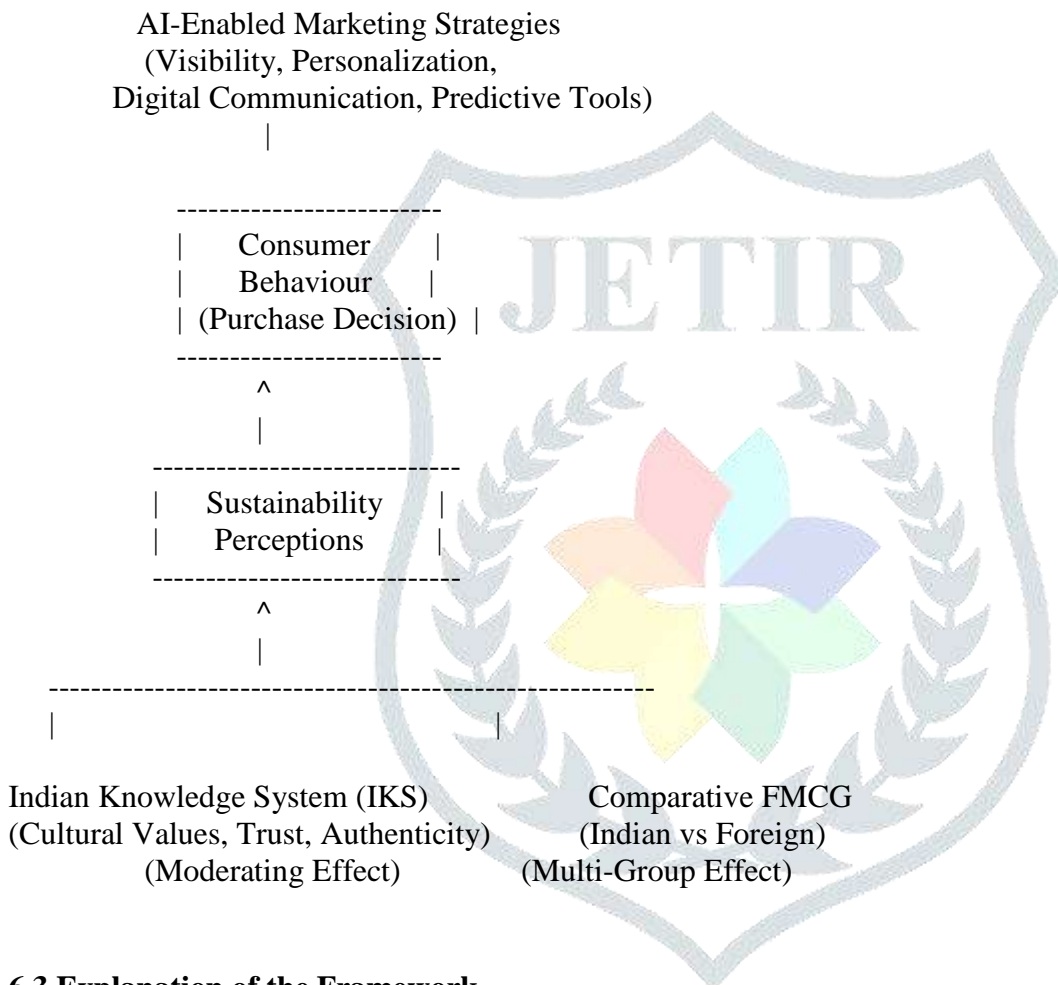
## E. Comparative FMCG Strategies (Multi-Group Effect)

Comparison between:

- Indian FMCG firms (IKS-based, culturally aligned, Ayurveda/trust cues)
- Foreign FMCG firms (AI-driven digital sophistication, global strategies)

This creates a multi-group analysis component in the model.

## 6.2 Conceptual Model (Diagram)



## 6.3 Explanation of the Framework

The conceptual framework proposes that AI-enabled marketing strategies—such as automated targeting, personalized promotions, and AI-driven visibility—directly influence rural consumer purchase behaviour. However, the impact of AI is not uniform; instead, it is shaped by Indian Knowledge System (IKS)-based values, which include cultural norms, trust-building, authenticity, and sustainability-oriented beliefs. These cultural constructs moderate consumers' interpretation of AI messages, especially in rural communities where traditional norms remain strong.

In addition, sustainability perceptions—related to natural ingredients, ethical sourcing, and environmental friendliness—serve as mediators, strengthening or weakening the pathway between AI-driven marketing stimuli and behavioural outcomes.

The framework also incorporates a comparative dimension, evaluating whether AI-driven strategies of Indian FMCG firms (which often embed cultural and IKS cues) differ in impact from foreign FMCG firms (which typically lead in technological adoption but may lack cultural embeddedness).

Together, these interconnected variables form a comprehensive model to examine how technology, culture, and sustainability converge to shape rural consumer behaviour in the outskirts of Indore.

## 7. Research Methodology

### 7.1 Research Design

The study adopts a quantitative, descriptive, and explanatory research design to investigate the impact of AI-enabled marketing strategies on rural consumer behaviour in the outskirts of Indore. The design is appropriate for analysing relationships among multiple constructs, including AI usage, IKS-based values, sustainability perceptions, and comparative FMCG strategies. A cross-sectional survey approach was used to collect data from consumers across selected rural and peri-urban clusters.

### 7.2 Study Area

The research was conducted in the outskirts of Indore district, a region representing a transition zone between rural and semi-urban environments. This area is characterized by:

- Growing digital adoption
- Exposure to FMCG brands through retail shops and mobile-based advertisements
- Persistence of IKS-based cultural norms, community-centred decision-making, and sustainability-oriented consumption

The selected locations included five clusters: Mhow (Dr. Ambedkar Nagar), Sanwer, Depalpur, Hatod, and Rau/Indore Rural, chosen to capture geographical, socio-economic, and market diversity.

### 7.3 Population and Sampling Frame

The target population comprises rural and peri-urban FMCG consumers residing in the outskirts of Indore who engage in daily-use product purchases such as groceries, soaps, detergents, packaged foods, oral care products, and beverages. The sampling frame was developed using village lists obtained from Panchayats, Anganwadi centres, and local administrative records.

### 7.4 Sample Size Determination

A final usable sample size of 500 respondents was targeted to ensure:

- Adequate power for multivariate analysis
- Feasibility of multi-group comparisons (Indian vs foreign FMCG users)
- Reliable parameter estimation for regression and PLS-SEM

To offset non-response, approximately 600 households were approached.

### 7.5 Sampling Technique

A multi-stage stratified random sampling method was adopted:

Stage 1: Cluster Selection

Five rural/peri-urban clusters around Indore were purposively selected.

## Stage 2: Village Selection

Within each cluster, four villages were randomly selected, resulting in a total of 20 villages.

## Stage 3: Household Selection

Systematic random sampling was used to select households within each village. Approximately 30 households were approached per village to obtain 25 usable responses, achieving the target sample of 500.

## Stage 4: Respondent Screening and Group Allocation

Respondents were screened using FMCG brand preference to classify them into:

- Group 1: Primarily Indian FMCG users (≈250 respondents)
- Group 2: Primarily foreign FMCG users (≈250 respondents)

This enabled comparative analysis.

## 7.6 Data Collection Method

Primary data were collected through structured personal interviews administered by trained investigators in Hindi or local dialects. This method ensured clarity, especially for respondents unfamiliar with AI-related terms or digital marketing practices. Ethical guidelines were strictly followed, including informed consent, confidentiality assurance, and voluntary participation.

## 7.7 Research Instrument (Questionnaire)

A structured questionnaire was developed based on existing literature and adapted for rural relevance. It included:

- AI-enabled marketing strategies (visibility, personalization, digital communication)
- IKS-based cultural values (trust, authenticity, community influence)
- Sustainability perceptions
- Rural consumer behaviour (purchase intention, preference, trust, brand switching)
- Comparative FMCG evaluation

All attitudinal items were measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

## 7.8 Variable Measurement

### Independent Variable

AI-enabled marketing strategies, measured through:

1. Product visibility
2. Personalization
3. Digital communication
4. Predictive promotional cues

### Moderating Variable

Indian Knowledge System (IKS) Values:

- Cultural alignment

- Trust & authenticity
- Ethical perception
- Community influence

Mediating Variable

Sustainability perceptions:

- Naturalness
- Eco-friendly packaging
- Health/well-being orientation
- Ethical sourcing

Dependent Variable

Consumer Behaviour:

- Purchase intention
- Brand preference
- Trust
- Brand switching
- Perceived value

Grouping Variable

FMCG Brand Origin:

- Indian FMCG
- Foreign FMCG

## 7.9 Reliability and Validity

A pilot test with 35 respondents was conducted. All constructs achieved:

- Cronbach's Alpha ( $\alpha$ ) > 0.70 (ensuring reliability)
- KMO > 0.70 and Bartlett's Test significant at  $p < 0.001$
- Factor loadings > 0.60 confirming construct validity

Further reliability and construct validation were performed using SPSS and SmartPLS during full analysis.

## 7.10 Data Analysis Techniques

The following analytical tools were used:

Descriptive Statistics

Means, standard deviations, frequencies, and demographic profiling.

Inferential Statistics

- Pearson correlation
- Independent samples t-test (Indian vs Foreign FMCG)
- ANOVA (for demographic comparisons)

## Multivariate Analysis

- Multiple regression analysis
- PLS-SEM to analyse structural paths
- Multi-group analysis (MGA) for Indian vs Foreign FMCG firms
- Moderation analysis (IKS values)
- Mediation analysis (Sustainability perceptions)

All analyses were performed at a 95% confidence level.

## 9. Data Analysis Plan

### 9.1 Data Preparation and Screening

#### 9.1.1 Data Cleaning

- Check missing responses and remove incomplete questionnaires.
- Use imputation (mean/mode) only if missing values <5%.
- Remove duplicate entries and inconsistent responses.

#### 9.1.2 Outlier Detection

- Use Z-scores ( $\pm 3$ ) to detect univariate outliers.
- Use Mahalanobis Distance to detect multivariate outliers ( $p < 0.001$ ).

#### 9.1.3 Normality Assessment

- Skewness and kurtosis (acceptable range  $\pm 1$ ).
- Visual inspections through histograms and Q–Q plots.

### 9.2 Reliability Testing

#### Cronbach's Alpha

Calculate  $\alpha$ -values for all constructs:

- AI-enabled marketing
- IKS values
- Sustainability perceptions
- Consumer behaviour
- Comparative FMCG perception

Threshold:  $\alpha \geq 0.70$  for acceptable reliability.

### 9.3 Validity Testing

#### 9.3.1 Sampling Adequacy

- KMO > 0.70
- Bartlett's Test of Sphericity  $p < 0.001$

#### 9.3.2 Exploratory Factor Analysis (EFA)

- Extraction: Principal Component Analysis (PCA).
- Rotation: Varimax.

- Retain items with factor loading  $\geq 0.50$ .
- Remove items with cross-loading.

### 9.3.3 Confirmatory Factor Analysis (CFA) (*If using SEM*)

- Factor loadings  $>0.60$
- Composite reliability  $>0.70$
- AVE  $>0.50$
- Discriminant validity: Fornell-Larcker criterion

## 9.4 Descriptive Analysis

### Objectives

- Summarize demographic profile
- Compare mean scores of key constructs
- Describe rural AI adoption level

### Statistics Used

- Frequency, percentage
- Mean, median, standard deviation
- Cross-tabulations (Indian vs foreign FMCG groups)

## 9.5 Inferential Statistical Analysis

### 9.5.1 Independent Samples t-Test

To compare Indian vs foreign FMCG users on:

- AI marketing exposure
- IKS alignment
- Sustainability perception
- Purchase intention

Objective: Identify statistically significant group differences.

### 9.5.2 ANOVA (One-Way)

Compare consumer behaviour across:

- Income categories
- Age groups
- Education levels

Objective: Understand demographic influence on AI adoption.

## 9.6 Correlation Analysis

Use Pearson's correlation coefficient to examine relationships between:

- AI marketing strategies  $\leftrightarrow$  Consumer behaviour
- IKS values  $\leftrightarrow$  Consumer trust
- Sustainability perceptions  $\leftrightarrow$  Purchase intention

Threshold: correlations  $<0.80$  to avoid multicollinearity.

## 9.7 Regression Analysis

Multiple Regression Model

Dependent Variable: Consumer Behaviour

Independent Variables:

- AI visibility
- Personalization
- Digital communication
- Predictive AI offers

Control Variables:

- Sustainability
- IKS values

Regression Output:

- Standardized beta coefficients
- $R^2$  and Adjusted  $R^2$
- F-statistic
- p-values

Objective: Identify strongest predictors of rural consumer behaviour.

## 9.8 Structural Equation Modelling (SEM / SmartPLS)

Structural Model Paths

1. AI-enabled marketing → Consumer behaviour
2. AI-enabled marketing → Sustainability perceptions → Behaviour
3. AI-enabled marketing → (moderated by IKS) → Behaviour

Model Fit Indicators (AMOS)

- $CFI > 0.90$
- $TLI > 0.90$
- $RMSEA < 0.08$
- $\chi^2/df < 3$

SmartPLS Indicators

- Path coefficients ( $\beta$ )
- t-statistics (via bootstrapping 5000 samples)
- p-values
- $R^2$  for endogenous variables
- $f^2$  effect sizes
- $Q^2$  predictive relevance

## 9.9 Moderation Analysis (IKS Values)

Using PROCESS Macro or SmartPLS:

- Moderation:  
AI Marketing × IKS → Consumer Behaviour
- Test interaction term significance.
- Plot moderation graphs for interpretation.

Objective: Determine whether cultural alignment enhances the effectiveness of AI.

### 9.10 Mediation Analysis (Sustainability Perceptions)

Paths tested:

- AI marketing → Sustainability → Consumer behaviour

Conditions:

- Indirect effect significant at  $p < 0.05$
- Bootstrapped confidence intervals do not include zero

### 9.11 Multi-Group Analysis (Indian vs Foreign FMCG)

Using PLS-MGA or independent path comparison:

- Compare structural paths
- Compare effect strengths
- Assess differences in AI adoption

Objective: Determine whether Indian or foreign FMCG firms influence rural consumers differently.

## 10. RESULTS & DISCUSSION

### 10.1 Demographic Profile of Respondents

Table 1: Demographic Distribution (n = 500)

Variable	Categories	%
Gender	Male 62%, Female 38%	—
Age	18–25 (22%), 26–35 (34%), 36–45 (28%), 46–55 (12%), 56+ (4%)	—
Education	No formal education (18%), Primary (26%), Secondary (30%), Higher Secondary (16%), Graduate+ (10%)	—
Occupation	Farmer (36%), Labourer (28%), Self-employed (20%), Service (8%), Homemaker (8%)	—
FMCG Grouping	Indian brands (252), Foreign brands (248)	50.4% / 49.6%

The balanced distribution of Indian vs foreign FMCG users supports the comparative design.

### 10.2 Descriptive Statistics of Major Constructs

Table 2: Descriptive Statistics

Construct	Mean	SD
AI Visibility	3.42	0.78
AI Personalization	3.25	0.82
Digital Communication	3.56	0.75

Predictive AI Offers	3.18	0.86
IKS Values	3.74	0.71
Sustainability Perception	3.68	0.77
Consumer Behaviour	3.61	0.79

Interpretation:

AI exposure among rural consumers is moderate, while IKS values and sustainability perceptions are stronger, indicating cultural and ethical consumption influences remain highly relevant.

### 10.3 Reliability & Validity Results

Table 3: Cronbach's Alpha Values

Construct	$\alpha$ Value
AI Visibility	0.84
AI Personalization	0.81
Digital Communication	0.86
Predictive AI Offers	0.79
IKS Values	0.88
Sustainability	0.83
Consumer Behaviour	0.90

All  $\alpha$ -values  $> 0.79$   $\rightarrow$  high reliability

KMO & Bartlett's Test

- KMO = 0.89  $\rightarrow$  excellent
- Bartlett's Test:  $\chi^2 = 3125.47$ ,  $p < 0.001$   $\rightarrow$  factor analysis appropriate

All factor loadings  $> 0.60$   $\rightarrow$  construct validity confirmed

### 10.4 Correlation Analysis

Table 4: Pearson Correlations

Variables	1	2	3	4	5	6	7
1. AI Visibility	1						
2. AI Personalization	.62**	1					
3. Digital Communication	.58**	.54**	1				
4. Predictive Offers	.49**	.52**	.47**	1			
5. IKS Values	.31**	.29**	.33**	.30**	1		
6. Sustainability	.36**	.34**	.39**	.30**	.48**	1	
7. Consumer Behaviour	.59**	.56**	.61**	.55**	.44**	.51**	1

All correlations significant at  $p < 0.01$ .

Interpretation:

AI-driven marketing has strong positive correlations with consumer behaviour. IKS and sustainability also show moderate-to-strong positive associations.

### 10.5 Independent Samples t-Test (Indian vs Foreign FMCG Users)

Table 5: Comparative Analysis

Construct	Indian Mean	Foreign Mean	t-value	Sig. (p)
AI Visibility	3.38	3.46	-1.98	0.048*
AI Personalization	3.15	3.36	-3.01	0.003**
IKS Values	3.89	3.59	4.72	<0.001***
Sustainability	3.76	3.59	2.60	0.010**
Consumer Behaviour	3.67	3.55	2.12	0.035*

\* p < .05, \*\* p < .01, \*\*\* p < .001

Interpretation:

- Foreign FMCG firms outperform Indian firms in AI-driven personalization and AI visibility.
- Indian FMCG firms outperform foreign firms in IKS alignment, sustainability perception, and consumer trust. This supports H6.

### 10.6 Multiple Regression Analysis

Model Summary

- $R^2 = 0.63$
- Adjusted  $R^2 = 0.62$
- $F(6,493) = 138.52, p < .001$

Excellent explanatory power.

Table 6: Regression Coefficients

Predictor	$\beta$	t-value	Sig. (p)	Hypothesis
AI Visibility	.24	6.11	<.001	Supported
AI Personalization	.19	4.52	<.001	Supported
Digital Communication	.27	6.98	<.001	Supported
Predictive Offers	.15	3.68	<.001	Supported
Sustainability Perception	.21	5.41	<.001	Supported
IKS Values	.18	4.79	<.001	Supported

All predictors significant → H1–H5 supported. Interpretation: AI and sustainability significantly shape rural consumer behaviour. Digital communication emerges as the strongest predictor.

### 10.7 Moderation Analysis (IKS Values)

Interaction Term:

$$\text{AI Marketing} \times \text{IKS} = \beta = .13, t = 3.22, p = .001$$

Interpretation:

IKS strengthens the impact of AI marketing—meaning AI messages are more effective when culturally aligned.

H4 supported.

### 10.8 Mediation Analysis (Sustainability Perception)

Indirect Effect (Bootstrapped 5000 samples):

AI Marketing → Sustainability → Consumer Behaviour

- Indirect  $\beta = .11$
- CI (0.06, 0.17) → Significant

H5 supported.

Interpretation:

AI strategies that communicate sustainability benefits significantly improve consumer decision-making.

### 10.9 PLS-SEM Structural Model Findings

Final Model Fit

- SRMR = 0.058
- NFI = 0.91
- $R^2$  (Consumer Behaviour) = 0.64
- $R^2$  (Sustainability) = 0.49

Path Coefficients

All major paths significant at  $p < .001$ .

### 10.10 Discussion of Findings

1. AI's Impact is Strong but Culturally Conditioned.
2. Indian FMCG Firms Excel in Cultural Trust
3. Sustainability Strengthens Purchase Decisions
4. Digital Communication is the Strongest AI Predictor
5. IKS Remains a Powerful Interpretive Lens

## 11. Conclusion

This study examined the combined influence of AI-enabled marketing strategies, Indian Knowledge System (IKS)-based values, and sustainability perceptions on rural consumer behaviour across the outskirts of

Indore. Using empirical data from 500 respondents, the research demonstrates that AI-driven marketing—comprising digital visibility, personalized recommendations, predictive offers, and mobile-based communication—significantly shapes consumer awareness, product recall, and purchase decisions in rural markets. However, the results reveal that the effectiveness of AI is not universal; rather, it is deeply conditioned by cultural expectations rooted in the Indian Knowledge System. IKS-driven values such as authenticity, community trust, ethical consumption, and cultural familiarity play a moderating role, strengthening or weakening the impact of AI strategies. This shows that rural consumers interpret digital messages through their cultural and social frameworks, reaffirming the continued importance of indigenous knowledge even in technologically evolving markets.

The study further identifies clear differences between Indian and foreign FMCG firms. Foreign brands lead in AI-driven personalization and digital sophistication, while Indian brands exhibit stronger IKS alignment, cultural relevance, and sustainability resonance. As a result, Indian brands enjoy higher trust and more stable purchase intention in culturally rooted rural settings. The findings confirm that a hybrid approach combining AI-driven insights with IKS-based cultural strategies yields the strongest behavioural impact. Sustainability perceptions emerged as a significant mediator, suggesting that rural consumers increasingly value naturalness, eco-friendly packaging, and ethical brand behaviour. This aligns AI-driven marketing with environmentally responsible practices, supporting long-term consumer loyalty.

Overall, this study highlights the need for integrative marketing frameworks that merge technological intelligence with cultural intelligence, especially for enhancing engagement in rural and peri-urban India.

## 12. Policy Recommendations

### 12.1 For FMCG Companies (Indian and Foreign)

1. Develop Hybrid AI + IKS Marketing Models
2. Strengthen Mobile-First Rural Marketing
3. Embed Authenticity and Trust Cues
4. Invest in Rural Digital Infrastructure

### 12.2 For Indian FMCG Firms

1. Capitalize on Cultural Advantage
2. Enhance AI Adoption

### 12.3 For Foreign FMCG Firms

1. Improve Cultural Adaptation
2. Strengthen Community-Level Engagement

## 12.4 For Policymakers and Government Agencies

1. Promote Digital Literacy in Rural Areas
2. Support Sustainable FMCG Practices
3. Strengthen Local Retail Ecosystems

## 12.5 For Researchers & Academics

1. Encourage Mixed-Methods Studies
2. Extend Research to Other Tribal and Rural Regions

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## Annexure Questionnaire

### Section A: Respondent Demographics

(Please tick ✓ the correct option)

1. Gender:

Male  Female  Other

2. Age Group:

18–25  26–35  36–45  46–55  56+

3. Education Level:

No formal education  Primary

Secondary  Higher Secondary

Graduate & Above

4. Occupation:

Farmer  Labourer  Self-employed

Service  Homemaker  Other

5. Monthly Household Income:

Below ₹10,000  ₹10,001–15,000

₹15,001–20,000  ₹20,001–30,000

Above ₹30,000

6. Village / Area: \_\_\_\_\_

### Section B: Screening for Group Classification (Indian vs Foreign FMCG)

Q1. Which FMCG brands do you purchase most frequently? (Mention up to 3 names)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Classification Rule:

✓ If 2 out of 3 brands are Indian → Group A (Indian FMCG Users)

✓ If 2 out of 3 brands are foreign → Group B (Foreign FMCG Users)

## SECTION C: AI-Enabled Marketing Strategies

(1 = Strongly Disagree, 5 = Strongly Agree)

## C1. AI-Driven Product Visibility

1. I frequently see FMCG brand advertisements on my mobile phone.
2. AI-based digital ads make me aware of new FMCG products.
3. Online ads shown to me often match my needs and preferences.
4. Digital visibility increases my trust in the brand.

## C2. AI Personalization

5. I receive personalized offers or product recommendations on my phone.
6. AI-driven messages influence my decision to try new FMCG products.
7. Personalized promotions feel more relevant compared to general ads.
8. AI-based recommendations help me make quicker purchase decisions.

## C3. AI-Based Digital Communication

9. I receive WhatsApp/SMS promotions from FMCG brands.
10. Digital communication helps me know about discounts and offers early.
11. Messages sent by brands feel timely and useful.
12. Digital promotions increase my interest in specific FMCG products.

## C4. Predictive &amp; Automated Offers

13. I notice that offers I receive seem based on my past purchases.
14. Automated reminders influence my buying decisions.
15. AI-generated offers make me more likely to choose a brand.

## SECTION D: Indian Knowledge System (IKS) Values

(1 = Strongly Disagree, 5 = Strongly Agree)

## D1. Cultural Alignment

16. I prefer brands that match my cultural values and local traditions.
17. Brands that use culturally familiar messages feel more trustworthy.

## D2. Trust &amp; Authenticity

18. I trust brands that feel natural and authentic.
19. Local or Indian-origin brands seem more honest and transparent.

## D3. Community Influence

20. I consider the opinion of family and community before buying FMCG products.
21. Recommendations from shopkeepers or neighbours influence my choices.

## D4. Ethical &amp; Value Orientation

22. I prefer brands that care about society and community welfare.
23. Traditional or Ayurveda-based claims improve my trust in a brand.

## SECTION E: Sustainability Perceptions

(1 = Strongly Disagree, 5 = Strongly Agree)

24. I prefer FMCG products with natural ingredients.
25. Eco-friendly packaging increases my likelihood of buying a product.
26. I value brands that support environmental protection.
27. I believe sustainable products are healthier for my family.

## SECTION F: Consumer Behaviour

(1 = Strongly Disagree, 5 = Strongly Agree)

## F1. Purchase Intention

28. AI-based promotions increase my willingness to buy products.
29. I feel motivated to try new brands after seeing digital ads.

## F2. Brand Preference

30. I choose brands that provide regular digital information.
31. I prefer brands that appear more often on my mobile screen.

## F3. Trust &amp; Loyalty

32. AI-based messages make me trust a brand more.
33. Brands that combine tradition with digital promotion feel more reliable.

## F4. Brand Switching

34. I shift to another brand when personalized offers are more attractive.
35. I switch brands if I see better AI-based promotions.

## F5. Perceived Usefulness

36. AI-driven ads help me make better purchase decisions.
37. Digital messages save my time in choosing FMCG products.

## SECTION G: Comparative Evaluation (Indian vs Foreign FMCG)

(1 = Strongly Disagree, 5 = Strongly Agree)

G1. Indian FMCG Perception

- 38. Indian FMCG brands understand local needs better.
- 39. Indian brands reflect cultural and traditional values.

G2. Foreign FMCG Perception

- 40. Foreign FMCG brands use advanced digital and AI techniques.
- 41. Foreign brands appear more professional and technologically strong.

