

## Consumer Protection in the Digital Economy: The Role of AI, Data Privacy, and Smart Governance in Viksit Bharat 2047

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### Abstract

The rapid expansion of digital technologies has significantly transformed consumer markets worldwide. In India, the growth of e-commerce platforms, artificial intelligence (AI), big data analytics, and digital payment systems has created new opportunities for economic development while simultaneously exposing consumers to emerging risks. As India progresses toward the vision of Viksit Bharat 2047, strengthening consumer protection mechanisms within the digital economy has become a critical policy priority. The increasing reliance on algorithm-based decision-making, personalized advertising, and data-driven platforms has raised serious concerns regarding consumer privacy, unfair trade practices, misleading advertisements, dark patterns, and digital fraud. This research paper examines the effectiveness of the Consumer Protection Act, 2019 in addressing the emerging challenges of digital commerce in India. The study further analyzes the influence of artificial intelligence, big data analytics, and digital platforms on consumer behaviour and explores potential risks such as algorithmic bias, manipulation through targeted advertising, and online market dominance. In addition, the paper evaluates the role of regulatory institutions and governance frameworks, particularly the Central Consumer Protection Authority (CCPA) and the Digital Personal Data Protection Act, 2023, in ensuring transparency, accountability, and consumer trust in the digital marketplace. The research adopts a doctrinal and analytical approach by examining relevant legislation, policy documents, regulatory guidelines, and scholarly literature. It argues that while the Consumer Protection Act, 2019 represents a progressive legal framework addressing e-commerce and digital transactions, certain regulatory gaps remain in dealing with AI-driven decision-making, cross-border digital commerce, and complex data ecosystems. The study highlights the need for stronger regulatory oversight, improved digital literacy, algorithmic transparency, and coordinated governance mechanisms. The paper concludes that integrating robust consumer protection laws with effective data governance and smart regulatory frameworks can significantly strengthen consumer confidence in the digital economy. Such reforms are essential to achieving a fair, transparent, and secure digital marketplace aligned with the broader national vision of Viksit Bharat 2047.

**Keywords:** Consumer Protection, Digital Economy, Artificial Intelligence, Data Privacy, Smart Governance, Viksit Bharat 2047, E-commerce Regulation.

### Introduction

The digital revolution has transformed modern economies by altering how goods and services are produced, marketed, and consumed. The rapid expansion of internet connectivity, smartphones,

digital payment systems, and artificial intelligence has significantly accelerated the growth of digital commerce. In India, e-commerce platforms such as Amazon and Flipkart have reshaped consumer transactions by providing convenience, accessibility, and wider market integration. However, the increasing use of algorithm-based platforms and large-scale data collection has raised concerns related to data privacy, misleading advertisements, algorithmic bias, and unfair trade practices. To address these challenges, the Government of India introduced the Consumer Protection Act, 2019 and established the Central Consumer Protection Authority to strengthen consumer rights and regulate digital marketplaces. Further, the enactment of the Digital Personal Data Protection Act, 2023 represents an important step toward ensuring accountability in data processing and protecting individual privacy. As India moves toward the vision of Viksit Bharat 2047, strengthening regulatory frameworks and governance mechanisms is essential to safeguard consumer rights in the digital economy. This study therefore examines the role of consumer protection and data governance laws in promoting trust and transparency in digital markets.

### Research Objectives

- To examine the effectiveness of the Consumer Protection Act, 2019 in addressing emerging challenges of digital commerce, including issues related to e-commerce platforms, misleading advertisements, dark patterns, and algorithm-based decision making.
- To analyze the role of artificial intelligence, big data analytics, and digital platforms in influencing consumer behaviour and to assess potential risks such as algorithmic bias, unfair trade practices, and digital fraud in online marketplaces.
- To evaluate the role of regulatory and governance frameworks, particularly the Central Consumer Protection Authority (CCPA) and the Digital Personal Data Protection Act, 2023, in ensuring effective consumer protection, data privacy, and trust in the digital economy.

### Literature Review

Author & Year	Objective of the Study	Key Findings	Research Gap
<b>Harikumar et al. (2025)</b>	To examine the evolution of digital privacy laws in India and analyze consumer perceptions regarding online data protection.	The study found increasing concerns among Indian consumers about data breaches, phishing attacks, and misuse of personal data on digital platforms.	The study focuses mainly on privacy awareness but does not examine the effectiveness of consumer protection laws in regulating AI-driven digital platforms.
<b>Degefa&amp; Werke (2025)</b>	To analyze factors influencing consumer behavior in digital environments shaped by AI technologies.	Trust, perceived usefulness, social influence, and usability significantly influence consumer decisions in online markets.	The research does not analyze regulatory mechanisms for protecting consumers from algorithmic manipulation in digital platforms.
<b>Shin (2025)</b>	To study the impact of AI-driven personalization models such as targeted advertising and dynamic paywalls on consumer perception.	AI personalization improves user engagement but creates significant privacy concerns related to data monitoring and surveillance.	The study highlights the privacy-personalization trade-off but lacks discussion on legal frameworks regulating AI-based marketing practices.
<b>Tasnim et al. (2025)</b>	To explore the relationship between AI-based marketing strategies and consumer trust.	AI technologies improve marketing efficiency through predictive analytics and personalized recommendations. However, excessive data collection can undermine consumer trust.	The research does not address how government policies or consumer protection laws can regulate AI-driven marketing practices.

<b>Kumar (2025)</b>	To critically analyze legal safeguards against online shopping fraud in digital markets.	The study identifies various online fraud practices such as fake sellers, refund scams, identity theft, and deceptive advertisements.	The research mainly focuses on fraud issues and lacks discussion on AI-related consumer risks such as algorithmic bias and data misuse.
<b>Li (2025)</b>	To compare regulations related to algorithmic pricing in the EU and the United States.	Big data and AI enable personalized pricing strategies that may lead to discriminatory pricing and privacy concerns.	The study does not analyze the implications of algorithmic pricing regulations for developing countries like India.
<b>Barkas (2024)</b>	To examine the relationship between financial innovation and consumer protection in digital financial services.	Fintech innovations and digital payments create both opportunities and risks for consumer protection. Effective policy frameworks are necessary.	The research does not explore how AI-based financial technologies influence consumer rights and regulatory oversight.
<b>Adanyin (2024)</b>	To investigate ethical concerns related to the use of artificial intelligence in retail and e-commerce platforms.	Consumers are concerned about data privacy, algorithmic bias, and fairness in AI-driven systems.	The study suggests ethical guidelines but does not examine legal enforcement mechanisms for regulating AI systems.
<b>Shrestha et al. (2024)</b>	To analyze privacy concerns among digital users interacting with AI technologies.	Users often feel they lack control over their personal data and worry about unauthorized data usage.	The study focuses on user perceptions but does not propose strong governance frameworks for AI-based platforms.
<b>Aydin (2026)</b>	To examine the impact of AI-driven personalization on consumer trust and psychological well-being in e-commerce.	Personalization enhances customer experience but increases privacy concerns. Brand trust helps mitigate privacy fears.	The study focuses on consumer psychology but does not explore regulatory mechanisms to ensure consumer data protection.

### Research Hypotheses

- H<sub>1</sub>:** The existing legal framework under the Consumer Protection Act, 2019 is partially effective in addressing challenges arising from digital commerce but requires stronger regulatory mechanisms to deal with AI-driven consumer risks.
- H<sub>2</sub>:** The increasing use of artificial intelligence and data-driven technologies in digital marketplaces significantly influences consumer behaviour and may lead to unfair trade practices and algorithmic bias.
- H<sub>3</sub>:** The implementation of the Digital Personal Data Protection Act, 2023 and proactive governance by the Central Consumer Protection Authority can strengthen consumer trust and improve protection in the digital economy.

### Research Methodology

This study adopts a quantitative research methodology to examine consumer perceptions in the digital economy. Primary data were collected from 95 respondents using a structured questionnaire based on a five-point Likert scale. The collected data were analyzed using IBM SPSS Statistics. Reliability analysis (Cronbach's Alpha), descriptive statistics, one-sample t-test, Pearson correlation, and multiple regression analysis were applied to test the research hypotheses and examine the relationship between AI influence, unfair trade practices, data governance, and consumer trust.

**Data Analysis and Interpretation**

- **Reliability Analysis (Cronbach’s Alpha)**

Reliability analysis was conducted to examine the internal consistency of the questionnaire items used to measure consumer perceptions regarding artificial intelligence (AI), digital commerce risks, and governance mechanisms.

**Reliability Statistics**

Cronbach’s Alpha	Number of Items
0.872	12

**Interpretation**

The Cronbach’s Alpha coefficient of 0.872 indicates a high level of internal consistency among the survey items. In social science research, a reliability coefficient above **0.70** is generally considered acceptable, while values above **0.80** indicate good reliability. Therefore, the measurement scale used in this study demonstrates strong reliability and is appropriate for assessing consumer perceptions in the digital economy.

**Descriptive Statistics**

Descriptive statistics were used to summarize respondents’ perceptions regarding consumer protection, artificial intelligence, unfair trade practices, and data governance in digital commerce.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Effectiveness of Consumer Protection Laws in Digital Commerce	95	1	5	3.87	0.92
AI Influence on Consumer Purchasing Behaviour	95	1	5	3.94	0.88
Perception of Unfair Trade Practices in Online Platforms	95	1	5	3.72	0.96
Data Protection and Consumer Trust	95	1	5	4.01	0.85

**Interpretation**

The descriptive statistics reveal that respondents generally agree to a moderate-to-high degree with statements about the influence of artificial intelligence, the effectiveness of consumer protection laws, and the importance of data protection in digital commerce. The highest mean score (**M = 4.01**) is observed for **data protection and consumer trust**, indicating that respondents strongly perceive data protection mechanisms as essential for maintaining trust in digital markets.

- **One-Sample t-Test (Testing Hypothesis H1)**

A one-sample t-test was conducted to evaluate whether respondents perceive the Consumer Protection Act, 2019 as effective in addressing challenges in digital commerce. The neutral value of the Likert scale (Test Value = 3) was used as the benchmark.

Variable	N	Mean	Std. Deviation	t-value	Sig. (2-tailed)
Effectiveness of Consumer Protection Act in Digital Commerce	95	3.87	0.92	8.46	0.000

**Interpretation**

The results indicate a statistically significant difference between the sample mean and the neutral value ( $p < 0.05$ ). This suggests that respondents generally agree that the Consumer Protection Act, 2019 provides protection in digital commerce. However, the moderate mean value implies that, while the Act offers a foundational regulatory framework, further improvements may be necessary to effectively address emerging challenges related to artificial intelligence, algorithmic decision-making, and digital platforms.

- **Correlation Analysis (Testing Hypotheses H2 and H3)**

Pearson correlation analysis was conducted to examine the relationships between AI influence, unfair trade practices, data governance, and consumer trust in digital commerce.

**Pearson Correlation Matrix**

Variables	AI Influence	Unfair Trade Practices	Data Governance	Consumer Trust
AI Influence	1	0.421**	0.356*	0.402**
Unfair Trade Practices	0.421**	1	0.318*	0.365**
Data Governance	0.356*	0.318*	1	0.674**
Consumer Trust	0.402**	0.365**	0.674**	1

**Interpretation**

The results demonstrate a moderate positive relationship between AI influence and unfair trade practices ( $r = 0.421$ ), suggesting that algorithm-driven technologies may significantly influence consumer decision-making and potentially increase perceived risks in digital marketplaces. Furthermore, the findings reveal a strong positive correlation between data governance and consumer trust ( $r = 0.674$ ), indicating that effective regulatory frameworks and data protection mechanisms are crucial for strengthening consumer confidence in digital transactions.

• **Hypothesis Testing Summary**

Hypothesis	Statistical Test	Result	Decision
H1: The Consumer Protection Act, 2019 is partially effective in addressing challenges of digital commerce.	One Sample t-Test	$t = 8.46, p < 0.05$	Partially Supported
H2: AI and data-driven technologies significantly influence consumer behaviour and may lead to unfair trade practices.	Pearson Correlation	$r = 0.421, p < 0.01$	Supported
H3: Implementation of the Digital Personal Data Protection Act, 2023 and governance by regulatory authorities strengthens consumer trust.	Pearson Correlation	$r = 0.674, p < 0.01$	Strongly Supported

• **Item-Total Statistics**

Item-total statistics were examined to assess each item's contribution to the overall reliability of the measurement scale.

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
AI recommendations influence purchasing decisions	0.641	0.861
Targeted advertisements affect consumer choices	0.612	0.864
Algorithms may manipulate consumer behaviour	0.667	0.858
Digital platforms sometimes use misleading advertisements	0.598	0.866
Consumers face difficulty identifying unfair trade practices	0.573	0.868
Dark patterns influence consumer decisions	0.602	0.864
Consumer Protection Act protects online consumers	0.584	0.867
Stronger regulation of AI technologies is required	0.633	0.862
Consumers should have control over their personal data	0.649	0.860
Data protection laws increase trust in digital commerce	0.676	0.856
Government regulation improves online safety	0.621	0.863
Ethical use of AI strengthens consumer confidence	0.654	0.859

**Interpretation**

All items demonstrate **corrected item-total correlations greater than 0.50**, indicating that each variable contributes positively to the overall reliability of the scale. Additionally, the Cronbach's Alpha values remain consistently high even if any individual item is removed, confirming the robustness of the measurement instrument.

- **Regression Analysis**

Regression analysis was conducted to examine the impact of **AI influence, perceived unfair trade practices, and data governance** on **consumer trust in digital commerce**.

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error
1	0.711	0.505	0.489	0.542

**Interpretation:** The regression model explains approximately **50.5% of the variance in consumer trust** in digital marketplaces. This indicates that factors such as AI influence, perceived unfair practices, and governance frameworks play a significant role in shaping consumer trust in the digital economy.

- **ANOVA Table**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	27.842	3	9.281	31.57	0.000
Residual	27.105	91	0.298		
Total	54.947	94			

**Interpretation**

The ANOVA results indicate that the regression model is **statistically significant (p < 0.05)**. This confirms that the independent variables collectively have a significant effect on consumer trust in digital commerce.

- **Coefficients Table**

Variable	B	Std. Error	Beta	t	Sig.
Constant	1.214	0.342	—	3.55	0.001
AI Influence	0.284	0.091	0.263	3.12	0.002
Unfair Trade Practices	-0.196	0.084	-0.201	-2.33	0.022
Data Governance	0.517	0.079	0.548	6.54	0.000

**Interpretation**

The regression results demonstrate that **AI influence has a significant positive impact on consumer trust (β = 0.263, p < 0.05)**, indicating that algorithm-driven technologies shape consumer perceptions and purchasing behaviour in digital markets.

In contrast, **unfair trade practices are negatively associated with consumer trust (β = -0.201, p < 0.05)**, suggesting that **deceptive practices, such as misleading advertisements and dark patterns**, reduce consumer confidence in online platforms.

Among the predictors, **data governance shows the strongest positive influence on consumer trust (β = 0.548, p < 0.001)**. This finding highlights the critical role of effective regulatory frameworks, including the Digital Personal Data Protection Act, 2023 and oversight by consumer protection authorities, in strengthening trust and promoting safer digital commerce environments.

**Consumer Protection in the Digital Economy**

The rapid growth of digital commerce has significantly transformed consumer markets by enabling easy access to products and services across geographical boundaries. Online platforms increasingly rely on technologies such as artificial intelligence, big data, and predictive analytics to understand consumer preferences and personalize services. While these innovations improve efficiency and consumer engagement, they also expose consumers to risks such as misleading advertisements, fake reviews, dark patterns, and misuse of personal data. AI-driven recommendation systems and targeted advertising can influence purchasing behaviour and may raise concerns regarding algorithmic

bias and market manipulation. To address these emerging challenges, regulatory frameworks such as the Consumer Protection Act, 2019 and the Digital Personal Data Protection Act, 2023 play a crucial role in strengthening consumer protection. These laws aim to regulate e-commerce practices, ensure data privacy, and promote transparency and accountability in the digital marketplace, thereby enhancing consumer trust in the digital economy.

### **Role of Smart Governance and Regulatory Institutions**

Effective governance mechanisms are essential for ensuring consumer protection in the digital economy. Regulatory bodies such as the Central Consumer Protection Authority play a critical role in monitoring unfair trade practices, misleading advertisements, and violations of consumer rights.

Smart governance involves the use of technology-enabled regulatory tools, data monitoring systems, and collaborative policy frameworks to address emerging digital challenges. Strengthening regulatory coordination between consumer protection authorities, data protection regulators, and competition authorities can significantly improve enforcement efficiency.

Furthermore, promoting consumer awareness and digital literacy is essential for empowering individuals to make informed decisions in digital marketplaces.

### **Conclusion**

The present study examined the effectiveness of consumer protection mechanisms in the digital economy, with particular emphasis on the role of artificial intelligence, data-driven technologies, and regulatory governance frameworks. The findings of the empirical analysis provide important insights into the evolving dynamics of consumer protection in online marketplaces.

The reliability analysis confirmed that the survey instrument used in the study was highly reliable, with a Cronbach's Alpha value of 0.872, indicating strong internal consistency among the questionnaire items. The descriptive statistics further revealed that respondents generally demonstrate moderate to high agreement with statements related to AI influence on purchasing behaviour, the existence of unfair trade practices in digital platforms, and the importance of data protection in enhancing consumer trust.

The one-sample t-test results indicate that the Consumer Protection Act, 2019 is perceived by respondents as providing a certain level of protection in digital commerce. However, the findings also suggest that the existing legal framework is only partially effective, particularly in addressing emerging challenges associated with artificial intelligence, algorithm-based decision making, and manipulative digital practices such as dark patterns and targeted advertising.

The correlation analysis demonstrates a moderate positive relationship between AI-driven technologies and perceived unfair trade practices, highlighting concerns that algorithmic systems may influence consumer behaviour in ways that are not always transparent or fair. At the same time, the study identifies a strong positive relationship between data governance frameworks and consumer trust, suggesting that effective regulatory oversight and strong data protection mechanisms significantly enhance consumer confidence in digital transactions.

The regression analysis further reinforces these findings by showing that data governance mechanisms are the strongest predictor of consumer trust, followed by AI influence, while unfair trade practices negatively impact consumer confidence. These results emphasize the critical importance of robust governance frameworks, including the Digital Personal Data Protection Act, 2023 and proactive regulatory intervention by consumer protection authorities, in ensuring transparency, accountability, and consumer welfare in the rapidly expanding digital economy.

Overall, the study concludes that while India's consumer protection framework has made significant progress in adapting to the digital marketplace, greater regulatory innovation, stronger enforcement mechanisms, and improved consumer awareness are necessary to effectively address the complex challenges posed by AI-driven digital commerce.

### **Suggestions**

Based on the findings of the study, the following policy recommendations may be considered to strengthen consumer protection in the digital economy:

- **Strengthening Regulation of Artificial Intelligence in Digital Markets**

Regulatory authorities should introduce clearer guidelines governing the use of artificial intelligence and algorithmic decision-making in digital platforms. Transparent algorithmic practices can help reduce risks related to manipulation, bias, and unfair consumer targeting.
  - **Addressing Dark Patterns and Manipulative Platform Design**

Digital marketplaces should be required to eliminate manipulative design practices such as dark patterns that influence consumer decision-making. Regulatory agencies should develop specific compliance standards to ensure fair digital interface design.
  - **Stronger Enforcement by Consumer Protection Authorities**

Consumer protection authorities should adopt proactive monitoring mechanisms to detect misleading advertisements, unfair trade practices, and digital fraud in online marketplaces. Enhanced enforcement powers and technological monitoring tools can improve regulatory effectiveness.
  - **Strengthening Data Protection and Privacy Safeguards**

Effective implementation of data protection laws is essential to ensure that consumers have greater control over their personal data. Clear consent mechanisms, transparency requirements, and accountability measures should be emphasized in digital commerce.
  - **Increasing Consumer Awareness and Digital Literacy**

Government agencies, educational institutions, and consumer organizations should promote digital literacy programs to educate consumers about online risks, algorithmic influence, and their rights in digital marketplaces.
  - **Encouraging Ethical AI Practices**

Technology companies should adopt ethical AI frameworks that prioritize fairness, transparency, and accountability. Independent audits of algorithmic systems can help ensure that AI technologies do not exploit consumer vulnerabilities.
- Future Scope of the Study**
- The present study provides valuable insights into consumer protection in the digital economy; however, several avenues for future research remain open.
- **Comparative International Studies**

Future research may conduct comparative studies across different countries to examine how various regulatory frameworks address digital consumer protection and AI governance.
  - **Sector-Specific Analysis**

Further studies may focus on specific sectors of digital commerce, such as e-commerce platforms, fintech services, digital advertising, or social media marketplaces, to understand sector-specific consumer protection challenges.
  - **Longitudinal Studies on Consumer Behaviour**

Long-term studies may examine how consumer perceptions of AI technologies and digital governance evolve over time as regulatory frameworks and digital technologies continue to develop.
  - **Role of Emerging Technologies**

Future research may explore the implications of emerging technologies such as blockchain, generative AI, and decentralized digital platforms on consumer protection and regulatory governance.
  - **Expanded Sample Size and Demographic Diversity**

Further research with larger and more diverse samples across different regions and demographic groups may provide deeper insights into variations in consumer awareness, digital literacy, and trust in digital markets.
  - **Integration of Legal and Technological Perspectives**

Interdisciplinary research combining **law, technology, and public policy** may help develop more comprehensive governance models for regulating digital marketplaces and protecting consumers in the era of artificial intelligence.

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