

EXPLORING CONSUMER

PERCEPTIONS OF ALGORITHMIC PRICE DISCRIMINATION IN INDIAN E-COMMERCE: MEDIATING AND MODERATING PERSPECTIVES ANALYSIS

PERCEPCIONES DE CONSUMIDORES SOBRE DISCRIMINACIÓN ALGORÍTMICA DE PRECIOS EN COMERCIO ELECTRÓNICO INDIO: PERSPECTIVAS MEDIADORAS Y MODERADORAS

Surjadeep Dutta¹

E-mail: surjadeep.dutta@bcrec.ac.in

ORCID: <https://orcid.org/0009-0004-4637-6844>

Arunava Mookherjee¹

E-mail: arunava.mookherjee@bcrec.ac.in

ORCID: <https://orcid.org/0000-0002-3410-9712>

¹ Dr. B.C. Roy Engineering College, Durgapur, West Bengal, India.

Suggested citation (APA, seventh edition) _____

Dutta, S., & Mookherjee, A. (2026). Exploring consumer perceptions of algorithmic price discrimination in Indian E-Commerce: Mediating and moderating perspectives analysis. *Sophia Research Review*, 3(3), 91-99.

Submission: 06/29/2026

Acceptance: 08/07/2026

Publication: 09/01/2026

ABSTRACT

E-commerce platforms in India have undergone rapid transformation while increasingly adopting algorithmic price discrimination practices. This form of price discrimination relies on artificial intelligence and data-driven technologies to set personalized prices based on consumers' browsing behavior, purchase history, geographic location, and other online activities. The purpose of this study is to examine how algorithmic price discrimination influences consumer perceptions of e-commerce platforms in India, considering perceived exploitation as a mediating variable and digital literacy as a moderating variable. A quantitative research approach was employed, and data were collected from 150 online consumers through a structured questionnaire. The data were subsequently analyzed using SPSS and AMOS through descriptive statistics and structural equation modeling. The findings indicate that the use of pricing algorithms negatively affects consumers' perceptions of pricing fairness and contributes to a sense of exploitation by firms, with perceived exploitation serving as a mediating mechanism in this relationship. Furthermore, the study demonstrates that among the dimensions of digital literacy, consumers' knowledge of personalized pricing practices and algorithmic decision-making moderates the impact of algorithmic price discrimination on consumer perceptions. Individuals with a higher level of understanding of these mechanisms interpret algorithmic price discrimination practices differently from those with lower levels of digital literacy.

Keywords:

Algorithmic price discrimination, E-Commerce Platforms, customer perceptions, perceived exploitation.

RESUMEN

Las plataformas de comercio electrónico en la India han experimentado una rápida transformación y, al mismo tiempo, han incrementado el uso de la discriminación algorítmica de precios. Esta constituye una modalidad de discriminación de precios que utiliza inteligencia artificial y tecnologías basadas en datos para establecer precios personalizados para los consumidores según su comportamiento de navegación, historial de compras, ubicación y otras actividades realizadas en línea. El propósito de esta investigación es analizar cómo la discriminación algorítmica de precios influye en las percepciones de los consumidores sobre las plataformas de comercio electrónico en la India, considerando la percepción de explotación como variable mediadora y la alfabetización digital como variable moderadora. Para ello, se empleó una metodología de investigación cuantitativa y se recopiló datos de 150 consumidores en línea mediante un cuestionario estructurado. Posteriormente, la información fue analizada con los programas SPSS y AMOS utilizando estadística descriptiva y modelos de ecuaciones estructurales. Los resultados muestran que el uso de algoritmos para fijar precios afecta negativamente la percepción que los consumidores tienen sobre los precios y contribuye a generar una sensación de explotación por parte de las empresas, percepción que actúa como un mecanismo mediador de dicho efecto. El estudio evidencia que, entre las dimensiones de la alfabetización digital, el conocimiento sobre la fijación personalizada de precios y el funcionamiento de los algoritmos modera el impacto de la discriminación algorítmica sobre la percepción de los consumidores, ya que quienes poseen un mayor nivel de comprensión de estos mecanismos interpretan de manera diferente las prácticas de discriminación de precios.



Palabras clave:

Discriminación algorítmica de precios, plataformas de comercio electrónico, percepciones de los consumidores, percepción de explotación.

INTRODUCTION

Recent growth of sites like Amazon India, Flipkart, Myntra, and JioMart has led to an increased use of algorithmic pricing systems; that is, companies are now much more able to change their prices based on user data such as a person's prior browsing activity, where they are located, what type of device they use, how much money they have available to spend, and how they behave online when they visit the company's site or the website of one of its competitors. This practice, referred to as algorithmic price discrimination or personalized pricing/cross platform pricing, is increasingly becoming a concern for researchers who study digital marketing and consumer behavior because it is used by marketers to create custom prices and special offers for consumers at the time they place their orders (Hannak et al., 2014). As artificial intelligence and big data become more prevalent in India's highly competitive digital marketplace, e-commerce sites have found that they can maximize their profits by offering personalized prices to consumers, but this practice has also created many ethical issues related to the fairness of how consumers are treated (Organization for Economic Cooperation and Development, 2018). When a consumer believes that he/she is being unfairly targeted by an e-commerce site or charged a different price than someone else who purchased the same item at the same time, then that consumer will begin to feel a sense of perceived exploitation which will adversely impact their level of trust, e.g., customer satisfaction and willingness to purchase from that company again (Xia et al., 2004).

Perceived Exploitation can act as a psychological mechanism that influences consumer attitude towards online platforms via algorithmic pricing practices, particularly when pricing decisions are perceived to be manipulative or opaque (Turow, 2017). Moreover, Digital Literacy serves as an important moderating factor within the context of algorithmic pricing tactics as higher levels of technological awareness among consumers enable them to better identify, interpret and respond to algorithmic pricing tactics (Van Deursen & Van Dijk, 2014). In the Indian context, where there is rapid digital adoption and uneven digital literacy across demographic groups, the interaction of algorithmic price discrimination, perceived exploitation, and Digital Literacy are particularly important for understanding online consumer behaviour. There have been recent studies indicating that digitally literate consumers are more likely to question personalized pricing practices and engage in protective behaviours, while less digitally literate consumers are more likely to unknowingly accept discriminatory pricing structures (Calo, 2014;

Zuboff, 2019). Thus, understanding the mediating role of perceived exploitation and the moderating role of Digital Literacy provides both theoretical and managerial insights into the ethical implications of algorithmic pricing within Indian e-commerce ecosystems.

With the rise of algorithmic price discrimination in digital commerce due to the extensive use of AI, ML and Big Data by e-commerce platforms to customize pricing based on consumer actions (including purchase behaviours, purchase history, location, browsing behaviours and willingness to pay), the matter of algorithmic pricing has become more vital to firms as a means to maximize revenue efficiency. However, there are also many concerns about fairness, transparency, and consumer trust surrounding algorithmic pricing (Krämer & Kalka, 2017). For example, algorithmic pricing on Indian ecommerce platforms such as Amazon India, Flipkart and Myntra are commonly used during instance sales (such as during holidays), and therefore impact how consumers perceive fair pricing and ethical business practices by firms. As demonstrated by several scholars, traditional price discrimination has shifted towards being a digital mechanism of sophisticated price discrimination, with consumers typically not aware of how their prices are determined (Ezrachi & Stucke, 2016). Lack of transparency of pricing practices has increased levels of consumer trust issues and emotional anxiety as consumers discover price differences for the same products purchased from two separate users or devices.

According to existing research regarding price fairness, consumers evaluate the price of goods and/or services based on economic considerations but also from social comparisons, as well as psychological comparisons (Xia et al., 2004). Consumers will feel exploited when they believe businesses are taking advantage of the collection of personal data to manipulate their price in an unfair manner. Perceived exploitation leads to negative consequences such as decreased levels of trust and satisfaction, lower levels of store loyalty, and lower likelihood of repurchasing, as documented by (Martin, Borah, & Palmatier, 2017).

Consumers' perception of being exploited means they feel they are being treated unfairly for the purpose of corporate profit, particularly when companies' pricing strategies appear deceptive or manipulative. In a digital marketplace, this perception is heightened due to a lack of visibility into how algorithms operate, and their often-invisible behavior, combined with the lack of an easy way to find this information (Calo, 2014). Recent studies indicate that personalized pricing can lead to negative emotional states, such as anger, frustration, and privacy concerns, particularly among consumers who perceive a lack of fair treatment (Garbarino & Lee, 2003). Further research has shown that algorithmic discrimination has a higher impact on the most vulnerable types of consumers, who do not

have a reasonable level of understanding about digital systems and the collection of personal data (Zuboff, 2019).

A further notable area of current interest in research studies is the influence of digital literacy on how online shoppers react to algorithm-based pricing. The meaning behind digital literacy is a person's ability to find, understand, evaluate and use different types of digital technologies and information found online (Van Deursen & Van Dijk, 2014). Generally, people who have a higher level of digital literacy are better equipped to identify when an online store is using dynamic pricing practices, can easily compare prices offered by multiple online retailers, know how to delete cached files from their web browser so that they are not tracked, and know how to use tools (e.g., pricing comparison websites) to avoid being treated unfairly towards them due to algorithmic discrimination.

As a result, digital literacy moderates the relationship between algorithmic price discrimination and the consumer's perception of exploitation through the reduction of vulnerabilities that consumers experience when confronted with hidden pricing practices (Stankov, 2023). In contrast, consumers with low levels of digital literacy will tend to accept algorithmic pricing decisions uncritically because they do not feel comfortable questioning whether these types of pricing decisions are fair, thus creating an increased risk for feelings of having been exploited and dissatisfaction with the purchase. As countries such as India continue to experience significant growth in the number of people using the internet but have large gaps in digital awareness levels between urban and rural communities, this moderating role of digital literacy will be especially salient.

Recent research highlights both the ethical and regulatory aspects of algorithms used for pricing goods in e-commerce settings. The Organization for Economic Cooperation and Development (2018) states that although personalized pricing has the potential to increase the efficiency of the marketplace, a marketplace that relies too heavily on consumer data may lose its transparency to the marketplace and its consumers' rights to be independent. As a result, researchers are calling for more accountability in algorithmics; transparency related to pricing; and a digital consumer protection policy, all in an effort to ensure that innovation and ethical responsibility in business are balanced (Borgesius & Poort, 2017). The current literature supports the notion that algorithmic price discrimination will substantially impact how consumers perceive the practice of personalized pricing in an e-commerce environment based on perceived exploitation, and that digital literacy serves as a protective measure impacting how consumers perceive and accept personalized pricing strategies utilized by e-commerce organizations.

The objective of this study is to analyze the impact of algorithmic price discrimination on consumer perceptions across Indian e-commerce platforms. Specifically, it seeks to examine how algorithmic pricing practices influence consumers' evaluations of online marketplaces and to provide insights into the factors shaping their perceptions within the rapidly evolving digital commerce environment.

MATERIALS AND METHODS

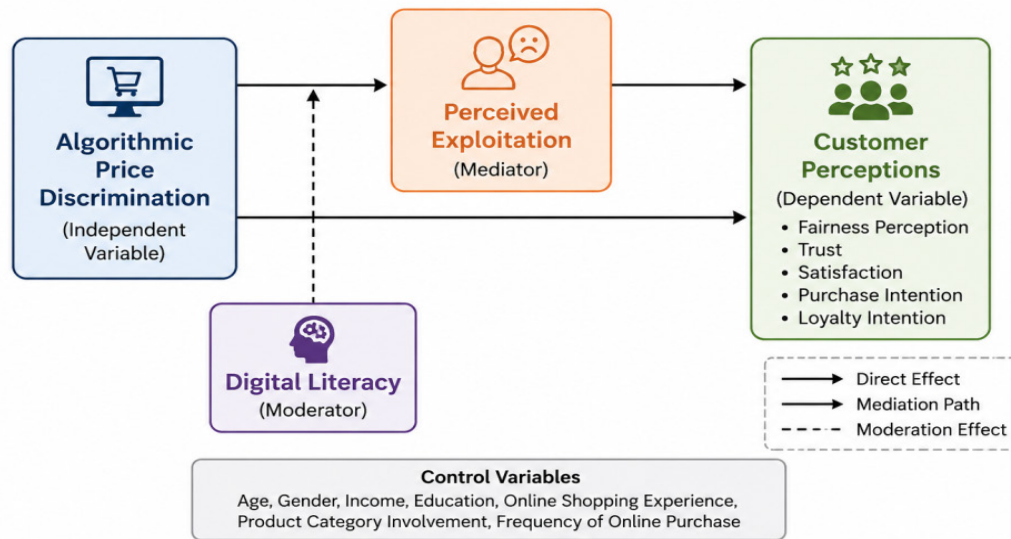
This study used a quantitative/ descriptive research design to investigate the effects of algorithmic price discrimination on customers' perceptions of Indian E-Commerce websites using perceived exploitation as a mediator and digital literacy as a moderator. The target sample was made up of consumers who shop online through platforms such as Amazon India, Flipkart, Myntra and other online stores. Primary data was obtained by administering a structured questionnaire based on previously used and validated measurement tools related to algorithmic pricing, perceived exploitation of consumers, digital literacy and customer perception. The first part of the questionnaire obtained demographic information regarding respondents, and the second part measured the constructs in the study using 5-point Likert scales (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree).

A total of 150 participants were recruited using convenience sampling because of their availability online as well as high levels of internet connectivity (i.e., access to a high-speed connection). Participants were selected from a variety of age, educational background, occupational, and income levels. Participant data was collected using web-based survey forms that were sent out to email addresses, social media channels, and other digital communication channels. Data was analyzed using SPSS and AMOS (two software applications designed to analyze statistical data). Overall descriptive statistics were produced, and structural equation modeling (SEM) was used to analyze the hypothesized relationships between variables and to assess the hypothesized mediating role of perceived exploitation and the moderating role of digital literacy. The reliability and validity of constructs were assessed using Composite Reliability (CR), & Average Variance Extracted (AVE).

As shown in Figure 1, the proposed research model identifies algorithmic price discrimination as the independent variable, exerting both a direct effect on customer perceptions and an indirect effect mediated by perceived exploitation. In addition, digital literacy functions as a moderating variable in the relationship between algorithmic price discrimination and customer perceptions. The model also incorporates control variables related to demographic characteristics and online shopping behavior to account for their potential influence on the study outcomes.

Research Model

Algorithmic Price Discrimination across Indian E-Commerce Platforms: The Mediating Role of Perceived Exploitation and the Moderating Role of Digital Literacy



Note: The model proposes that Algorithmic Price Discrimination influences Customer Perceptions both directly and indirectly through Perceived Exploitation, and this relationship is moderated by Digital Literacy.

Figure 1. Research Model on Algorithmic Price Discrimination.

RESULTS AND DISCUSSION

The demographics of the participants shows almost 2/3 (65%) of the total sample are between the ages of 25-30. This demonstrates that young adults make up the bulk of users of Indian e-commerce platforms and are most commonly exposed to pricing through algorithms. In addition, 60% of the participants are male, suggesting a predominance of males in online purchase behaviors and engaged in digital commerce. Similarly, 70% of respondents are unmarried, implying that younger and independent consumers will engage in more online shopping than other consumers as well as use technology to make purchase decisions (Table 1).

Table 1. Key Demographic Highlighting Criteria of Respondents.

Factor	Specific Highlighting Criteria	Percentage
Age Group	25-30	65 %
Gender	Male	60 %
Marital Status	Unmarried	70 %
Occupation	Private Employees	75 %

Finally, 75% of respondents who work in private employment suggest that salaried employees with established internet access and digital exposure are the majority consumers of e-commerce platforms. Overall, the demographic profile of the respondents indicates that the study captures responses primarily from digitally active, young, professionally employed consumers who frequently access algorithm-based pricing systems within the Indian online marketplace.

According to the results of Structural Equation Modeling (Figure 2) the model demonstrated that the accompanying goodness of fit statistics validated the proposed conceptual framework. More specifically, the reported values of $\chi^2/df = 1.842$, CFI=0.957, TLI=0.945, GFI=0.938, RMSEA=0.046, and SRMR=0.38 indicate that the model adequately fit the empirical data, based on SEM standards. Furthermore, the measurement model demonstrated that the construct had high reliability and convergent validity as evidenced by all factor loadings exceeding the minimum level of 0.70 or higher; Composite Reliability Values (CR) were all greater than 0.80; and Average Variance Extracted Values were also all greater than 0.50. The results of the structural portion of the model showed that Algorithmic Price Discrimination (APD) has a significant positive impact on Perceived Exploitation (PE) ($\beta=0.62$, $p < .001$).

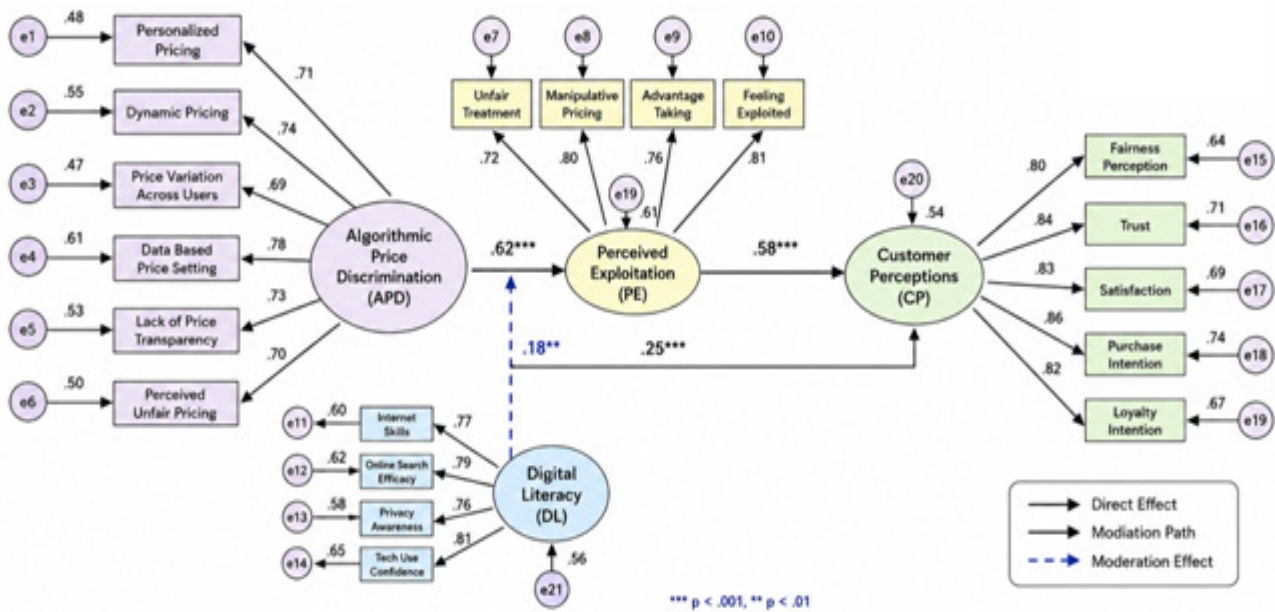


Figure 2. SEM Model.

This means that those subjects who experience personalized/dynamic pricing methods are more likely to view themselves as being treated inequitably/exploited as a direct result of e-commerce pricing algorithms (Table 2). In addition, PE also has a significant positive relationship with Customer Perceptions ($\beta=0.58$ $p < 0.001$). Therefore, feeling exploited will negatively impact the way the consumer perceives e-commerce in terms of fairness, trust, satisfaction, purchase intentions, and loyalty. Furthermore, Research also shows a statistically significant direct relationship between APD and Customer Perceptions ($\beta=0.25$, $p < 0.001$), as such algorithmic pricing methods will continue to influence Customer Perceptions even without the chain of causality through PE.

Table 2. SEM Analysis.

Hypothesis	Structural Path	Standardized Beta (β)	t-value	p-value	Decision
H1	APD $\rightarrow$ PE	0.62	8.74	<0.001	Supported
H2	PE $\rightarrow$ CP	0.58	7.96	<0.001	Supported
H3	APD $\rightarrow$ CP	0.25	3.84	<0.001	Supported
H4	APD $\rightarrow$ PE $\rightarrow$ CP (Indirect Effect)	0.36	5.91	<0.001	Partial Mediation Supported
H5	APD $\times$ DL $\rightarrow$ PE	0.18	2.87	<0.01	Moderation Supported

According to mediation analysis (Table 3), as shown by the previous findings, perceived exploitation partially mediates the association between APD and customer perception of (indirect effect $\beta = 0.36$, $p < 0.001$). This result provides evidence that a customer's negative feelings toward APD create an important psychological mechanism for impact on the customer's assessment of e-commerce platforms. The positive result of digital literacy moderating the relationship between APD and PE ($\beta = 0.18$, $p < 0.01$) suggests that digitally literate consumers will have greater sensitivity to algorithmically-based price discrimination compared to consumers who are less digitally literate. The empirical data obtained from SEM suggests, generally, that algorithmic price discrimination has a direct impact on a customer's perception of an Indian e-commerce platform through perceived exploitation, and that digital literacy influences the overall strength of this relationship.

Table 3. Measurement Model Results.

Construct	Measurement Items	Standardized Loading	CR	AVE	Result
Algorithmic Price Discrimination (APD)	Personalized Pricing	0.71	0.89	0.61	Accepted
	Dynamic Pricing	0.74			
	Price Variation Across Users	0.69			
	Data-Based Price Setting	0.78			

	Lack of Price Transparency	0.73			
	Perceived Unfair Pricing	0.7			
Perceived Exploitation (PE)	Unfair Treatment	0.72	0.87	0.63	Accepted
	Manipulative Pricing	0.8			
	Advantage Taking	0.76			
	Feeling Exploited	0.81			
Digital Literacy (DL)	Internet Skills	0.77	0.85	0.59	Accepted
	Online Search Efficacy	0.79			
	Privacy Awareness	0.76			
	Technology Use Confidence	0.81			
Customer Perceptions (CP)	Fairness Perception	0.8	0.91	0.67	Accepted
	Trust	0.84			
	Satisfaction	0.83			
	Purchase Intention	0.86			
	Loyalty Intention	0.82			

The results of the model-fit indices listed in Table 4 indicate that the structural equation model (SEM) tested in this study provided an acceptable and statistically valid fit with the data being analyzed. The ratio of the chi-square statistic to degrees of freedom ($\chi^2/df = 1.842$) is less than the recommended maximum threshold of 3.00, showing that all results associated with the SEM offer a good overall fit and that there is very little discrepancy between the observed covariance matrix derived from the sample and that estimated covariance matrix estimated by the SEM (Hair et al., 2019). Further, both the comparative fit index (CFI = 0.957) and Tucker and Lewis index (TLI = 0.945) are greater than the desired value of 0.90, indicating a high level of incremental fit and providing evidence that the SEM effectively explains the covariance structure observed through the null model (Hu & Bentler, 1999). Finally, the goodness-of-fit index (GFI = 0.938) indicates a superior level of fit between the hypothesized model and the collected data, offering additional corroboratory evidence for the quality of both the measurement and structural model frameworks used in this analysis.

Table 4. Model Fit Indices.

Fit Index	Recommended Value	Obtained Value	Interpretation
χ^2/df	< 3.00	1.842	Good Fit
CFI	> 0.90	0.957	Excellent Fit
TLI	> 0.90	0.945	Good Fit
GFI	> 0.90	0.938	Good Fit
RMSEA	< 0.08	0.046	Excellent Fit
SRMR	< 0.08	0.038	Excellent Fit

Also, the RMSEA = 0.046 is considerably lower than the recommended threshold of .08 indicating how well the model approximates the true population covariance matrix as well as being an indicator of the high parsimony of the model (Browne & Cudeck, 1993). The SRMR = 0.038 is also significantly below the recommended cut-off of .08, suggesting that there are only minimal residual discrepancies between observed correlations and predicted correlations. Taken together, these fit indices indicate that the SEM Model proposed in this study is statistically valid and theoretically sound when investigating relationships between Algorithmic Price Discrimination, Perceived Exploitation, Digital Literacy, and Customer Perceptions within Indian E-Commerce. The results also support the use of established SEM criteria for evaluation as outlined in previous methodological literature and further illustrate the adequacy of the conceptual framework used within this research.

Managerial Implications

The results of the research offer some crucial implications for Indian e-commerce platforms, digital marketing professionals, policymakers, and technology creators. The relatively strong correlation between perceived exploitation and algorithmic price discrimination indicates that consumers are now becoming more aware of how unfair or manipulative pricing approaches are, and thus more sensitive than ever before to personalized pricing methods. E-commerce managers need to now consider how transparent their pricing practices are and the ethics

involved in the use of algorithms to price in order to keep customers' trust and foster long-term loyalty on their platforms. For instance, e-commerce platforms such as Amazon India, Flipkart and Myntra should provide customers with information describing the methods used to arrive at their discount rate(s), dynamic pricing, or personalized offer. Providing such information about pricing can help to reduce consumer doubt surrounding hidden pricing practices by allowing customers to better understand pricing strategies and thereby lower their feelings of exploitation. Providing transparent pricing strategies can also help to create a perception among customers that pricing is fair, ultimately leading to enhanced levels of trust, and satisfaction. Finally, managers/marketing administrators should be certain that the pricing algorithm developed is designed not just for profit maximization, but also for ethical reasons and without placing too much emphasis upon over-personalization, since overly personalized pricing may result in negative reactions from consumers in terms of brand loyalty/reputation over time.

The findings of this research also suggest that perceived exploitation mediates the relationships between emotional responses and customers' perceptions of e-commerce platforms, which suggest that companies need to develop effective systems for tracking customer sentiment and feedback on pricing fairness. Companies use customer relationship management (CRM) systems with integrated sentiment analysis tools to identify customer dissatisfaction related to algorithmic pricing models and provide proactive solutions through personalized communication, education of customers, and grievance redressed. For example, marketing managers should create marketing campaigns that emphasize fairness in the eyes and mind of consumers rather than manipulation by digital systems. In addition, to promote perceived fairness in pricing, retailers should offer price guarantees, create transparent discount formats, and enforce consistent pricing across multiple devices (e.g., mobile vs. desktop) and multiple user segments (e.g., students vs. professionals).

The moderating effect of digital literacy provides another dimension to consider. As consumers become more knowledgeable about algorithmic pricing and data-driven business models, there is increased pressure on e-commerce businesses to implement responsible data management and fair pricing policies. E-commerce companies need to invest in digital consumer education initiatives that inform consumers about personalized recommendations and how they work, the difference between personalized pricing and the traditional model of price discrimination, the relationship between digital consumers and companies using AI; it is important for companies to provide educational materials, FAQs, and transparency in their privacy policies to help consumers understand how to use AI for personalized pricing. At the same time, companies should avoid taking advantage of consumers who are less digitally literate

and do not understand how to identify discriminatory pricing. If a company is found to have discriminated against a consumer based on their digital literacy, this is likely to result in further scrutiny from regulators and negative publicity for that company.

The evidence presented in this research provides support for the development of more robust consumer protection policies around algorithmic transparency and digital pricing practices in India. To achieve this, regulatory bodies such as the Competition Commission of India (CCI) and the Consumer Protection Authority should create guidelines outlining the requirement to disclose personalized pricing processes as well as prohibiting unfairly discriminatory pricing practices based on sensitive information about consumers. In addition, policymakers may want to support the development of programs that promote digital literacy among consumers regarding their rights related to online privacy issues (e.g., knowledge of how online prices are calculated), pricing algorithms, and how their own data is used by companies. By providing consumers with greater digital literacy, they will be better positioned to make informed decisions about purchasing goods/services as well as be less vulnerable to exploitative practices by companies operating in the digital space.

The findings of this study also have strategic implications for firms competing for long-term market share in the e-commerce space. In addition to high competitive intensity, trust and ethical reputation have become important factors that impact the success of any firm competing within the online marketplace. Firms that are able to effectively balance the introduction of new technologies with offering equitable/trustworthy products or services will typically have higher levels of customer retention, brand equity, and positive word-of-mouth endorsements compared to other firms. Therefore, it is important for managers to view ethical algorithmic pricing practices not just as a way to comply with existing regulations but also as an effective means of developing long-term relationships with customers and establishing sustainable differentiation against competitors within the digital marketplace in India, which is changing rapidly.

CONCLUSIONS

According to the current study, e-commerce algorithms can create both positive and negative perceptions for customers, primarily through perceived exploitation of customers as the psychological mechanism. As consumers become increasingly familiar with, and aware of, AI and big data and how their purchasing habits and profile (demographic and psychographic) can create personalized pricing, they begin to experience feelings of exploitation when they believe those algorithms used to establish pricing are unfair, manipulative, and opaque.

This feeling of exploitation has a negative impact on their trust, satisfaction, loyalty, and purchase intentions towards e-commerce sites. The results of this study also highlight that perceived exploitation as a mediator can provide an explanation for how and why algorithmically generated prices affect both the overall perception/experience by customers of e-commerce and their future behaviours. This study also establishes that consumers who possess 'digital literacy' (i.e., those with higher levels of technology knowledge and experience will exhibit different behaviours toward pricing than those of low digital literacy).

Consumers with high digital literacy are likely to question the fairness of algorithms and conduct comparative pricing analysis; therefore, they are more likely to take action to protect themselves from discrimination caused by algorithms. Consumers with low levels of digital literacy are at greater risk of exploitation by algorithms and, generally, are less capable of identifying the various forms of concealment related to price discrimination generated by algorithms.

The findings derived from this study provide evidence to verify the proposed structural equation model of ethical issues related to the implementation of AI pricing technologies for use within the e-commerce sector. It also indicates the need for e-commerce companies to focus on transparency as part of their efforts to achieve an ethical implementation of AI pricing technologies and to retain their competitive advantage over time by maintaining customer trust. Policymakers and consumer protection agencies ought to provide regulators with more substantial regulatory guidelines concerning the ethical adoption and utilization of personalized pricing practices as well as enhance digital literacy among consumers regarding these practices.

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Conflicts of Interest:

The authors declare no conflicts of interest.

Author Contributions:

Surjadeep Dutta, Arunava Mookherjee: Conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, visualization, original draft writing, and writing, review, and editing.

Ethical statement:

The study was conducted in accordance with the ethical principles of scientific research. Participation was voluntary, and informed consent was obtained from all participants. Confidentiality, anonymity, and respect for the rights of populations considered vulnerable were ensured throughout the research process.