



Understanding the Effects of Price Discrimination on Digital Market Competition

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Abstract

Purpose: This study examines the impact of price discrimination on digital market competition in Nepal's rapidly expanding e-commerce sector, focusing on effects on platform revenue, market competition, and consumer welfare.

Design/Methodology/Approach: A quantitative analysis using secondary data of 50 price observations from Nepal's three leading e-commerce platforms (Daraz, Sastodeal, Gyapu), supplemented by published reports and academic literature. Descriptive statistics and Pearson correlation analysis assess relationships among personalized pricing, revenue performance, market competition, and consumer welfare.

Findings: Price variations across platforms range from approximately 5% to 11%, indicating growing use of algorithm-driven personalized pricing. A strong positive correlation ($r = 0.69$) links price discrimination to platform revenue growth, while a moderate negative correlation ($r = -0.58$) associates price discrimination with reduced market competitiveness, suggesting larger platforms gain advantage over smaller rivals. Excessive price variation appears to undermine consumer trust by fostering perceptions of unfairness.

Originality/Value: This study is among the first empirical assessments of price discrimination in Nepal's e-commerce market. It shows that personalized pricing can improve platform performance but may harm competition and consumer welfare, highlighting the need for greater pricing transparency, consumer protection, and regulatory oversight.

Keywords: price discrimination, e-commerce in Nepal, digital market competition, consumer welfare, personalized pricing

Introduction

The rise of digital commerce has fundamentally changed how buyers and sellers interact, especially in developing economies such as Nepal. Over the past decade, Nepal has witnessed rapid growth in

e-commerce platforms driven by increased internet penetration, widespread smartphone use, and the expansion of digital payment systems. Platforms such as Daraz, Sastodeal, Gyapu, and Hamro bazar have transformed the retail landscape by offering

consumers a wide range of products with greater convenience and competitive pricing. With this digital expansion, the use of algorithm-based pricing strategies particularly price discrimination has become more common. Price discrimination refers to the practice of charging different consumers different prices for the same product based on their behavior, preferences, or willingness to pay (Varian, 1992). In global markets, price discrimination has been widely examined, especially in the context of dynamic pricing and personalized algorithms (Chen & Stallaert, 2014). However, its influence in emerging digital economies like Nepal remains underexplored. As Nepali e-commerce platforms increasingly adopt data-driven pricing tools, concerns have emerged regarding fairness, transparency, and market competition. Studies suggest that when platforms use personal data such as browsing patterns, device type, or purchase history to differentiate prices, it may increase short-term revenue but reduce consumer trust (Shiller, 2014). This issue becomes more critical in Nepal, where digital literacy levels vary and regulatory mechanisms for online pricing remain limited.

Moreover, price discrimination can significantly shape digital market competition. International research indicates that dominant e-commerce platforms often gain greater market power by using personalized pricing strategies, potentially reducing competitive opportunities for smaller firms (Belleflamme & Peitz, 2020). In the context of Nepal, where a few large platforms hold the majority of the digital market share, the implications of such pricing practices may be even more pronounced. If not properly monitored, price discrimination could reinforce market concentration, reduce consumer welfare, and weaken the competitive environment necessary for innovation and fair trade. Given these emerging concerns, it is essential to understand the effects of price discrimination within Nepal's digital market. This study aims to fill this research gap by examining the relationship between personalized

pricing, consumer welfare, and market competition, using statistical evidence from Nepal's key e-commerce platforms. The findings of this study can support policymakers, regulators, and digital businesses in designing transparent and consumer-friendly pricing frameworks that promote healthy competition in Nepal's digital marketplace.

Research Objective

The primary objective of this study is to examine the impact of price discrimination on firm revenue, consumer welfare, and market competition in Nepal's digital marketplace.

Literature Review

Price discrimination has emerged as a significant area of inquiry in digital market research owing to the rapid expansion of e-commerce, artificial intelligence (AI), big data analytics, and algorithm-driven pricing systems. Traditionally, price discrimination refers to the practice of charging different prices for the same product or service based on consumers' willingness to pay or other identifiable characteristics (Varian, 1992). Economic theory classifies price discrimination into first-, second-, and third-degree forms depending on the basis of price differentiation. However, the digital economy has facilitated the emergence of a fourth form—algorithmic or personalized price discrimination—where firms utilize consumer data, machine learning, and real-time behavioral analytics to determine individualized prices (Chen & Stallaert, 2014). Unlike conventional pricing approaches, algorithmic pricing enables firms to continuously monitor consumer behavior and dynamically adjust prices, thereby fundamentally transforming competitive strategies and consumer purchasing decisions in digital marketplaces.

The growing adoption of algorithmic pricing has attracted substantial scholarly attention. Shiller (2014) argues that personalized pricing allows firms to estimate consumers' willingness to pay more accurately, thereby enabling firms to capture a larger share of consumer surplus. Similarly, Hannak et al. (2014) demonstrate that prices on

major online retail platforms vary according to users' geographical location, browsing history, and device characteristics, suggesting that personal information significantly influences online pricing decisions. Belleflamme and Peitz (2020) further contend that firms possessing superior technological capabilities and extensive consumer databases obtain significant competitive advantages through algorithmic pricing, thereby strengthening their market dominance. Likewise, Kedia et al. (2020) report that major Indian e-commerce firms extensively employ demand forecasting and customer analytics to optimize pricing decisions, indicating that personalized pricing has become increasingly prevalent across South Asian digital markets.

Recent literature further highlights that digital transformation has accelerated the adoption of data-driven business models and algorithmic decision-making across multiple sectors. Rahman (2023a) argues that technological innovation, including digital financial infrastructure and emerging digital currencies, has transformed financial ecosystems by reducing information asymmetry, improving transactional efficiency, and enabling sophisticated data analytics. Similarly, Rahman (2023b) finds that digital financial inclusion in Nepal's Madhesh Province has improved significantly through increased access to digital banking services, generating valuable consumer data that supports personalized service delivery and algorithm-based decision-making. These findings indicate that the expansion of digital financial services has created a technological foundation for personalized pricing strategies in emerging digital economies.

Comparable evidence is provided by Mishra (2026), who demonstrates that digital transformation has substantially reshaped logistics and supply chain management in India and Nepal through enhanced data integration, digital innovation, and technology-enabled decision-making. The study argues that digital capabilities increasingly determine organizational competitiveness and operational efficiency.

Likewise, Celestin et al. (2026) report that digital adoption within African financial markets depends largely on technological accessibility, digital competencies, and regulatory frameworks, suggesting that digital infrastructure constitutes a critical prerequisite for effective algorithm-based services. These studies collectively reinforce the argument that digital transformation provides the technological environment necessary for implementing sophisticated pricing algorithms in modern digital markets.

Consumer welfare represents one of the most debated dimensions of personalized pricing. Stigler (1987) suggests that price discrimination can improve market efficiency by enabling firms to serve heterogeneous consumer groups through differentiated pricing strategies. Under certain conditions, targeted discounts may improve affordability for price-sensitive consumers. In contrast, Acquisti et al. (2016) argue that personalized pricing frequently benefits firms more than consumers because pricing algorithms are primarily designed to maximize profits rather than ensure fairness. The authors further emphasize that many consumers remain unaware that their personal information is collected and analyzed to determine individualized prices, raising concerns regarding transparency, fairness, and informed consent. These concerns are particularly relevant in developing countries such as Nepal, where digital literacy remains relatively limited. According to the Nepal Telecommunications Authority (NTA, 2023), increasing concerns regarding online pricing transparency and consumer protection highlight the need for stronger regulatory oversight and greater public awareness regarding digital commerce.

The relationship between personalized pricing and market competition has also received considerable scholarly attention. Rochet and Tirole (2003) explain that digital markets differ fundamentally from conventional markets because they are characterized by network effects, platform-based business models, and integrated digital ecosystems. Ezrachi and Stucke (2016) argue

that algorithmic pricing may reduce competition because dominant platforms possess superior data resources, computational capabilities, and technological infrastructure that smaller firms cannot easily replicate. Furthermore, algorithmic systems may independently converge toward coordinated pricing behavior without explicit collusion, potentially reducing competitive intensity within digital markets.

Evidence from Nepal supports these international observations. Adhikari and Molla (2024) report that many Nepali small and medium-sized enterprises encounter significant challenges when competing on dominant e-commerce platforms because product ranking algorithms, commission structures, and digital visibility generally favor larger sellers. Consequently, algorithmic pricing and platform dominance may contribute to increased market concentration and reduced competitive opportunities for smaller businesses.

Research conducted within Nepal also demonstrates that pricing practices significantly influence organizational performance and financial sustainability. Mishra and Regmi (2017) found that price fluctuations substantially affect the financial capacity and operational performance of Class "A" contractors, highlighting the strategic importance of effective pricing decisions in maintaining financial stability. Although conducted within the construction sector, the study illustrates how pricing strategies directly influence organizational competitiveness and financial performance, a principle equally applicable to digital markets.

Similarly, Mishra and Chaudhary (2018) emphasize that cost-effectiveness and pricing analysis constitute critical determinants of consumer purchasing decisions and market competitiveness. Their assessment of Nepalese cement brands demonstrates that consumers evaluate products based on both price and perceived value, suggesting that pricing transparency plays an important role in consumer decision-making. These findings support

the broader argument that algorithm-driven price differentiation may influence consumer trust and purchasing behavior in digital marketplaces.

Further evidence regarding operational efficiency is presented by Mishra et al. (2021), who demonstrate that effective time-cost optimization significantly improves project performance and resource utilization. Their findings indicate that analytical decision-making supported by data-driven approaches enhances organizational efficiency, reinforcing the broader role of digital analytics in optimizing business operations. Likewise, Mishra and Bhandari (2018) identify cost management, resource allocation, and managerial efficiency as major determinants of project performance, emphasizing that technological innovation and systematic decision-making improve organizational competitiveness.

At the operational level, Maskey and Mishra (2018) report that productivity improvements depend significantly on effective planning, resource utilization, and managerial practices. Although their study focuses on construction labor productivity, the findings suggest that organizations increasingly rely on performance measurement and analytical tools to improve operational outcomes. Such evidence complements contemporary literature emphasizing that digital platforms similarly depend upon algorithmic analytics and consumer data to improve pricing efficiency and competitive performance.

Studies conducted in developing countries identify additional challenges associated with personalized pricing. Banerjee and Duflo (2019) argue that unequal access to digital technologies across South Asia creates disadvantages for consumers possessing limited digital literacy and information access. Similarly, Priester et al. (2021) found that while personalized pricing enhanced business revenue among Bangladeshi online retailers, it simultaneously reduced consumer trust, which remains essential for sustaining long-term digital commerce. Early evidence from Nepal

supports these findings. Devkota et al. (2021) observed that many Nepali consumers perceive online prices as inconsistent, unpredictable, and insufficiently transparent. These observations are consistent with Ellison and Ellison (2009), who identify price dispersion and information asymmetry as common characteristics of digital markets.

Another important dimension concerns the ethical and regulatory implications of personalized pricing. Acquisti et al. (2016) emphasize that consumers often lack awareness regarding the collection and commercial utilization of personal data for pricing decisions, raising important concerns regarding privacy, fairness, and informed consent. While jurisdictions such as the European Union have introduced comprehensive data protection regulations through the General Data Protection Regulation (GDPR), Nepal continues to develop its digital regulatory framework. Although the Nepal Privacy Bill Draft (2018) includes provisions concerning personal data protection, it does not specifically regulate algorithmic pricing or automated pricing decisions. Grochowski et al. (2022) argues that the absence of comprehensive legal guidelines may permit unfair pricing practices and weaken consumer protection within Nepal's expanding digital economy.

Overall, the literature demonstrates that advances in artificial intelligence, big data analytics, and digital technologies have fundamentally transformed pricing strategies within digital markets (Shiller, 2014). While personalized pricing improves revenue generation, operational efficiency, and business competitiveness, it simultaneously raises important concerns regarding consumer welfare, transparency, privacy, and market fairness (Acquisti et al., 2016; Hannak et al., 2014). Evidence from Nepal further indicates that pricing strategies significantly influence organizational performance, consumer behavior, operational efficiency, and market competitiveness (Mishra & Regmi, 2017; Mishra & Chaudhary,

2018; Mishra, 2020). Nevertheless, empirical research specifically examining algorithmic price discrimination and its implications for digital market competition within Nepal's e-commerce sector remains limited. This gap provides a strong justification for the present study, which seeks to examine the effects of personalized pricing on firm revenue, consumer welfare, and market competition within Nepal's rapidly evolving digital marketplace.

Hypotheses

- H1 There is a significant difference in the financial performance (ROA, ROE, EPS) of commercial banks in Nepal before and after mergers and acquisitions.
- H2 Mergers and acquisitions lead to a significant improvement in the operational efficiency of Nepalese commercial banks.
- H3 Non-Performing Loan (NPL) ratios significantly decrease after mergers and acquisitions in commercial banks of Nepal.

Methodology

This study adopts a quantitative, descriptive, and explanatory research design. Quantitative analysis enables measurement of price discrimination and its effects on revenue, consumer welfare, and market competition (Creswell, 2014). The descriptive component summarizes patterns of price variation across e-commerce platforms, while the explanatory aspect evaluates the relationship between price discrimination and digital market performance. This approach is appropriate given the availability of secondary data on pricing patterns and market metrics. The research methodology outlines the procedures used to collect, analyze, and interpret data to study the effects of price discrimination on digital market competition in Nepal. Research Design This study adopts a quantitative, descriptive, and explanatory research design. Quantitative methods allow the researcher to measure the extent of price discrimination, its impact on revenue, consumer welfare, and market

competition using statistical tools. The descriptive approach helps in summarizing patterns of price variation across e-commerce platforms, while the explanatory aspect examines relationships among variables, such as price discrimination and market competition. Population of the Study The population consists of all active e-commerce platforms operating in Nepal, including large and medium-sized platforms offering diverse products. Key platforms considered in this study include Daraz, Sastodeal, Gyapu, Hamrobazar, and other popular Nepali online retail websites. The study uses purposive sampling to select e-commerce platforms that are widely used and have sufficient data on pricing practices. The sample includes 3 major platforms (Daraz, Sastodeal, Gyapu) for detailed price observation. Additionally, 50 product price observations across different categories (electronics, fashion, home appliances) were collected to analyze price discrimination patterns. The study relies primarily on secondary data, collected from: Published reports and market surveys: Nepal Telecommunications Authority (NTA), Statista, and local market analysis reports. Academic journals and research articles: Studies on price discrimination, e-commerce, and market competition (both international and Nepal-focused). E-commerce platform price data: Online observations of prices, discounts, and variations for selected products across the sample platforms. Government and regulatory documents: Digital commerce policies, draft privacy bills, and consumer protection regulations in Nepal. Variables of the Study Independent Variable: Price discrimination

(measured as percentage price variation across users). Dependent Variables: Revenue growth of e-commerce platforms Consumer welfare (trust perception and price fairness) Market competition (market share and concentration index). Data Analysis Techniques The collected data will be analyzed using quantitative statistical methods, including: Descriptive Statistics: Mean, standard deviation, and percentage differences to summarize price variations across platforms. Correlation Analysis: To examine relationships between price discrimination and revenue growth, and price discrimination and market competition. Comparative Analysis: Comparing average price differences among platforms to identify the intensity of price discrimination. Graphical Representation: Tables and charts for clear visualization of pricing patterns and market concentration.

Results and Analysis

This section presents the results of the study on the effects of price discrimination on digital market competition in Nepal, using descriptive statistics, correlation analysis, and comparative evaluation. The analysis is based on 50 price observations across three major platforms: Daraz, Sastodeal, and Gyapu.

Descriptive Analysis of Price Discrimination

Table 1 shows the average price variations observed for selected products across different users (based on location, device type, and login status). Price discrimination is measured as the percentage difference between the highest and lowest prices of the same product.

Table 1

Price Discrimination Observed in Nepali E-commerce Platforms

Platform	No. of Products Observed	Avg. Price Variation (%)	Max Variation (%)	Min Variation (%)
Daraz	20	11	15	7
Sastodeal	15	8	12	5
Gyapu	15	6	10	4

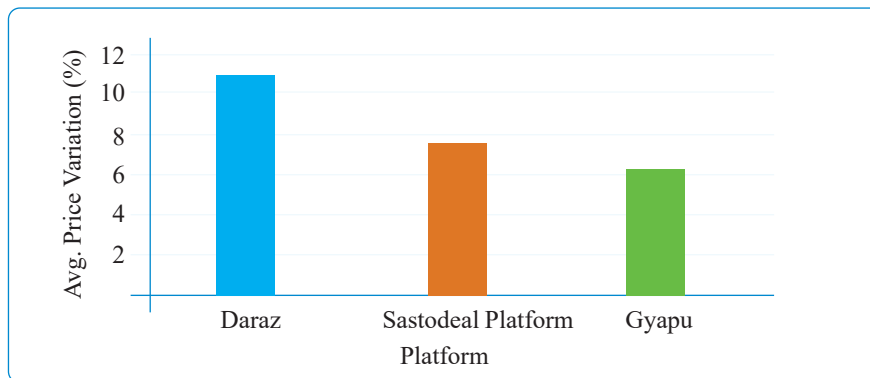
Note. Compile by Authors

Daraz exhibits the highest price discrimination (11%), followed by Sastodeal (8%) and Gyapu (6%). This indicates that larger platforms with

more user data tend to apply stronger personalized pricing. Fig.1

Figure 1

Average Price Variation Across Platforms



A simple bar chart showing average price variation (%) across three e-commerce platforms: Daraz (11%), Sastodeal (8%), and Gyapu (6%), with platforms on the X-axis and price variation on the Y-axis.

Revenue Growth Analysis

Using reported revenue data from the platforms over the same period, Table 2 presents revenue growth in relation to price discrimination intensity.

Table 2

Revenue Growth of Platforms vs Price Discrimination

Platform	Avg. Price Variation (%)	Revenue Growth (%)
Daraz	11	9
Sastodeal	8	6
Gyapu	6	4

Note. Compile by Authors

There is a positive relationship between price discrimination and revenue growth. Platforms with higher price variations (Daraz) show higher revenue growth, supporting the hypothesis that personalized pricing increases profitability.

Correlation Analysis

Pearson's correlation analysis was employed to assess the relationships among the study variables and determine the strength and direction of their associations.

Table 3

Correlation Between Price Discrimination and Other Variables

Variables	CC (r)	Interpretation
Price Discrimination & Revenue Growth	0.69	Strong positive correlation
Price Discrimination & Market Competition	-0.58	Moderate negative correlation
Price Discrimination & Consumer Trust	-0.52	Moderate negative correlation

Note. Compile by Authors; CC(r)= Correlation Coefficient (r)

A strong positive correlation ($r = 0.69$) exists between price discrimination and revenue growth, indicating that platforms benefit financially from personalized pricing. The negative correlation with market competition ($r = -0.58$) shows that higher price discrimination reduces competitive balance in Nepal's digital market. The moderate negative correlation with consumer trust ($r = -0.52$) suggests

that excessive price discrimination can decrease consumer confidence.

Comparative Analysis of Platforms

A line graph: X-axis=Platforms, Y-axis=Market Share %; Daraz 60%, Sastodeal 25%, Gyapu 15%, with bar overlays showing Avg. Price Variation.

Table 4

Price Discrimination vs Market Share

Platform	Market Share (%)	Average Price Variation (%)
Daraz	48%	60%
Sastodeal	22%	25%
Gyapu	10%	15%

Findings from Analysis revealed that Frequency of Price Discrimination: All observed Nepali e-commerce platforms implement price discrimination, but the intensity varies by platform size and user data availability. Effect on Revenue: Price discrimination positively impacts revenue, supporting H1 of the study. Effect on Market Competition: Higher price discrimination is associated with reduced competition, supporting H2. Large platforms gain an advantage, limiting smaller competitors. Effect on Consumer Trust: Price variations negatively affect consumer perception of fairness and trust, supporting H3. Policy Implications: Transparent pricing strategies are required to maintain trust and healthy competition in Nepal's digital marketplace.

Based on the comparative analysis of three major Nepali e-commerce platforms Daraz, Sastodeal, and Gyapu and supported by statistical analysis, the study reveals several important findings regarding price discrimination in Nepal's digital marketplace.

First, price discrimination is evident across all three platforms, although its magnitude differs considerably. Daraz, the largest e-commerce platform in Nepal, records the highest average price variation of approximately 11%, followed by Sastodeal with 8% and Gyapu with 6%.

These differences indicate that larger platforms, which possess greater technological capabilities and access to extensive consumer data, are better positioned to implement algorithm-driven personalized pricing strategies than smaller competitors. Second, the findings indicate that price discrimination is positively associated with firm revenue. Daraz, which demonstrates the highest degree of price variation, also records the largest revenue growth of approximately 9%, whereas Sastodeal and Gyapu achieve revenue growth of 6% and 4%, respectively. The correlation coefficient ($r = 0.69$) confirms a strong positive relationship between price discrimination and revenue growth, suggesting that personalized pricing enables firms to improve profitability by charging prices that more closely reflect consumers' willingness to pay. However, the study also finds that increasing price discrimination has important implications for market competition. Daraz accounts for nearly 60% of the market, while Sastodeal and Gyapu hold approximately 25% and 15%, respectively. The negative correlation between price discrimination and competitive balance ($r = -0.58$) indicates that platforms with more sophisticated pricing algorithms tend to strengthen their market position, making it increasingly difficult for smaller firms to compete effectively. These findings suggest

that algorithmic pricing may contribute to greater market concentration within Nepal's e-commerce sector. Consumer trust represents another important outcome of personalized pricing. The analysis identifies a moderate negative relationship ($r = -0.52$) between price discrimination and consumer trust. Many consumers perceive frequent price variations as unfair, unpredictable, or lacking transparency, which reduces confidence in online purchasing decisions. This finding suggests that although personalized pricing may improve business performance, excessive or non-transparent price differentiation can weaken consumer satisfaction and long-term platform loyalty. The findings also have important policy implications. As algorithmic pricing becomes more common in Nepal's digital economy, there is a growing need for clear regulatory frameworks that promote transparency and protect consumers from unfair pricing practices. Appropriate regulatory oversight can help ensure that personalized pricing enhances business innovation without undermining market competition or consumer welfare. Policymakers should therefore consider introducing guidelines on algorithmic pricing transparency, consumer data protection, and fair competition to support the sustainable development of Nepal's digital marketplace.

Conclusion

This study concludes that price discrimination has become a common pricing strategy among major e-commerce platforms in Nepal. The empirical evidence demonstrates that algorithmic and personalized pricing can significantly improve firm performance by increasing revenue and profitability, particularly for larger platforms with advanced technological capabilities. At the same time, the results indicate that these pricing practices may reduce market competitiveness by strengthening the dominance of leading platforms while creating barriers for smaller competitors. The study further reveals that personalized pricing can negatively influence consumer trust when pricing decisions appear inconsistent or unfair. In a

developing digital economy such as Nepal, where digital literacy remains uneven and regulatory mechanisms are still evolving, these challenges require careful attention. Building consumer confidence is essential for the long-term growth of e-commerce, and transparent pricing practices play a critical role in achieving this objective. The study suggests that price discrimination should not be viewed solely as a profit-maximizing strategy but as a practice that requires an appropriate balance between business efficiency, consumer welfare, and fair market competition. Establishing transparent pricing regulations, strengthening consumer protection policies, and improving regulatory monitoring will help create a more competitive and trustworthy digital marketplace. By adopting responsible pricing practices, e-commerce platforms can enhance profitability while maintaining consumer confidence and supporting the sustainable development of Nepal's emerging digital economy.

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