

Consumer Purchase Awareness on E-commerce Platforms -- From A Network-Based Perspective

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Abstract

This study examines consumer purchase awareness in e-commerce platforms by conceptualizing platforms as structured trading networks. Drawing on network stability theory, industrial cluster and value-chain theory, and information economics, the paper argues that awareness emerges from stable platform configurations rather than isolated individual decision-making. Using survey data from 1,063 Chinese consumers, regression and structural equation modeling results show that personalized services, product substitutability, endorsements, price perception, and transaction convenience significantly influence purchase awareness. The findings contribute a network-based explanation of digital consumer cognition and offer implications for platform design.

Key Words: consumer purchase awareness; e-commerce platforms; network stability; information economics; personalization

1. Introduction

With the rapid expansion of digital platforms, e-commerce has fundamentally transformed the way consumers search for information, evaluate products, and make purchase decisions. Unlike traditional retail markets, e-commerce platforms are characterized by high product variety, algorithmic intermediation, dense information flows, and strong network effects. In such environments, consumers are continuously exposed to many products through rankings, recommendations, reviews, and endorsements. As a result, consumer purchase awareness—the state in which consumers become persistently aware of, attentive to, and cognitively primed for purchasing specific products—has become a critical determinant of market outcomes on digital platforms.

Existing studies on consumer behavior largely rely on equilibrium-based or individual-level decision models, emphasizing price sensitivity, preferences, and utility maximization under conditions of complete or near-complete information. However, these assumptions are increasingly inadequate for explaining consumer cognition in platform-based markets, where information is filtered algorithmically, attention is scarce, and transactions are embedded in complex networks of interactions. In practice, consumers do not independently evaluate all available options; rather, their awareness is shaped by repeated exposure, platform governance mechanisms, and the structural stability of the trading environment.

Recent advances in network economics provide a useful lens for reinterpreting consumer behavior in such settings. Network stability theory suggests that even in the absence of classical equilibrium conditions, stable outcomes can emerge through locally stable trading networks. At

the same time, information economics highlights the role of experience goods, attention allocation, and positive feedback mechanisms in shaping consumer choices in digital markets. From this perspective, e-commerce platforms can be understood not merely as marketplaces, but as stable trading networks in which consumer awareness emerges endogenously from structural, informational, and algorithmic coordination mechanisms.

Against this background, this study proposes a network-based framework to analyze consumer purchase awareness on e-commerce platforms. By integrating network stability theory, industrial cluster and value-chain theory, and information economics, the paper argues that purchase awareness is an emergent network outcome rather than a purely individual cognitive response. Using survey data from Chinese e-commerce consumers and applying regression and structural equation modeling techniques, this study empirically examines how platform-related factors—such as product substitutability, price perception, endorsements, personalized services, and transaction convenience—shape consumer purchase awareness.

The contributions of this study are threefold. First, it extends consumer behavior research by introducing a network-based explanation of purchase awareness in digital markets. Second, it provides empirical evidence on the relative importance of structural, informational, and algorithmic mechanisms in shaping consumer cognition. Third, it offers practical implications for platform design by highlighting how stable network configurations can enhance consumer awareness and engagement. The remainder of the paper is organized as follows: Section 2 reviews the relevant literature; Section 3 develops the theoretical framework and hypotheses; Section 4 presents the empirical analysis and results; and Section 5 concludes.

2. Literature Review

Prior equilibrium-based models of consumer behavior assume convexity and frictionless markets, assumptions frequently violated in platform-based economies characterized by transaction costs and increasing returns. Shuntian Yao & Ke Li (2008) propose a network stability framework for finite economies, demonstrating that stable outcomes can emerge through locally stable trading networks even when the core is empty. E-commerce platforms resemble such networked economies, where algorithmic ranking, product diversity, and feedback mechanisms shape consumer attention. Within this context, consumer purchase awareness is best understood as an emergent network outcome rather than a purely individual cognitive process.

Carl Shapiro & Hai R. Varian (1999) provide a foundational economic framework for understanding information products and network markets, emphasizing experience goods, extreme cost asymmetries, and the central role of network effects. Their analysis highlights how attention scarcity, versioning, and switching costs generate positive feedback and lock-in, leading to winner-takes-most outcomes in digital markets. These principles offer a microeconomic explanation for platform dominance and the persistence of consumer attention in e-commerce environments.

3. Theoretical Framework

This study conceptualizes e-commerce platforms as stable trading networks in which consumer purchase awareness emerges through coordinated structural, informational, and behavioral mechanisms.

Building on Ke Li et al. (2010), e-commerce platforms can be interpreted as digital cluster-network systems in which functional modules (such as logistics, payment, recommendation, and customer service) constitute a division-of-labour network. Platform governance and design reduce transaction frictions and reorganize specialization, thereby strengthening network scope and stability. These structural mechanisms increase the probability and persistence of consumer exposure to products, directly linking platform organization to consumer purchase awareness.

Drawing on Shapiro and Varian (1999), consumer purchase awareness on digital platforms is shaped by the experience-good nature of information products and the scarcity of attention. Platform mechanisms such as recommendation algorithms, endorsements, and personalized interfaces function as attention-allocation devices that reduce information asymmetry and amplify repeated exposure. Through network effects and switching costs, these mechanisms stabilize consumer attention over time, reinforcing persistent awareness within platform-based trading networks.

Figure 1. Platform–Cluster–Value Chain Integrated Framework

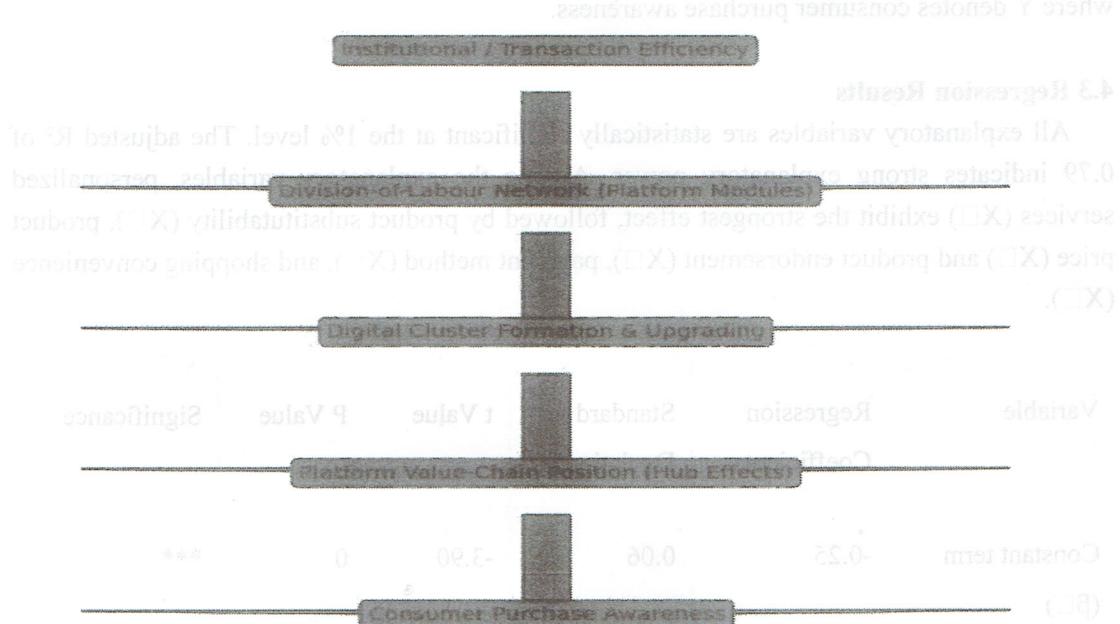


Figure 1 illustrates how transaction efficiency expands platform-based division-of-labour networks, enabling digital cluster formation and value-chain upgrading, which ultimately shape consumer purchase awareness.

3.1 Key theoretical mechanisms and variable mapping:

- Network Stability → Product Substitutability (Structural Exposure Effect)
- Information Signaling → Product Endorsement, Price Perception (Information Stabilization Effect)
- Algorithmic Coordination → Personalized Services (Algorithmic Amplification Effect)
- Transaction Efficiency → Shopping & Payment Convenience (Friction Reduction Effect)
- Outcome → Consumer Purchase Awareness

3.2 Hypotheses:

H1: Product substitutability positively influences consumer purchase awareness.

H2: Product endorsement and price perception positively influence consumer purchase awareness.

H3: Personalized services positively influence consumer purchase awareness.

H4: Shopping and payment convenience positively influence consumer purchase awareness.

4. Empirical Analysis and Interpretation

4.1 Data and Variables

Micro-level data were collected through questionnaires from 1,063 Chinese consumers, covering users of major platforms such as Taobao, JD.com, and Pinduoduo.

4.2 Model Specification

A multiple linear regression model is specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \mu$$

where Y denotes consumer purchase awareness.

4.3 Regression Results

All explanatory variables are statistically significant at the 1% level. The adjusted R^2 of 0.79 indicates strong explanatory power. Among the explanatory variables, personalized services (X_1) exhibit the strongest effect, followed by product substitutability (X_2), product price (X_3) and product endorsement (X_4), payment method (X_5), and shopping convenience (X_6).

Variable	Regression Coefficient	Standard Deviation	t Value	P Value	Significance
Constant term (β_0)	-0.25	0.06	-3.90	0	***
Product price (X_2)	0.17	0.02	7.44	0	***
Shopping convenience (X_6)	0.12	0.02	5.47	0	***
Product endorsement (X_4)	0.17	0.02	7.70	0	***

			Influence		
Payment method (X□)	0.13	0.02	5.60	0	***
Product substitutability (X□)	0.18	0.02	7.76	0	***
Personalized services (X□)	0.32	0.03	11.24	0	***
Adjusted R ²	0.79	-	-	-	-
F value	682.12	-	-	-	0

Note:*** indicates p<0.01

Ranking of influence intensity:

Personalized services (0.32) > Product substitutability (0.18) > Product price (0.17) = Product endorsement (0.17) > Payment method (0.13) > Shopping convenience (0.12)

These results strongly support the proposed network-based framework. Algorithmic coordination plays a dominant role in stabilizing consumer attention, while network richness and information signaling further reinforce purchase awareness. Transaction convenience functions as a foundational but comparatively weaker mechanism.

5. Conclusion

By integrating network stability theory with empirical analysis, this study extends consumer behavior research beyond equilibrium-based explanations. The findings show that consumer purchase awareness emerges from stable platform networks shaped by algorithmic coordination, information signaling, and transaction efficiency. This network-based perspective provides practical implications for platform design and offers a robust foundation for future cross-country and longitudinal research.

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