

Research on the Impact of "Billion Subsidy" Policy on Consumers' Purchase Intention and Behavior for 3C Products

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Abstract: The government's billion-yuan subsidy policy is of great significance for promoting consumption upgrading and stimulating domestic demand. Utilizing survey data from 1046 questionnaires, this study employs Logistic regression models and Structural Equation Modeling (SEM) to investigate the impact mechanism and pathways through which the billion-yuan subsidy policy influences consumers' purchase intention and behavior regarding 3C products. The results indicate that: (1) Consumers' trust in and cognitive level of the subsidy policy significantly and positively affect their purchase intention, with price attractiveness being the core driving factor. Middle-to-low-income groups show the highest sensitivity to the subsidy policy. (2) Brand technological strength and product familiarity indirectly promote 3C product consumption decisions through marginal gains. Young consumers exhibit more significant purchase intention, while differences in risk preference lead to divergence in consumption behavior. (3) Brand technology, government trust, and product familiarity are key factors influencing consumers' purchase decisions, whereas the impact of price subsidy sensitivity on purchase behavior is relatively limited. Finally, countermeasures and suggestions are proposed based on the conclusions.

Keywords: Billion-yuan Subsidy; Purchase Intention and Behavior; Influence Mechanism; Logistic Regression; Structural Equation Model.

1. Introduction

Promoting consumption upgrading in the 3C product market with the billion-yuan subsidy policy as the core has yielded significant market results post-implementation. In the second quarter of 2024, 3C product transaction volume increased by 42% year-on-year, with mid-to-low-end models experiencing price reductions of up to 25%, effectively lowering the barrier to experiencing new technologies. This study focuses on the policy's impact mechanism on consumer purchase intention, aiming to reveal how price incentives and technological innovation synergistically drive consumption upgrading. It provides empirical evidence for the government to optimize subsidy design and for enterprises to formulate market strategies, while also promoting greener and smarter consumption transformation.

Existing research mainly revolves around three levels. At the consumer psychology level, scholars focus on the influence of online word-of-mouth, social dissemination, and promotion expectations on purchase decisions (Liu, H. L., 2025; Li, Z. T., 2025; Li, Z. T., 2025), finding that positive word-of-mouth and KOL recommendations can enhance perceived value, while promotion expectations may lead to purchase delays. However, these studies mostly focus on young groups, with insufficient analysis of middle-aged and elderly consumer behavior. At the policy effect level, subsidy policies have been proven to significantly stimulate purchase intention through price advantages, especially for price-sensitive groups (Wu, Y. Y., & Kong, M. Y., 2025; Wu, T., 2020). Nevertheless, existing findings mostly concentrate on short-term price effects, with insufficient exploration of the interaction mechanisms involving non-price factors such as policy trust and brand technology. From a market evolution perspective, the 3C product market shows an intelligent trend driven by technological iteration and policy promotion.

Although e-commerce platform subsidy strategies boost consumption in the short term, they face long-term challenges such as low user loyalty and cost control (Lin, W. L., 2021; Dun, S. et al., 2020; Zhao, Z. X. et al., 2020). Current research not only lacks analysis of behavioral differences across age groups (especially middle-aged and elderly groups) under subsidy policies but also insufficiently explores the interaction effects of multiple factors (e.g., policy trust, brand technology, price elasticity).

This study integrates consumer surplus theory, purchase decision models, and policy trust mechanisms to construct a three-dimensional framework of "policy reach - psychological response - behavioral decision," exploring the impact of the "billion-yuan subsidy" on consumers' purchase intention and behavior for 3C products.

2. Theoretical Analysis and Research Hypotheses

First, under the billion-yuan subsidy policy, consumers' purchase intention for 3C products is influenced by a combination of various factors. From price theory, subsidies reduce product prices (Wu, M. X., 2022), allowing consumers to purchase desired products at more favorable prices, significantly enhancing purchase intention. According to price sensitivity theory, price is a key factor affecting consumer purchase decisions. Under the billion-yuan subsidy policy, price subsidies directly reduce the purchase cost of 3C products, which is highly attractive to price-sensitive consumers.

Second, according to the Technology Acceptance Model (TAM), consumers' perceived usefulness and ease of use of new technologies affect their acceptance intention. In 3C products, the application of technologies such as artificial intelligence and 5G communication can provide consumers with a better experience (Zhao, S. F., 2015). The higher

consumers' attention to technological innovation in 3C products, the stronger their purchase intention.

Third, based on social cognitive theory, consumers' trust in and satisfaction with policies influence their participation willingness (Zhang, K. Z., et al., 2017). Under the billion-yuan subsidy, consumers' trust in and satisfaction with the policy affect their purchase decisions.

Fourth, according to consumer behavior theory, product familiarity can reduce consumers' perceived risk and enhance their trust in the product, thereby influencing their purchase decision (Liu, X., et al., 2018). In the process of 3C product consumption, the higher the consumer's familiarity with the product, the better they can understand its functions, performance, and usage scenarios, thereby increasing the likelihood of purchase behavior. Accordingly, the following hypothesis is proposed:

H1: Price subsidy sensitivity, brand technology innovation attention, policy trust, and product familiarity can positively influence consumers' purchase intention and purchase behavior for 3C products.

Furthermore, purchase intention is an important antecedent variable of purchase behavior. The stronger the purchase intention, the greater the possibility of actual purchase behavior. By reducing consumers' perceived risk in purchase decisions and simultaneously enhancing their decision-making confidence, psychological resistance is reduced, and motivation is increased, thereby effectively facilitating the

transition from purchase intention to actual purchase behavior (Li, J., et al., 2021; Huang, M., et al., 2019). Accordingly, the following hypothesis is proposed:

H2: Purchase intention plays a mediating role in the impact of price subsidy sensitivity, brand technology innovation attention, policy trust, and product familiarity on purchase behavior. The stronger the purchase intention, the greater the probability of purchase behavior.

3. Research Design and Data Collection

3.1. Questionnaire Design and Variable Measurement

The questionnaire adopts a mixed question type design, comprising four modules: The first part is demographic characteristics (gender, age, occupation, income); the second part is policy awareness (information channels, level of trust); the third part is purchase behavior and intention (product type preference, policy impact dimensions); the fourth part is influencing factors and policy feedback (brand selection tendency, technology attention, improvement suggestions). Core variables are quantified using a five-point Likert scale. Items not referencing mature scales were optimized through pre-survey reliability and validity tests. Core variable measurements are shown in Table 1.

Table 1. Variable Measurement Content

Variable	Measurement Items
Product Familiarity	How familiar are you with 3C products?
	You pay close attention to 3C product brands.
	To what extent does the subsidy policy influence your choice of a specific 3C product brand?
	In your opinion, how effective is the subsidy policy in enhancing the brand awareness and reputation of 3C products?
Price Subsidy Sensitivity	You find the price of 3C products after subsidies more attractive.
	When purchasing 3C products, the subsidy policy makes you feel closer to the products.
	When purchasing 3C products, would you change your originally preferred brand choice due to the billion-yuan subsidy policy?
Government Trust	How much do you trust the billion-yuan subsidy policy?
	Do you think the billion-yuan subsidy policy is sustainable in the long-term implementation process?
	Do you believe the long-term economic impact of the billion-yuan subsidy policy is positive?
Brand Technology	Are you willing to try new technology products (e.g., 5G phones, smart voice devices, smart home devices)?
	How effective do you think the subsidy policy is in promoting the popularization of new technologies in 3C products?
	When considering purchasing 3C products due to the subsidy policy, what proportion of your expectation is for product new technology?
Purchase Intention	Has the billion-yuan subsidy policy affected your willingness to purchase 3C products?
	With the billion-yuan subsidy policy in place, are you willing to purchase 3C products from brands you are unfamiliar with?
Purchase Behavior	How frequently do you purchase 3C products?
	Do you think the subsidy policy will lead to more people accepting and purchasing 3C products in the market?

3.2. Data Collection and Sample Description

A total of 1105 questionnaires were distributed for this study. After strict screening and removal of 59 invalid questionnaires, 1046 valid questionnaires were ultimately recovered, with an effective recovery rate of 94.66%, meeting social statistical research standards. In reliability analysis, the Cronbach's Alpha value was 0.821, exceeding 0.7, indicating good questionnaire stability and consistency. In validity analysis, the KMO value was 0.894, greater than 0.5, and Bartlett's test of sphericity significance was less than 0.05, suitable for factor analysis. Seven factors were extracted, cumulatively explaining 64.17% of the total variance, with a reasonable factor structure and high explanatory power.

From the perspective of sample statistical characteristics, the gender ratio of respondents was relatively balanced, with males accounting for 45.51% and females for 54.49%, slightly more female consumers than male consumers. In terms of age distribution, the 26-35 age group accounted for the largest proportion at 27.53%, indicating this age group is the main consumer segment for 3C products. The 46-55 age group accounted for 17.02%, while 56 and above accounted for 12.05%, suggesting lower participation or weaker consumption intention among older groups. Regarding monthly income distribution, the 4001-6000 yuan range accounted for the largest proportion at 27%, reflecting that low-to-middle-income individuals were more numerous in the collected sample, while over 10000 yuan accounted for

only 11%, indicating relatively fewer high-income individuals among the surveyed consumers. Occupational distribution statistics showed that office workers accounted for the largest proportion at 56%, reflecting that employed individuals constituted the majority of respondents.

4. The Impact Mechanism of the Billion-Yuan Subsidy Policy on Purchase Intention and Behavior for 3C Products

4.1. The Impact of the Billion-Yuan Subsidy Policy on Purchase Intention for 3C Products

Logistic regression analysis revealed that government trust,

product familiarity, brand technology, and price attractiveness have significant positive effects on purchase intention for 3C products, with price attractiveness having the greatest impact ($\text{Exp}(B)=4.562$). Policy awareness, price perception, and psychological distance had no significant impact on purchase intention. Age had a negative impact on purchase intention, while monthly income had a positive impact, but both effects were weak. This implies that when aiming to enhance purchase intention, focus should be placed on these four factors: government trust, product familiarity, brand technology, and price attractiveness.

Table 2. Partial Parameter Estimates

Purchase Intention Y		B	Wald	Sig.	Exp (B)
Enhance	Intercept	-1.557	3.509	0.061	0.000
	Age	-0.144	3.998	0.046	0.866
	Government Trust	0.511	12.916	0.000	1.667
	Monthly Income	0.162	3.893	0.048	1.176
	Product Familiarity	0.499	11.479	0.001	1.647
	Brand Technology	0.383	5.787	0.016	1.467
	Policy Awareness	-0.117	0.980	0.322	0.890
	Price Attractiveness	1.518	86.702	0.000	4.562
	Price Perception & Psychological Distance	-0.123	1.191	0.275	0.884

Table 3. Factor Loading Matrix

Item	Factor_1	Factor_2	Factor_3	Factor_4
Q7 1	-0.014	0.022	-0.076	0.082
Q7 2	-0.048	0.012	0.094	0.110
Q7 3	-0.001	-0.005	0.095	-0.236
Q7 4	-0.172	0.011	-0.021	0.317
Q14 1	0.302	0.036	0.009	0.304
Q16 1	0.061	0.992	-0.127	-0.076
Q16 2	0.150	-0.324	0.928	-0.115
Q16 3	0.170	-0.315	-0.306	-0.342
Q16 4	-0.005	-0.116	-0.121	0.229
Q18 1	-0.111	-0.053	0.040	0.238
Q18 2	0.026	0.098	0.000	0.404
Q18 3	0.000	0.019	0.117	-0.012
Q18 4	0.089	-0.011	-0.067	-0.273
Q18 5	-0.002	0.010	0.015	-0.067
Q22 1	0.682	0.000	-0.025	-0.095
Q23 1	0.612	-0.008	0.019	-0.090
Q24 1	0.592	0.020	-0.010	0.013
Q25 1	0.573	-0.013	-0.029	-0.091
Q26	0.608	-0.023	0.088	-0.161

Principal component analysis was used to estimate the factor loading matrix, and varimax rotation was applied to the matrix to improve factor interpretability. The results are shown in Table 3. The findings were: First, Q22|1, Q23|1, Q24|1, Q25|1, and Q26 had high positive loadings on this factor, indicating these variables may collectively reflect a certain type of latent characteristic, possibly related to similar thematic questions in the questionnaire. Second, Q16|1 had an

extremely high loading on this factor, suggesting it largely dominates this factor and may represent a unique latent dimension related to the specific theme of question 16. Third, Q16|2 had a relatively high loading on this factor, indicating its significant contribution, possibly reflecting unique latent features related to question 16. Fourth, Q7|4 and Q18|2 had relatively high positive loadings on this factor, suggesting this factor may be related to the latent factors represented by these two questions.

4.2. The Impact of the Billion-Yuan Subsidy Policy on Purchase Behavior for 3C Products

First, the purchase frequency of 3C products shows stratified distribution characteristics. Low-frequency purchases are concentrated among middle-aged and elderly groups aged 46 and above and low-income individuals with monthly income below 4000 yuan. Medium-frequency purchases are mainly among middle-aged and young groups aged 26-45 and middle-to-high-income individuals earning 6001-10000 yuan. High-frequency purchases are concentrated among young groups aged 18-25 and high-income individuals with monthly income above 10000 yuan.

Second, analysis of driving factors for purchase behavior. The impact of the subsidy policy on purchase behavior is mainly reflected in price-sensitive behavior and brand- and technology-oriented behavior. Middle-to-low-income groups advance or increase purchases due to subsidies. Young males choose high-end brands or new technology products because of subsidies. The influence of rigid demand and social word-of-mouth on purchase behavior is weakly related to subsidies.

Third, key factors for purchase behavior. Logistic regression analysis shows that brand technology, government

trust, product familiarity, and price attractiveness have significant positive effects on purchase behavior, while monthly income, policy awareness, and price perception & psychological distance have no significant impact. Typical consumer group behavioral characteristics include Price-Sensitive Driven (38%), Technology Early Adopters (22%), and Rational Decision-Makers (40%). Different types of consumers vary in purchase frequency, product preference, focus points, and purchase decision cycle.

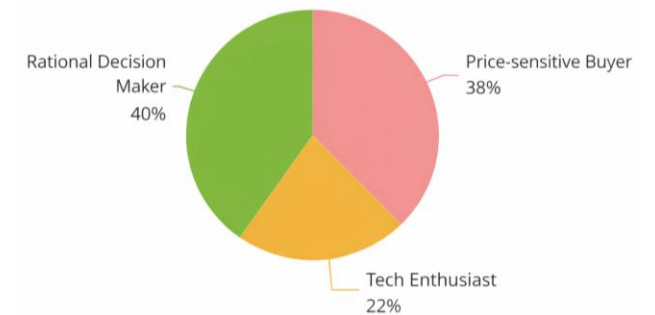


Figure 1. Distribution of Purchase Behavior Types

5. The Impact Pathways of the Billion-Yuan Subsidy Policy on Purchase Intention and Behavior for 3C Products

5.1. SEM Model Fit Test for Influencing Factors of Purchase Intention and Behavior

Model fit indices show that the Chi-square/df ratio is 3.56 < 5, which is acceptable. GFI and CFI are both greater than 0.9, indicating good model-data fit and adequate explanation of relationships between variables.

5.2. The Impact Pathways of the Billion-Yuan Subsidy Policy on Purchase Intention for 3C Products

Structural Equation Modeling (SEM) was used to analyze the impact of brand technology, government trust, and product familiarity on consumers' purchase intention. The results show that brand technology has the most significant impact on purchase intention. Advanced technology improves product performance and functionality, meeting consumers' demand for efficiency and high-quality experience, thus becoming a key factor in evaluating product value. Government trust and product familiarity have a moderate impact on purchase decisions, indicating the importance of social norms and product cognition in consumer behavior.

Table 4. Standardized Path Coefficients and Significance Test Results for Purchase Intention

Path Relationship	Standardized Coefficient	p-value	Significance Conclusion
Price Subsidy Sensitivity → Purchase Intention	0.140	0.027	Significant
Government Trust → Purchase Intention	0.490	0.000	Significant
Brand Technology → Purchase Intention	0.770	0.000	Significant
Product Familiarity → Purchase Intention	0.420	0.000	Significant

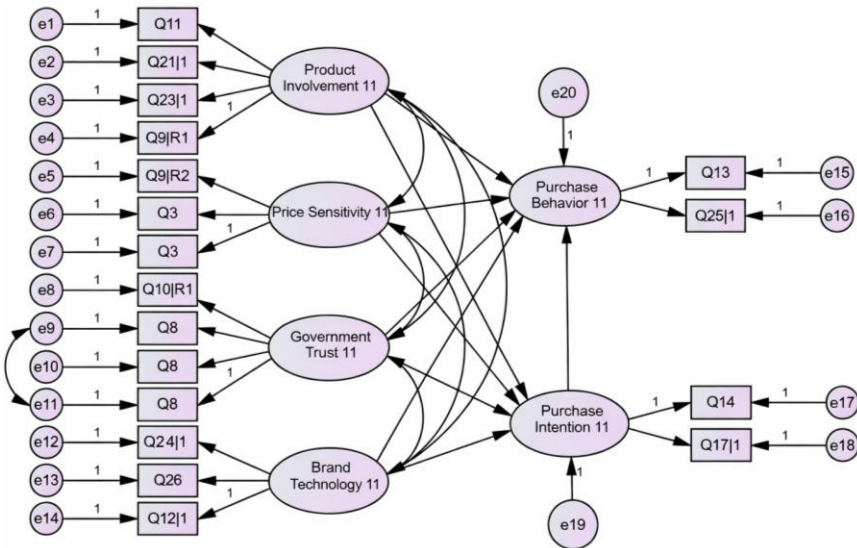


Figure 2. Impact Pathways of the Billion-Yuan Subsidy Policy on Purchase Intention and Behavior for 3C Products

Brand technology has a significant positive impact on consumer purchase intention (standardized coefficient 0.770). Advanced brand technology implies superior product performance, richer features, and better experience. It is a key factor for consumers evaluating product value and an important guarantee for their pursuit of high-quality life. Government trust has a significant positive impact on

purchase intention (standardized coefficient 0.490). Consumers' trust in the government can extend to products. The government's regulatory and supportive role provides consumers with confidence. Product familiarity has a significant positive impact on purchase intention (standardized coefficient 0.420). Familiarity with a product can reduce perceived purchase risk, making consumers more

inclined to choose products they understand. Although price subsidy sensitivity has a certain positive impact on purchase intention (standardized coefficient 0.140), its influence is relatively small compared to other factors, playing a role only in specific market environments.

5.3. The Impact Pathways of the Billion-Yuan Subsidy Policy on Purchase Behavior for 3C Products

The importance of product familiarity lies in reducing consumers' perceived purchase risk, making them more inclined to choose familiar products during the decision-making process. Enterprises should effectively conduct market education and product promotion to increase consumer product familiarity, thereby comprehensively enhancing consumers' purchase intention and behavior.

Product familiarity has a significant positive impact on purchase behavior (standardized coefficient 0.800), reducing consumers' perceived purchase risk and making them more likely to take actual purchase actions. Government trust also has a significant positive impact on purchase behavior (standardized coefficient 0.570). The government's trust endorsement can enhance consumer confidence in products and promote their purchase decisions. Price subsidy sensitivity has no significant impact on purchase behavior (standardized coefficient 0.190, $p=0.156$). Its effect is limited by factors such as consumer personal preferences and product availability. Brand technology also has no significant impact on purchase behavior (standardized coefficient 0.550, $p=0.121$). In actual purchase decisions, consumers consider various factors comprehensively, including price, product availability, after-sales service, etc., in addition to brand technology.

Table 5. Standardized Path Coefficients and Significance Test Results for Purchase Behavior

Path Relationship	Standardized Coefficient	p-value	Significance Conclusion
Price Subsidy Sensitivity → Purchase Behavior	0.190	0.156	Not Significant
Government Trust → Purchase Behavior	0.570	0.005	Significant
Brand Technology → Purchase Behavior	0.550	0.121	Not Significant
Product Familiarity → Purchase Behavior	0.800	0.004	Significant

The analysis finds that brand technology, government trust, and product familiarity are key factors influencing consumers' purchase decisions. The significant impact of brand technology highlights the importance of enterprise R&D and innovation investment in enhancing product competitiveness. Advanced brand technology meets consumers' high requirements for product performance and functionality, strengthening their identification with and purchase intention for the product. The positive role of government trust reflects the importance of social norms and institutional environment in consumer behavior. As the market regulator and public service provider, the level of government trust directly affects consumers' trust in products and their purchase decisions. The importance of product familiarity lies in reducing consumers' perceived purchase risk, making them more inclined to choose familiar products. Enterprises should increase consumer product familiarity through effective market education and product promotion, thereby enhancing consumer purchase behavior.

6. Research Conclusions and Suggestions

This study utilized survey data from 1046 valid questionnaires and employed factor analysis, Logistic regression, and Structural Equation Modeling to explore the impact of the billion-yuan subsidy policy on consumers' purchase intention and behavior for 3C products. The main conclusions include: First, consumer purchase behavior characteristics show significant differences, with distinct stratification among different groups. Low-frequency purchasers are mostly middle-aged/elderly and low-income groups. Medium-frequency purchasers are mainly middle-aged/young and middle-to-high-income groups. High-frequency purchasers are young and high-income groups. The "trade-in" model is more common among medium- and high-frequency purchase groups. Second, influencing factors for purchase intention are complex and strongly interrelated.

Price attractiveness is the core factor, with the most significant effect on middle-to-low-income groups. Brand technological strength, policy trust, and product familiarity have significant positive effects on purchase intention. Consumers consider multiple factors comprehensively. The "billion-yuan subsidy policy" reduces consumer purchase costs through "coupons," and "trade-in" further enhances purchase intention. The two synergistically increase policy attractiveness. Third, the subsidy policy's impact pathways are diverse and synergistic. It promotes purchase behavior through direct price advantages and indirectly by enhancing policy trust. It synergizes with factors like brand technology and product familiarity to drive purchase decisions. "Trade-in" promotes resource recycling and enhances policy effectiveness and market vitality.

Based on the research conclusions, the study suggests that the government and enterprises should form a synergistic effect to jointly promote the development of the 3C product market. Through policy guidance and enterprise response, product quality and added value should be improved, market competitiveness enhanced, subsidy policy implementation ensured to be precise, and the healthy development of the 3C product market and high-quality economic growth promoted. First, the government should optimize the subsidy policy and regulatory mechanism from three aspects. Implement precise subsidy allocation and differentiated policy design, formulating differentiated subsidy policies based on the consumption characteristics of different groups and optimizing policy processes. Enhance policy transparency by establishing a subsidy information platform, regularly publishing implementation status and effect evaluations, and setting up regulatory bodies to ensure reasonable fund usage. Guide consumers to choose green and energy-saving products and encourage enterprises to launch such products. Second, enterprises need to take measures to achieve product innovation and market expansion. On one hand, implement product innovation and diversification strategies, launching differentiated products and providing diverse trade-in options.

On the other hand, expand market channels, leveraging subsidy policies to explore markets in second- and third-tier cities and rural areas, formulate differentiated pricing strategies, and strengthen cooperation with e-commerce platforms and offline channel partners.

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