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Large Language Model Text Analysis and Attribution Theory Explain the Return Paradox of E-Commerce Consumers

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Abstract: In the digital e-commerce landscape, the return paradox—whereby high post-purchase satisfaction coexists with high return rates—has become increasingly prominent. Traditional consumer behaviour theories fall short of fully explaining the underlying mechanisms of this contradictory phenomenon. Drawing on attribution theory and leveraging large language model (LLM)-based text analysis to mine real user review data from e-commerce platforms, this paper deconstructs consumers' return attribution logic from two dimensions—internal personal perception and external contextual environment—and clarifies the formation mechanism of the satisfaction-driven return paradox. The findings reveal that consumer satisfaction is not the sole core factor inhibiting return behaviour; rather, non-negative evaluative factors such as implicit cognitive biases and contextual fit gaps are key triggers for returns following satisfaction. This study addresses the limitations of traditional questionnaire-based research, which suffers from fragmented data and ambiguous attribution, enriches the theoretical framework of consumer return behaviour in the digital era, and provides empirical evidence and practical references for e-commerce platforms and merchants to optimise operational strategies and reduce irrational return costs.

Keywords: Large Language Model Text Analysis; Attribution Theory; E-Commerce Consumers; Return Paradox; Consumer Behaviour

1. Introduction

With the rapid proliferation of live-streaming e-commerce and omnichannel retail, China's online retail market has continued to expand. While convenient return and exchange policies have greatly reduced consumers' post-purchase decision costs, they have also given rise to a prominent return paradox: a substantial number of consumers, despite giving positive product ratings and expressing post-purchase satisfaction, nonetheless choose to initiate return requests, creating a contradictory consumption pattern of "high satisfaction and high return rates." Industry data show that for categories such as apparel, cosmetics, and home furnishings, returned items with favourable reviews account for over 35% of total returns. Irrational satisfaction-driven returns have become a significant pain point, inflating merchants' logistics costs, eroding platform operational efficiency, and hindering the high-quality development of the e-commerce sector.

Existing research on e-commerce returns, largely grounded in expectation-confirmation theory and cognitive dissonance theory, tends to interpret return behaviour through negative factors such as product quality defects and service failures, implicitly assuming that low satisfaction is a prerequisite for returns. This perspective struggles to account for returns occurring under high satisfaction. Moreover, traditional studies have mostly relied on questionnaires and small-sample interviews, which yield highly subjective and unidimensional data and fail to capture the implicit attributions and genuine psychological appeals hidden in consumer reviews, thus leaving a significant gap in understanding the mechanisms of novel return behaviours.

To address these issues, this paper introduces attribution theory from social psychology and combines it with LLM-based text analysis. Using a large corpus of real e-commerce review texts as research data, we objectively deconstruct the internal and external attribution pathways underlying consumer returns after satisfaction, reveal the formation mechanism of the return paradox, and fill the theoretical gap in consumer behaviour research within the digital e-commerce context, offering a fresh

research perspective and practical solutions for mitigating irrational returns.

2. Theoretical Foundations and Literature Review

2.1 Core Connotations of Attribution Theory

Attribution theory, originally proposed by social psychologist Heider, posits that individuals subjectively infer and judge the causes of their own behavioural outcomes. The theory primarily distinguishes between two major dimensions: internal attribution and external attribution. Internal attribution focuses on individual-level factors, including personal preferences, cognitive biases, and consumption impulses; external attribution emphasises environmental factors, such as product fit, platform services, contextual changes, and information discrepancies. In the e-commerce consumption context, consumers' post-purchase behaviour is not determined solely by satisfaction but is instead the outcome of decision-making based on multiple attributional judgments. This theoretical framework provides a core foundation for interpreting the satisfaction-driven return paradox.

2.2 Current Research on E-Commerce Return Behaviour

Existing studies have generally confirmed that negative factors—such as product quality, logistics service, and price fluctuations—significantly increase consumers' return intentions. For instance, negative emotions triggered by sudden events can alter consumption decision tendencies [1], and in live-streaming contexts, consumers' impulsive purchasing behaviour further amplifies the likelihood of subsequent returns [2-4]. However, most studies assume a linear negative correlation between satisfaction and return rates, overlooking the novel behavioural characteristics emerging under lenient return policies in digital e-commerce.

In recent years, some scholars have begun to examine the role of non-negative factors in driving returns. Research has found that hassle-free return policies reduce consumers' perceived decision risk [5-6], leading many consumers to return items for non-quality reasons such as personal fit or temporary changes in needs, which are not directly related to product satisfaction [7]. Similarly, induced consumption behaviours in live-stream marketing may also prompt satisfied consumers to return purchases [8]. These findings suggest that return decisions are not entirely determined by satisfaction but are influenced by a broader set of factors.

In terms of research methods, traditional empirical studies rely on structured questionnaire data, which are inadequate for uncovering consumers' fragmented and implicit psychological states. In contrast, large language model-based text analysis can efficiently process massive unstructured review data and precisely extract latent attributional features. Previous studies that have applied product review analysis to examine consumer behaviour [9-10] have demonstrated the unique advantages of this technique in revealing deep-seated attributions, thereby offering novel methodological support for deconstructing the return paradox.

3. Research Design and Data Processing

3.1 Research Approach

This study focuses on three high-return product categories—apparel, home furnishings, and cosmetics—on major e-commerce platforms. We selected user review texts that received five-star ratings and were accompanied by valid return records as the core sample, while excluding negative reviews, neutral reviews, and returns due to quality issues, thereby concentrating exclusively on pure satisfaction-driven returns. Leveraging LLM-based text mining, sentiment clustering, and keyword extraction techniques, we coded the sample reviews according to attribution types, classified them into internal and external attribution categories, calculated the proportion of each category, and ultimately interpreted the formation mechanism of the return paradox in light of attribution theory.

3.2 Data Sources and Screening

The data for this paper were sourced from two major e-commerce platforms, Taobao and JD.com. We randomly crawled user reviews and return records for the three categories from January to June 2025, yielding an initial sample of 12,000 records. After data cleaning, deduplication, and removal of invalid entries, we retained 3,862 valid samples. The screening criteria were: users gave five-star ratings,

reviews contained no negative wording, and complete return order records existed.

3.3 Variable Classification and Coding

Based on attribution theory and informed by the text mining results, we divided the attribution dimensions of satisfaction-driven returns into two broad categories—internal attribution and external attribution—with six refined secondary indicators. The specific classification and definitions are presented in Table 1.

Table 1. Classification of Consumer Satisfaction-Driven Return Attribution Dimensions and Sample Proportion Statistics

Primary attribution dimension	Secondary attribution indicator	Definition	Sample proportion
Internal attribution	Consumption impulse bias	Rational reassessment after impulsive ordering; returning due to lack of genuine need	32.10%
	Personal fit mismatch	Satisfied with product quality, but size or style does not meet personal expectations	28.70%
	Temporary demand change	Post- purchase changes in personal circumstances or needs; no longer need to keep the item	15.30%
External attribution	Online information discrepancy	Minor differences between visual presentation and actual product; does not affect satisfaction but affects fit	12.50%
	Dynamic price fluctuation	Post- purchase price reduction or coupon issuance on the platform; consumer returns to repurchase at lower price	7.20%
	Lenient after- sales policy	Easy hassle- free returns; voluntary return after trying on or testing	4.20%

4. Empirical Results and Mechanism Analysis

4.1 Overall Attribution Characteristics

According to the text mining results, internal attribution accounts for 76.1% of satisfaction-driven returns, while external attribution accounts for 23.9%. This indicates that the core driving factors of the e-commerce return paradox originate from consumers' own cognitive and behavioural biases, rather than from product or service quality defects—and this is precisely the key reason why high satisfaction coexists with high return rates. Traditional research, which focuses on external negative factors to explain returns, fails to cover such endogenous return scenarios, thereby leading to theoretical misinterpretation.

4.2 Decomposition of Core Attribution Pathways

Impulsive consumption cognitive bias is the primary trigger of the return paradox. The LLM-based text analysis shows that over 30% of satisfaction-driven return samples contain keywords such as "ordered on a whim" or "looks good but not practical." The immersive consumption environments created by short videos and live-streaming on e-commerce platforms stimulate impulsive purchases. After receiving the product, consumers acknowledge its quality and give positive ratings, but then choose to return based on rational consumption reflection, resulting in the contradictory behaviour of "satisfied yet returning."

Functional returns caused by personal fit gaps rank second. In these samples, consumers generally affirm the quality, craftsmanship, and appearance of the products, but return them due to mismatches in body shape, style, or usage context. Such returns do not involve dissatisfaction; they are purely issues of personal fit, which are typical characteristics of the return paradox in apparel and home furnishings categories.

Lenient external policies amplify irrational return behaviour. Convenient hassle-free return policies and zero return costs lower consumers' trial-and-error thresholds. A large number of consumers treat e-commerce shopping as a "free trial" channel—they return items even after a satisfactory experience and affirmation of product quality, further intensifying the return paradox. At the same time, price disparities caused by dynamic platform pricing mechanisms also prompt satisfied consumers to initiate returns and repurchase at lower prices.

4.3 Summary of the Formation Mechanism of the Return Paradox

Integrating attribution theory, it becomes clear

that e-commerce consumers' return decisions involve a dual-stage process in which attributional judgment takes precedence over satisfaction evaluation. Consumers first form a satisfaction judgment based on product quality, and then engage in attributional reasoning by considering their own needs, fit, and external context, ultimately arriving at a return decision. Traditional theories that rely solely on satisfaction to explain return behaviour overlook the critical role of subsequent attributional reasoning. Through LLM-based textual data, this paper empirically validates this theoretical gap and provides a complete explanation of the formation logic of the return paradox.

5. Conclusions and Managerial Implications

5.1 Conclusions

This paper, grounded in attribution theory and employing LLM-based text analysis, empirically examines the formation mechanism of the e-commerce consumer return paradox. The study yields three main findings: First, the satisfaction-driven return paradox is prevalent in e-commerce and is predominantly driven by internal attribution, with impulsive consumption, personal fit mismatches, and demand changes being the core triggers. Second, satisfaction is not the decisive factor in return behaviour; attributional reasoning serves as a key mediating link between post-purchase experience and return decisions. Third, external factors such as lenient after-sales policies and dynamic pricing mechanisms can amplify endogenous return behaviour and exacerbate the return paradox. This research effectively fills the theoretical gap in traditional consumer behaviour studies and enriches the research framework for post-purchase consumer behaviour in digital e-commerce contexts.

5.2 Managerial Implications

For e-commerce merchants, it is advisable to optimise product detail page displays by adding size-fitting guides and scenario-based usage instructions to reduce consumer fit mismatches; simultaneously, rational consumption should be encouraged through detail pages and live-stream scripts to curb impulsive ordering, thereby reducing irrational returns at the source. For e-commerce platforms, dynamic pricing mechanisms should be refined to avoid return surges caused by short-term sharp price reductions; hassle-free return rules should be improved, and differentiated service mechanisms should be established for frequent trial-and-return users to balance consumer experience with operational costs. For the industry as a whole, it is necessary to construct a consumer behaviour evaluation system tailored to digital e-commerce, moving beyond the single-dimensional satisfaction assessment to support the standardised and high-quality development of the e-commerce sector.

6. Limitations and Future Research

This paper only examines three mainstream product categories, so the coverage of sample categories is limited; return attribution characteristics may vary across different product categories. Future research could expand to include a broader range of categories and conduct comparative analyses of the heterogeneous mechanisms of the return paradox across categories. Additionally, moderating variables—such as user age, consumption tier, and shopping context—could be introduced to further investigate their influence on attribution pathways, thereby enriching the theoretical framework of consumer return behaviour.

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