Effective Quality Analysis of E-commerce Platform Services on Polite Framework

I-Ching Chen[1*,] Jintong Huang[2]

[1, 2]School of Economics and Management, Zhaoqing University, 526060, Zhaoqing, Guangdong, China

[1*]Corresponding Author: I-Ching Chen

Abstract

Background information & problem statement: As an extension of the "service economy," the "experience economy" has become the fourth type of economic activity. With the continuous improvement of living standards, people evolve from the pursuit of functionality to the pursuit of experience, i.e., from "purchasing products" to "purchasing experiences."

Motivation: This study clarifies the current situation and challenges of research related to e-commerce platforms, addressing the gap in the study of politeness frameworks, and provides references for platform enterprises to explore user experience in the future.

Research method: This study used CIT(Critical Incident Technique) as the research method, collected users' views on the services provided by the e-commerce platform through questionnaires and interviews, and then analyzed and summarized these critical incidents. Finally, the reliability and validity between were evaluated.

Findings & conclusion: In terms of theoretical significance, this study summarizes and refines the dimensions of the politeness framework and, combined with the critical incident technique, proposes an impact model of user value co-creation for e-commerce platforms based on user experience. Through empirical testing, the study demonstrates the impact path of politeness frameworks on user value co-creation and the moderating role of platform types, which is beneficial for future differentiated research on user experience in e-commerce platforms. Practically, the study encourages platforms and merchants to more deeply understand the connotation of user experience and propose specific improvement directions and corresponding management insights as references, contributing to the healthy and stable development of the e-commerce ecosystem.

Keywords: E-commerce Platform, Politeness Framework, Service Evaluation, User Experience, E-commerce Service Quality

1. Introduction

In the study of its development process, e-commerce started with Electronic Data Interchange (EDI) and gradually evolved into online transactions via the internet, showcasing its key role in the evolution of the global trade landscape. In the field of business models, B2B, B2C, C2C, and emerging O2O models have been extensively discussed, analyzing the operational characteristics, profit methods, and applicable scenarios of each model. For instance, Amazon's B2C model, with large-scale warehousing logistics and personalized recommendation systems, has reshaped the retail landscape.

The integration of cutting-edge technologies such as big data, cloud computing, and artificial intelligence with e-commerce has attracted significant attention. Big data aids in precise marketing, uncovering potential consumer needs; cloud computing provides flexible computing power support, reducing operational costs for enterprises; artificial intelligence excels in customer service, intelligent product selection, and other aspects, enhancing operational efficiency.For enterprises, e-commerce brings market expansion opportunities, allowing small and medium-sized enterprises to break regional limitations and enter international markets. However, they also face challenges such as digital transformation costs and network security risks. For consumers, online shopping convenience increases, with a diverse range of product choices. However, they also face issues such as information asymmetry and privacy leaks.

Currently, the layout of e-commerce platforms in China can be categorized into three main types: traditional shelf e-commerce (such as Taobao, Tmall, JD.com), social e-commerce (such as Pinduoduo), and content e-commerce (such as Douyin, Kuaishou, Xiaohongshu). With the rise of short video traffic, the structure of e-commerce platforms has gradually become more fragmented. Each platform is actively exploring new operating methods. In this era that values content, capturing users' attention and providing value on a spiritual level is essential to shift from a "product mindset" to a "user mindset."

User-centered design and politeness framework have always been considered crucial in the product and service design process. To achieve new product innovations, most enterprises invest considerable resources into politeness framework management to gain an in-depth understanding of user needs. Mobile applications must also emphasize politeness framework since users' expectations for experience increase as apps become a part of daily life. Apart from focusing on functionality, users may have higher expectations regarding service and psychological needs. Therefore, defining the concept and scope of product politeness framework becomes increasingly important. In the new retail context, where live streaming, video, and e-commerce are combined, traditional industries are constantly evolving. As digital tools redefine value creation and delivery methods, the best way to take advantage of new online retail opportunities is to enhance politeness framework. Given that "experience" is context-dependent, it is necessary to study the dimensions and outcomes of politeness framework in e-commerce platforms.

2. Literature Review

2.1 E-commerce Platforms

David S Evans and Richard Schmalensee (2010) pointed out that the scope and depth of customer value creation and e-commerce platform operations are crucial control points for the continued development of platform competitiveness. Bernd et al. (2016) suggested that the value creation operation models of social e-commerce platforms reflect the value-added activities generated at various stages of platform operation, meeting customer needs and enhancing platform service interaction levels. Therefore, this study defines an e-commerce platform as: activities and related services conducted via electronic transactions on the internet, intranet, and databases, representing the socialization, interactivity, informatization, and networking of various business segments of traditional e-commerce platforms. Figure 1 shows the three-way interaction diagram of e-commerce services.
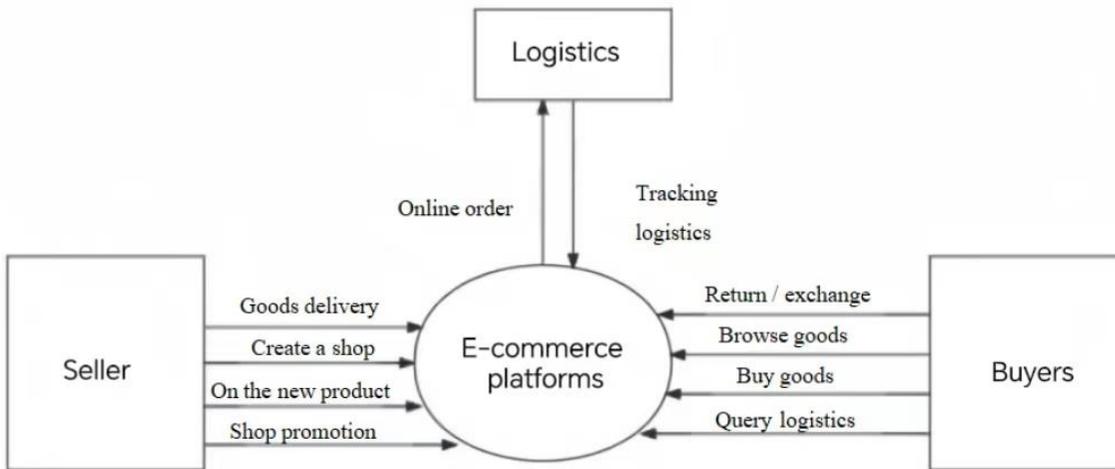

Fig. 1. Diagram of the Interactive Relationship in E-commerce.

In the e-commerce ecosystem, e-commerce platforms, sellers, buyers, and logistics are closely interconnected, presenting a complex and collaborative interaction relationship among them. The e-commerce platform acts as the central hub, providing sellers with a digital commercial space, integrating various marketing tools, and store setup templates to help sellers lower market entry barriers, accurately target customer groups, and establish rules to regulate sellers' business behavior to ensure transaction fairness.

For buyers, the platform creates a convenient shopping interface, offering extensive product information search and intelligent recommendation services to enhance the shopping experience. Sellers rely on the e-commerce platform to display product details, including product features, prices, inventory, and other key information. They utilize the platform's marketing channels to attract buyers' attention and promptly adjust product strategies based on buyer feedback data,

such as style updates and price optimizations, to meet market demands and achieve sales conversion and profit growth. Buyers search for desired products on the e-commerce platform, browse the information provided by sellers, and place orders. During the payment process, the funds are transferred to the platform's escrow until the buyer confirms satisfactory receipt of the goods, after which the platform settles the payment to the seller. During this period, buyers can also use the evaluation system to provide feedback on their shopping experience, which in turn influences the seller's reputation and subsequent business decisions.

Logistics intervenes after the transaction between buyer and seller is completed. It receives shipping instructions from the seller, picks up goods from designated storage locations, uses advanced logistics technologies to plan the optimal delivery route, and ensures timely delivery of goods to the buyer. Meanwhile, logistics provides real-time feedback on the delivery progress to the platform and both parties involved, ensuring a smooth flow of information, funds, and goods. This seamless connection enables the efficient operation of the entire e-commerce transaction loop. These four parties depend on and restrict each other, and any changes in one party will trigger a chain reaction, collectively driving the continuous development of the e-commerce industry.

Computer programs, like machines, are mechanized, and people increasingly view programs as active collaborators rather than passive media. These new social roles—agents, assistants, or facilitators—imply a new requirement: politeness. A social agent represents another social entity in social interactions (B. Whitworth & T. Liu, 2008). Even if the agent (program) is not social, the interaction itself is social because installation is a social contract. Software is not inherently social, but to mediate social interaction, it must operate in a socially considerate manner.

If a software agent works for the party it interacts with, it acts as an assistant and polite human-computer interaction is required. If software engages in social interaction, it should be designed accordingly. No company would send an unsociable person to talk to important clients, but their software may interrupt, override, nag, steal, hijack, and often annoy and offend people (Cooper, 1999). Polite computing involves designing software with social capabilities. People uninstall software due to impoliteness, representing a new type of computing error—a social error. When a computer system enters an infinite loop and freezes, it is a software error. When software offends and drives away users, it is a social error. Thus, software that respects and considers users is polite (B. Whitworth & A. Ahmad, 2013). This function is distinctly different from the usability or utility of software, which refers to functionality and ease of use. In contrast, polite computing relates to social interaction rather than computer functionality or cognitive ease of use. Thus, software can be easy to use but rude, or polite but still difficult to use. While usability reduces training and documentation costs, politeness ensures successful social interaction with software agents.

Generally, politeness can improve online social interactions, thereby increasing them. Politeness is the reason why the social environment becomes a better place. It is typically defined as considering others in social situations. Research has tested politeness measures on e-commerce

platforms through quantitative studies, indicating that e-commerce etiquette is gradually gaining attention (I-Ching Chen & Shueh-Cheng Hu, 2017). If the considered person knows what is "considerate" for them, politeness can be abstractly defined as giving choice to others in social interactions. This is "considerate" because only the other person knows what is beneficial for them. In conversation, if control points are passed back and forth between parties, handing control to the other party is polite (B. Whitworth, 2005). Based on the preceding definitions, polite software should:

a) Respect the user. Polite software respects the owner's rights, does not act preemptively, and does not change data without the owner's permission.
b) Be visible. Polite software does not covertly change things but openly declares what it is doing and on whose behalf.
c) Be easy to understand. Polite software helps people make informed choices by providing useful and understandable information.
d) Remember past interactions. Polite software remembers past interactions, bringing your past choices into future interactions.
e) Respond to you. Polite software responds to human instructions rather than pursuing its own agenda.

3. Critical Incident Technique

This study employs the Critical Incident Technique (CIT), a method for systematically collecting, classifying, and analyzing data to study human behavior. CIT facilitates the exploration of significant events identified by respondents, aiming to capture individuals' perspectives on these events, including cognition, emotions, and behaviors. CIT is widely used in fields such as education, management, retail, and service interactions, with its reliability and validity well established (Flanagan, 1954). The method involves collecting detailed accounts of significant incidents from participants, performing content analysis, and categorizing the data into frameworks, aiding researchers in classifying events.

Initially, CIT was mainly applied in non-service fields. However, since 1990, subsequent research has applied CIT to areas such as corporate economics, human resources, and marketing management. For instance, Kim Janssens and colleagues investigated market buyer-supplier satisfaction using CIT to describe 29 critical incidents and extract first-hand data. Lee Jieon et al. conducted a subjective survey of user experiences on South Korea's public home shopping platform, analyzing how shopping experiences vary with customer loyalty. Currently, CIT's application scope has expanded to include management, human resources, hospitality, education, and other fields. In studying perceived service quality, CIT offers unique advantages over traditional service attribute evaluation methods by incorporating participants' subjective cognition, emotions, and behaviors into qualitative analysis. This helps researchers classify events and deeply analyze them to identify the causes of customer dissatisfaction. Thus, this study uses CIT to analyze service failure incidents and determine directions for improving service quality, providing targeted suggestions for e-commerce platforms.

3.1. Research Method

This study uses both interviews and questionnaires to collect samples. Initially, user perceptions of e-commerce platform services are gathered through questionnaires and interviews, followed by identifying which data qualify as "critical incidents" and analyzing and summarizing these critical incidents. Therefore, the questionnaire aims to gain insights into user perspectives, deeply understand their subjective opinions on e-commerce platform service management. To provide an intuitive understanding of the sample data, the subjective questions include:

Q1: Using various e-commerce platforms, describe one impressive incident or experience that made you feel satisfied, happy, or respected. (Reminder: The subject is the e-commerce platform, not an individual).

Q2: Using various e-commerce platforms, describe one impressive incident or experience that made you feel dissatisfied, unhappy, or disrespected. (Reminder: The subject is the e-commerce platform, not an individual).

3.2. Data Collection

The questionnaire collection in this study follows qualitative research methods. The survey targets users who currently use or have used e-commerce platform services. The data collection period was from June 7, 2025 to July 15,2025, for a period of 38 days. There were 103 valid questionnaires and 59 invalid questionnaires. If the activity can be simply defined, only 50 to 100 events need to be analyzed（Flanagan, 1954）. The questionnaire design focuses on surveying customer satisfaction with e-commerce platform services, adhering to randomness principles and timely recovery after the survey. Subsequently, the author organizes the collected data and categorizes the responses into satisfaction and dissatisfaction critical incidents. These incidents are then categorized by three coders independently. After one month, the same three coders recategorize the incidents to ensure consistency. Finally, the reliability and validity among the three coders are statistically analyzed to evaluate e-commerce platform service quality and propose measures to optimize the politeness framework.

4. Data Analysis

4.1. Basic Information

By organizing and analyzing the collected data, we conducted descriptive statistical analysis on five aspects: gender, age, highest education level, occupation, and monthly income. In terms of gender distribution, there were 33 males, accounting for 32.04% of the total, and 70 females, accounting for 67.96%, indicating a significant gender difference. The age distribution of the respondents was uneven, with the majority of respondents aged between 26 and 35, showing a trend towards a younger demographic. It was observed that over 80% of the respondents had a bachelor's or master's degree, indicating a generally high level of education within this group.

4.2. Reliability and Validity Testing

This study used the average interjudge agreement method, a widely applied international technique for testing coder consistency with categorical data. The range of this coefficient is from 0.00 to 1.00, where scores between 0.41 and 0.60 indicate moderate reliability, scores between 0.61 and 0.80 are considered basically acceptable, and scores above 0.80 indicate high reliability.

Finally, after sorting and analyzing the data, the number of completely consistent critical incidents among coders was as follows: for satisfactory incidents, there were 88 critical incidents where Coders 1 and 2 were in complete agreement, 80 critical incidents where Coders 1 and 3 were in complete agreement, and 76 critical incidents where Coders 2 and 3 were in complete agreement, as shown in Table 1; for unsatisfactory incidents, there were 69 critical incidents where Coders 1 and 2 were in complete agreement, 75 critical incidents where Coders 1 and 3 were in complete agreement, and 72 critical incidents where Coders 2 and 3 were in complete agreement, as shown in Table 2.

Table 1. Intercoder Consistency – Satisfactory Incidents.

Number	Classifier 1	Classifier 2	Classifier 3
Classifier 1	92	--	--
Classifier 2	69	88	--
Classifier 3	75	72	82

Table 2. Intercoder Consistency – Unsatisfactory Incidents.

Number	**Classifier 1**	**Classifier 2**	**Classifier 3**
Classifier 1	90	--	--
Classifier 2	88	87	--
Classifier 3	80	76	79

The classification was carried out according to the principle of "maximizing the similarity of meanings within groups and maximizing the differences between groups." After organizing and summarizing, the number of critical incidents with complete agreement among Classifier 1, Classifier 2, and Classifier 3 for satisfactory incidents can be seen in Table 1, and for unsatisfactory critical incidents in Table 2. The average interjudge agreement and reliability can be calculated using Formulas (1) and (2). The average interjudge agreement for satisfactory critical incidents, A, was approximately 0.79, and for unsatisfactory critical incidents, A was 0.70. Both exceeded 0.8, indicating relatively high interjudge agreement. The classification

reliability for satisfactory critical incidents, R, was 0.92, and for unsatisfactory critical incidents, R was 0.88, making the classification results valid, as shown in Table 3.

$$A = \frac{\frac{2M_{12}}{n_1 + n_2} + \frac{2M_{23}}{n_2 + n_3} + \frac{2M_{13}}{n_1 + n_3}}{N}$$

(1)

$$R = \frac{(N \times A)}{1 + [(N - 1) \times A]}$$

(2)

Table 3. Critical Incident Classification Statistics.

Critical Incident	Average Interjudge Agreement (A)	Reliability (R)
Satisfactory	0.79	0.92
Unsatisfactory	0.70	0.88

The scale used in this study demonstrates good content validity. According to the data in Table 3, where A represents the average interjudge agreement of critical incident classification; R represents the reliability of critical incident classification; n is the number of samples classified by each judge; M is the number of events classified the same by both; and N is the number of judges. The reliability of three coders on both satisfied and dissatisfied critical incidents was close to 0.80. The coding results of the three researchers were integrated to form the final results.

5. Results

In the content analysis, the data can be systematically divided into different categories. Therefore, the thematic content can be identified, analyzed, and described for service satisfaction. Key event unit analysis is very important for the discussion of the platform service courtesy architecture. Through an in-depth survey of 162 respondents, author identified 324 critical incidents that affected the politeness framework of the e-commerce platform. CIT. Representative exemplars of both satisfactory and unsatisfactory interaction episodes are systematically presented in Tables 4 and 5 respectively, illustrating the polarity dimensions within politeness-related user experiences.

In the classification of critical incidents, "support services" remains the most prevalent category with 68 cases (37.86%). The least common category is "interaction", accounting for 20 cases (3.88%). The middle range consists of "emotional" (30.11%) and "sensory" (28.15%) categories. Notably, "support services" dominates both satisfaction and dissatisfaction rankings. Users'

primary complaints include cumbersome operations and feature navigation difficulties. Other service-related grievances involve excessive pop-up ads, privacy concerns, AI-powered data inaccuracies, and unappealing interface designs.

Table 4. Examples of Satisfactory Critical Incidents in the Survey Questionnaire (Partial).

Satisfactory Critical Incidents

Classification words	Examples(Partial)
Sensory	"The design of the page is simple and generous, the color combination is comfortable, the product classification is clear and bright, so that I can find the goods I want at a glance, browsing is very easy and pleasant."
Interaction	"The purchase process is smooth and natural. From browsing, adding to the shopping cart to payment, each step has clear guidance, no jump errors or lag, the experience is very smooth."
Emotion	"The customer service responded quickly, with a friendly attitude and professional and thoughtful solutions to the problem, which made me feel respected and valued, and I felt happy during the shopping process."
Security	"The price of the platform is transparent. My friends and I search for the same product at different times and with different accounts, and the displayed price was different, which makes people feel fair and assured."

Table 5. Examples of Unsatisfactory Critical Incidents in the Survey Questionnaire (Partial).

Unsatisfactory Critical Incidents	
Classification words	**Examples(Partial)**
Sensory	"The page design is chaotic, and the information layout is unclear, making it difficult for users to find the functions or products they need, increasing the difficulty of browsing and shopping."
Interaction	"JD.com automatically redirects me. Every time I open other software and encounter a JD.com ad, it automatically redirects me to JD.com. At first, I thought I clicked into it, but later I found that even if I didn't click, it would still automatically redirect there."
Emotion	"When needing customer service from the official Taobao customer service, I had to emphasize "human customer service" many times before the "human customer service" button would pop up. It felt like a hidden scenario that had to be triggered before being able to contact human customer service."
Security	"Sometimes the platform offers "special treatment" for loyal customers. Previously, several times when I bought things, my friend and I searched for the same store and the same product on Taobao, and the displayed price was different, which felt quite frustrating."

6. Summary

6.1. Enhance Sensory Performance

Among different platform types, the social commerce etiquette framework demonstrates a more pronounced impact on co-creating user value. In e-commerce apps, creating an immersive experience helps users avoid distractions, enhances their product enjoyment, and prevents interruptions during use. Most major e-commerce apps on the market use waterfall or immersive layouts to meet consumer needs. The waterfall presentation ensures natural transitions, enhancing design consistency and allowing users to quickly browse items of interest. Immersive layouts increase visual impact during single browsing sessions, providing a comprehensive view of all information. Since users' attention is limited and valuable, reducing interference from other functional elements within the interface allows users to focus on essential features, deepening their impression of the product. Designing functional elements in a linear style on a white background and a flat style on a dark background, adjusting opacity, reduces variability between different elements and improves visual consistency.

6.2. Improve Interaction Capabilities

Clear interaction cues mean that when users first use an e-commerce app, they can understand the specific usage methods through clear cues, quickly learn core operations, and easily

understand how to use specific functions, avoiding confusion and improving app convenience. Combining user interactions in interface design to highlight interaction cues, using appropriate icons or text, reduces user comprehension difficulty and facilitates quick recognition. Keeping interface information simple and practical provides actionable solutions to guide users through relevant operations or solve confusion.

6.3. Focus on User Emotional Experience

To meet users' pleasure demands, actively explore ways to make users happy, finding achievable goals in the product. For example, combining the user's current proficiency with the product, design tasks with appropriate difficulty to encourage users to complete tasks actively, clearly encourage them when they achieve a goal or task, and evoke feelings of joy. At the same time, consider achievement functions in the product to enhance users' sense of accomplishment, highlight their identity value, and design different displays and associated value rights for different achievements to incentivize users to complete achievement upgrades. After completing achievements, the product can provide exclusive display methods, such as tags or badges, forming a virtuous cycle and increasing the stickiness between the product and users.

6.4. Protecting User Rights

With the development of e-commerce platforms, e-commerce platforms need to strengthen data security management and user privacy protection to safeguard the personal information and transaction data of consumers and merchants.

First, e-commerce platforms should enhance data security management by establishing comprehensive data security management systems and technical measures to ensure safe data storage, transmission, and processing. Financial institutions should also strengthen user privacy protection by complying with relevant laws and regulations, respecting user privacy rights, and not excessively collecting or using user data.

Second, from the consumer's perspective, it is essential to continuously strengthen awareness of data rights and protection. Consumers should learn about national laws and regulations from various channels to enhance their sensitivity to issues like big data discrimination and data rights. Additionally, when using e-commerce platforms daily, consumers should pay attention to data collection settings and reasonably execute rights protection. If consumers do not have time to compare prices before purchasing, they can compare prices afterward to protect their rights. If they discover instances of being unfairly targeted by big data algorithms ("big data discrimination"), they should actively complain and provide feedback to the appropriate regulatory platforms and legally exercise their data rights to suppress such discriminatory behavior.

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