

## EXPLORING PERCEPTION OF PLATFORM LANGUAGE ON CONSUMER DECISION MAKING: A COGNITIVE LOAD PERSPECTIVE

Zhiwen Li  
School of Management  
Jiangsu University  
301 Xuefu Road, Jingkou District, Zhenjiang City  
212013, Jiangsu Province, China  
[zhiwenli@ujs.edu.cn](mailto:zhiwenli@ujs.edu.cn)

Owusu Prince<sup>1</sup>  
School of Management  
Jiangsu University  
301 Xuefu Road, Jingkou District, Zhenjiang City  
212013, Jiangsu Province, China  
[prince.owusu49@yahoo.com](mailto:prince.owusu49@yahoo.com)

Baojiao Wang  
School of Management  
Jiangsu University  
301 Xuefu Road, Jingkou District, Zhenjiang City  
212013, Jiangsu Province, China  
[wangbaojiao@126.com](mailto:wangbaojiao@126.com)

Thomas Le Texier  
School of Economics  
University of Rennes  
CNRS, CREM – UMR6211, F-35000 Rennes, France  
[thomas.letexier@univ-rennes.fr](mailto:thomas.letexier@univ-rennes.fr)

Stephen Addai-Dansoh  
School of Management  
Jiangsu University  
301 Xuefu Road, Jingkou District, Zhenjiang City 212013, Jiangsu Province, China  
[addaidansoh@gmail.com](mailto:addaidansoh@gmail.com)

### ABSTRACT

The cognitive load theory, predominant in educational psychology, is gaining prominence in consumer decision-making studies. This study extends cognitive load dimensions to measure consumer perception of platform language and examine its influence on consumer satisfaction and subsequent decision-making across three studies. In Study 1, a between-subjects experiment found higher intrinsic and extraneous cognitive loads in consumers using a secondary language platform, but lower germane cognitive load compared to those using their native language. Study 2, a within-subjects experiment, reinforced these findings and showed higher satisfaction and repurchase intentions when using the native language platform. Study 3 utilized structural equation modeling to examine the relationship between platform language perception, cognitive loads, satisfaction, and repurchase intentions. Results indicated that intrinsic and extraneous cognitive loads negatively impacted consumer satisfaction and repurchase decisions, while germane cognitive load had a positive influence. These findings highlight the importance of optimizing cognitive load from the consumer perception of platform language to enhance consumer satisfaction and loyalty on e-commerce platforms.

**Keywords:** Repurchase intention; Consumer perception of platform language; Consumer satisfaction; Cognitive load theory; Cognitive load.

### 1. Introduction

International consumers living or shopping from different countries have become one of the most important segments in the domestic retail market. Post-coronavirus (COVID-19), a tremendous increase in business, education, and tourism among foreigners in other countries is expected. While living in these countries, these international consumers contribute to the consumption scale in the country's retail market by shopping for both hedonic and utilitarian value goods. In particular, with the development of e-commerce, international consumers have become a

---

**Cite:** Li, Z., Owusu, P., Wang, B., Le Texier, T., & Addai-Dansoh, S. (2025, Feb). Exploring perception of platform language on consumer decision making: A cognitive load perspective. *Journal of Electronic Commerce Research*, 26(1).

<sup>1</sup> Corresponding author.

fast-growing force in online shopping. In this context, finding effective ways to serve this particular segment of consumers to retain them has become an essential issue for e-commerce platforms.

E-commerce platforms struggle to retain customers who frequently switch between retailers and platforms (Gupta & Kim, 2007; Jain et al., 2020; Trivedi & Yadav, 2020), although such platforms have largely been accepted, especially since the outbreak of the novel COVID-19 (Abumalloh et al., 2020; Meilatinova, 2021). As such, researchers advise retailers and platform owners to focus more on maintaining their existing customers than getting new ones (Yeo et al., 2021). For this reason, studies have highlighted several factors that influence consumers' decision to repurchase from an online platform (Dogra et al., 2023; Javed & Wu, 2020; Lin et al., 2021) because being aware of these factors helps retailers improve their customer trust and satisfaction, which increases their customer retention (Javed & Wu, 2020; Trivedi & Yadav, 2020). Among those factors, language plays a critical role in the operation and user experience of e-commerce platforms, particularly in diverse linguistic environments (Hu & Ma, 2023; Lin et al., 2024). Despite the availability of online translation tools and artificial intelligence (AI) enhancements that aim to mitigate language barriers, the cognitive implications for consumers remain underexplored (Meilatinova, 2021). The cognitive load theory provides a valuable framework for examining how language barriers on e-commerce platforms influence consumer behaviour. Cognitive load theory addresses how different factors affect our mental processing capacity. It considers the inherent difficulty of a task, the impact of how information is presented, and the mental effort devoted to understanding and integrating the information. Cognitive load theory differentiates between three types of cognitive load: intrinsic, extraneous, and germane (Sweller, 1994). These dimensions collectively offer a comprehensive method for assessing consumer perception of platform language ease of use and its effect on consumer decision-making. However, there has not been any research that measures the consumer perception of platform language from dimensions provided by cognitive load theory.

This study aims to bridge the gap in the literature by applying cognitive load theory to investigate how consumers perceive platform language and how this perception influences their satisfaction and repurchase intentions. Specifically, we seek to answer: *How does the perception of platform language affect consumers' cognitive load? Does this cognitive load impact their satisfaction and overall decision to repurchase from the platform?* We conducted three separate studies to explore these questions in this paper. The first study employed a between-subjects experiment to examine changes in cognitive load with different language types. The second study utilized a within-subjects laboratory experiment to validate the findings of the first study. Lastly, a structural model analysis was performed to assess how consumer perception of platform language, measured through the three dimensions of cognitive load, affects consumer satisfaction and repurchase intentions. This study not only applies cognitive load theory to the context of multilingual e-commerce platforms but also provides a comparative analysis of cognitive load differences when consumers use platforms in their native language versus a secondary language.

The remainder of this paper is structured as follows: First, we present the theoretical foundation and empirical literature that inform the study, accompanied by the development of the corresponding hypotheses. Next, we introduce the conceptual framework that guides the research, outlining the relationships between platform language, cognitive load (intrinsic, extraneous, and germane), consumer satisfaction, and repurchase intentions. Following this, we offer a detailed overview of the three studies conducted within this research. We then describe the measurement and structural models used to analyze the data. The results are presented next, providing insights into the relationships between platform language, cognitive load, consumer satisfaction, and repurchase intention. This is followed by a discussion of the key findings, highlighting the theoretical contributions. The manuscript concludes with the managerial implications of the findings and addresses the limitations of the research.

## 2. Theoretical Review and Hypotheses

### 2.1. Cognitive Load Theory

Cognitive load theory, formulated by Sweller (1994), provides a pivotal framework for understanding how cognitive resources are managed during the process of learning and task execution. This theory is predicated on the notion that human working memory has a finite capacity, and cognitive load pertains to the amount of mental effort expended within this capacity. This theory is instrumental in various fields, particularly in instructional design, with the objective of optimizing cognitive load to enhance learning and performance (van Nooijen et al., 2024). In the realm of consumer decision-making, cognitive load theory offers profound insights into how different types of cognitive load influence consumer behavior (Kaushik et al., 2018). Consumers often encounter a plethora of information when navigating e-commerce platforms, from product descriptions and reviews to promotional content and user interfaces (Zhang et al., 2024). The cognitive effort required to process this information can significantly affect their decision-making processes (Dong et al., 2022). Cognitive load directly impacts consumer satisfaction and trust. High intrinsic or extraneous cognitive load can lead to cognitive overload, causing frustration and dissatisfaction. On the other hand, platforms that manage cognitive load effectively by simplifying navigation and providing clear

information can enhance user satisfaction (Hu et al., 2017). When consumers find a platform easy to use and informative, their trust in the platform increases, positively influencing their intention to repurchase and recommend the platform to others. Cognitive load theory provides a comprehensive framework for understanding the cognitive processes involved in consumer decision-making. By focusing on the distribution of cognitive resources, cognitive load theory helps elucidate how different types of cognitive load influence consumer behavior. This theory is highly relevant for optimizing e-commerce platforms, as it guides the design of interfaces and information presentation to enhance user experience, satisfaction, and decision quality.

## 2.2. Intrinsic Cognitive Load of Platform Language

Intrinsic cognitive load refers to the mental effort required to process and understand the information inherent to the task itself. In the context of online shopping, this involves interpreting product descriptions, comparing features, and making informed purchase decisions (Alnawas et al., 2023). When consumers interact with a platform in their native language, the cognitive processes involved in decoding and comprehending the information are more fluent and efficient. The familiarity with vocabulary, syntax, and cultural references reduces the cognitive burden, allowing consumers to focus more on the task of evaluating products rather than deciphering the language (Sun et al., 2024). Conversely, using a secondary language introduces an additional layer of complexity (Loewen, 2020). Consumers must not only understand the product information but also translate and interpret it, which increases cognitive load. This added mental effort can lead to fatigue, frustration, and a decreased ability to make informed decisions. Furthermore, language familiarity impacts the ease with which consumers can navigate the platform, interpret reviews, and understand customer support interactions (Miozzo et al., 2020). When these elements are presented in a secondary language, the increased intrinsic cognitive load can detract from the shopping experience, making it more cumbersome and less enjoyable. Cognitive load theory suggests that when individuals face high intrinsic cognitive load, their overall task performance and satisfaction decrease (Li et al., 2024). In the context of e-commerce, this means that a higher cognitive load can negatively impact the consumer's ability to process information efficiently, make decisions confidently, and ultimately feel satisfied with their shopping experience. When consumers encounter a high intrinsic cognitive load, they are likely to feel overwhelmed and fatigued, which can reduce their overall satisfaction with the platform. This negative experience can diminish their trust in the platform's usability and reliability, leading to a lower likelihood of returning for future purchases. The influence of cognitive load on repurchase intention is critical for e-commerce platforms aiming to retain customers (Fan et al., 2020). If a platform is perceived as easy to use and navigate, with clear and understandable information, consumers are more likely to develop a positive attitude towards it. This positive perception not only encourages repeat purchases but also fosters long-term loyalty. Based on these we hypothesize that:

H1: Consumers experience lower intrinsic cognitive load when shopping on platforms in their native language compared to platforms in a secondary language.

H2: Higher intrinsic cognitive load negatively impacts consumer satisfaction on e-commerce platforms.

H3: Higher intrinsic cognitive load negatively impacts consumer repurchase intentions on e-commerce platforms.

## 2.3. Extraneous Cognitive Load of Platform Language

Extraneous cognitive load refers to the mental effort imposed by the way information is presented and the structure of tasks, rather than the complexity of the information itself (Novak et al., 2023). In the context of online shopping, this involves ease of navigation, clarity of instructions, and overall user interface design. When consumers use a platform in their native language, they are likely to find the navigation and information presentation more intuitive and less taxing. The familiar linguistic cues and cultural references contribute to a smoother user experience, reducing the cognitive effort required to understand and interact with the platform (Kachlicka et al., 2024). On the other hand, when consumers engage with a platform in a secondary language, they often face additional cognitive challenges. These include difficulties in understanding navigation labels, interpreting instructions, and comprehending contextual nuances, all of which increase the extraneous cognitive load. The structure and presentation of information in a secondary language can create barriers that distract from the primary task of shopping. For example, consumers may struggle with translating terms, understanding idiomatic expressions, or deciphering complex sentence structures. These challenges force consumers to allocate more cognitive resources to processing the language rather than focusing on the shopping task itself (Presbitero, 2020). Extraneous cognitive load, when excessive, can detract significantly from the overall user experience (Skulmowski & Xu, 2022). When consumers encounter poorly designed interfaces, confusing navigation, and unclear instructions, their ability to complete tasks efficiently and effectively is compromised. A high extraneous cognitive load leads to increased frustration and dissatisfaction. Consumers who experience difficulty navigating a platform or understanding how to use its features are likely to become disenchanted with the service. This negative experience can overshadow the actual content or quality of the products being offered, leading consumers to form an unfavorable impression of the platform. Consequently, their satisfaction with the shopping experience diminishes, which in turn affects their willingness to return to the platform for future purchases.

Moreover, high extraneous cognitive load can erode trust in the platform (Weiß & Pfeiffer, 2024). When consumers perceive that a platform is difficult to use, they may question its reliability and overall quality. This erosion of trust further diminishes their inclination to repurchase. Conversely, a platform that minimizes extraneous cognitive load by providing a clear, intuitive, and user-friendly interface enhances the shopping experience, leading to higher satisfaction and stronger repurchase intentions. Based on these, we hypothesize that;

H4: Consumers experience lower extraneous cognitive load when shopping on platforms in their native language compared to platforms in a secondary language.

H5: Higher extraneous cognitive load negatively impacts consumer satisfaction on e-commerce platforms.

H6: Higher extraneous cognitive load negatively impacts consumer repurchase intentions on e-commerce platforms.

#### 2.4. Germane Cognitive Load of Platform Language

Germane cognitive load refers to the mental effort devoted to processing, constructing, and automating schemas, in other words, the effort directed toward understanding and integrating information meaningfully (Greenberg & Zheng, 2023). When consumers shop on a platform in their native language, they can more easily comprehend detailed product information, interpret reviews, and evaluate different options. This deeper understanding and integration of information facilitates more meaningful and thoughtful decision-making (Lu et al., 2022). Because the linguistic and cultural nuances are clearer in their native language, consumers can engage more deeply with the content, thereby increasing their germane cognitive load. On the other hand, shopping on a platform in a secondary language may limit the depth of engagement due to language barriers. Consumers might find it harder to fully understand and integrate the information, leading to a more superficial processing of content (Hiver et al., 2024). The additional mental effort required to translate and interpret the secondary language can detract from the mental resources available for meaningful engagement with the material. When consumers invest mental effort in understanding and integrating product information, they are more likely to make well-informed decisions that align with their needs and preferences (Bastos, 2020). This thorough engagement can lead to higher satisfaction with the shopping process, as consumers feel confident and reassured about their choices. A platform that facilitates such deep cognitive processing fosters a sense of accomplishment and trust, enhancing overall user satisfaction. Moreover, a higher germane cognitive load can reinforce positive perceptions of the platform's reliability and quality. When consumers feel that they have effectively understood and utilized the information provided, they are more likely to trust the platform and view it as a valuable resource for future purchases. This increased trust and satisfaction translate into stronger repurchase intentions, as consumers are more likely to return to a platform that they perceive as helpful and reliable. We therefore hypothesize that:

H7: Consumers experience a higher germane cognitive load when shopping on platforms in their native language compared to platforms in a secondary language.

H8: Higher germane cognitive load positively impacts consumer satisfaction on e-commerce platforms.

H9: Higher germane cognitive load positively impacts consumer repurchase intentions on e-commerce platforms.

#### 2.5. Consumer Repurchase Intention

Constant purchase intention, which reflects consumers' identification, contentment, and commitment to a product or platform, is the subjective regularity with which they want to keep buying goods from the same vendor (Chiu et al., 2014). Due to their prior purchasing experience, customers who stick with a platform have a greater comprehension and significant assessment of the product information offered, which sets them apart from prospective customers (Kim & Gupta, 2009). Through this process, consumers will recognize the high value of the platform or product, better understand the platform activities, and build lasting impressions following their initial purchase, increasing their satisfaction and intentions to remain loyal (Lee & Charles, 2021). Consumers' continuous intent to buy on an e-commerce platform indicates the platform's potential for profit and long-term competitive advantages, and it is crucial for the survival and growth of enterprises from an economic and practical standpoint (Ou et al., 2014). The results from prior research on consumer repurchase intention (Nugroho & Wang, 2024) highlight its importance in the consumer behaviour literature.

H10: We expect a higher repurchase intentions when consumers use a platform in their native language compared to platforms in a secondary language.

H11: Consumer satisfaction with the platform language has a significant positive influence on repurchase intentions.

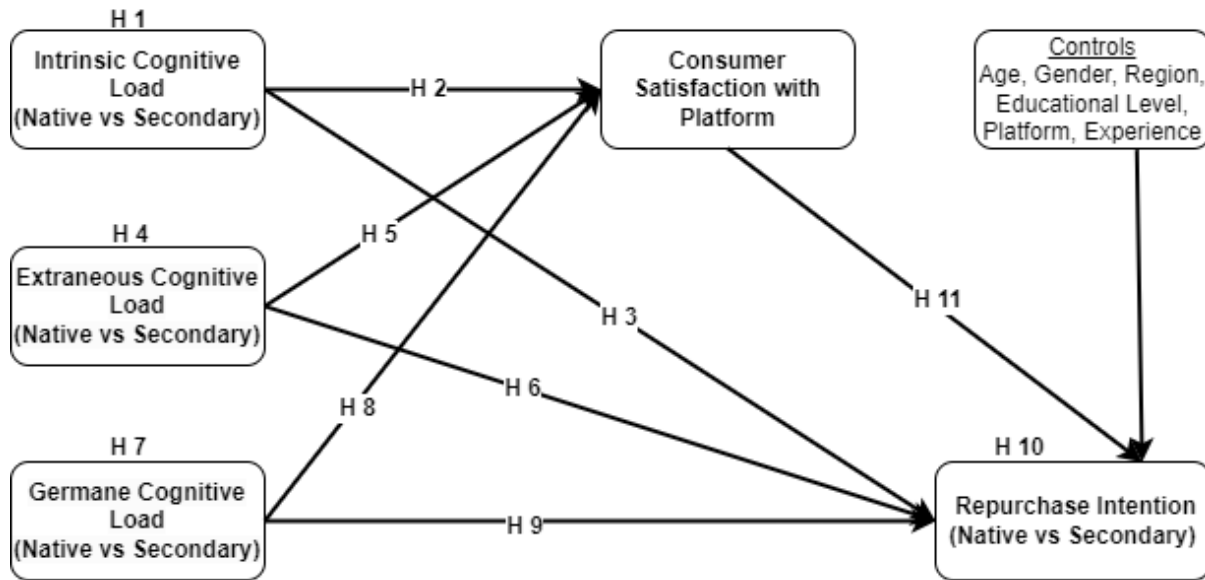


Figure 1: Conceptual framework

### 3. Methodology

#### 3.1. Study 1

##### 3.1.1 Overview

This study aims to measure the difference in consumer cognitive load between consumers using a platform in their native language compared to those using a platform in a secondary language. A between-subject laboratory experiment with two groups of participants, each consisting of 102 individuals was conducted for this study. The task involved a price comparison activity using two different e-commerce platforms: Taobao for the native language group and Amazon for the secondary language group. Group 1 consists of 102 participants who are native Chinese speakers and used Taobao, presented in Chinese, and Group 2, 102 participants who are native Chinese speakers but will use Amazon in English, a secondary language. Participants in group two were restricted to using an English keyboard without the option to switch to Chinese. The study used a randomization process to assign participants to either Group 1 or Group 2. This helps control for potential biases and ensures that the groups are comparable in terms of relevant characteristics.

Participants were instructed to perform a standardized price comparison task. They searched for a specific product, in this case, a smartphone model, on their assigned platform, selected three different products from the search results, compared their features, prices, and customer reviews, and decided on which product they would purchase, explaining their reasoning. Participants were first briefed on the study's purpose, ensuring they understood that the experiment was for academic purposes with no competitive element. Informed consent was obtained from all participants. Clear and standardized instructions were given to both groups on how to perform the price comparison task, ensuring that both groups understood the specific product they needed to search for and the criteria for comparison (features, price, customer reviews). Participants performed the task in a controlled laboratory setting to minimize external variables. After completing the task, participants were sent a questionnaire containing the adapted Cognitive Load Questionnaire and other relevant questions. The questionnaire assessed intrinsic, extraneous, and germane cognitive load. Of the 204 participants, 124 (60.7%) were males while the remaining 80 (39.3%) were females. The majority of the participants 117 (57.4%) were below 25 years, 69 (33.8) were between 25 to 35 years and the remaining 18 (8.8%) were above the age of 35. Of the 204 participants, 83 (40.7) were from the eastern part of China, 77 (37.9) were from the western part 30 (14.7%) were from the southern part and the remaining 14 (6.9%) were from the northern part.

##### 3.1.2 Validation and Manipulation Checks

To ensure the validity and reliability of Study 1, several validation and manipulation checks were implemented throughout the experimental process. First, a pilot test was conducted with a small group of participants (12 participants from each group). The purpose of the test was to identify any potential issues with the tasks and instructions and to ensure that the tasks were equally challenging across both language versions. The participants were made to go through the same procedures as the main study participants. In addition, performance metrics such as time

taken to complete tasks and the accuracy of comparisons were also analyzed in the pilot stage. Based on the pilot test results, the tasks and instructions were refined to address any identified issues, ensuring they were equally challenging and clear in both language conditions.

Further, the study measured participants' proficiency in English for Group 2 using self-reported proficiency levels on a Likert scale (1 = Very Poor, 7 = Native-like). This step is crucial to control for varying levels of secondary language skills, which could influence the results. This was done to ensure that the participants had a sufficient level of English proficiency to complete the tasks and excluded participants with very low proficiency. Additionally, the study verified that participants are familiar with the type of tasks they will perform. This was done through a pre-study questionnaire assessing the participant's experience with online shopping and price comparison activities. This was necessary to ensure that any cognitive load differences were due to language and not task unfamiliarity. There were no significant differences in task familiarity. After completing the experiment, a debriefing session was conducted where participants discussed their experiences. The objective of this was to gather qualitative feedback on the participants' experience and validate the quantitative data. This was done through open-ended questions. Feedback was collected on perceived task difficulty, clarity of instructions, ease of navigation, and any challenges faced. Insights gained from the debriefing were used to validate and ensure that participants' subjective experiences aligned with the measured cognitive load and performance metrics.

### 3.2 Study 2

#### 3.2.1 Overview

In study 2, we aimed to assess the impact of language familiarity on cognitive load and consumer behaviour by comparing user satisfaction and repurchase intentions on an e-commerce platform in both English and Chinese. The study conducted a within-subject laboratory experiment involving participants from a large university. The subject experiment was used for study 2 to take care of any biases in study 1 and also serve as a robustness check. The experiment was conducted in a computer lab equipped with internet-connected computers. Each participant was required to engage with the platform in two phases. In the first phase, participants accessed the English version of the platform and were shown images of three products, each labeled in English. They were instructed to search for these products on the platform, attempt to purchase them, and add them to their shopping cart. This task had to be completed within a stipulated time, followed by filling out an electronic questionnaire assessing their cognitive load, overall satisfaction, and willingness to reuse the platform. The second phase mirrored the first, but with the platform language switched to Chinese, and product names and descriptions were also presented in Chinese. Participants repeated the search and attempted purchase tasks before completing the same questionnaire. Each participant received an academic card stamp upon completion of the experiment as a token of appreciation for their participation. A total of 124 respondents consisting of 71 (57.3%) males and 53 (42.7%) females were involved in this study. Of this total, 56 (45.2%) were below the age of 25, an additional 61 (49.2) participants were between the ages 25 and 35 years and the remaining 7 (5.6%) were above 35 years. Of these, 48 were from the western part of China, 51 were from the eastern part, 21 were from the southern part and the remaining 4 were from the northern part.

#### 3.2.2 Validation and Manipulations Check

In study 2, various validations and manipulations were implemented to ensure the reliability and accuracy of the results. First, the study conducted a pilot test with a small group of participants to ensure the tasks were clear and appropriately challenging in both language conditions. This step will help identify any issues with task instructions, the platform interface, or the questionnaire items. The study also verified that the instructions for both phases are equally clear and understandable through the pilot test and by collecting feedback on the clarity of the instructions. Instructions were adjusted based on the ambiguities or difficulties reported. Second, the study implemented the counterbalancing approach to control for order effects by randomly assigning half of the participants to start with the English version of the platform and the other half to start with the Chinese version. This helps ensure that any observed effects are not due to the order in which the tasks are completed. After completing the experiment, a debriefing session was conducted where participants discussed their experiences.

### 3.3 Study 3

#### 3.3.1 Overview

The third study aims to build and analyze a Structural Equation Model (SEM) to estimate the relationship between consumer perception of platform language measured by the three types of cognitive loads (intrinsic, extraneous, and germane), consumer satisfaction, and consumer repurchase intention. This study collected survey data from international consumers who use Chinese shopping platforms. To ensure that the participants were truly international consumers, we first distributed the survey exclusively to WeChat groups specific to each country. Additionally, the survey included a section where respondents were asked to indicate their nationality. This allowed us to verify that the sample consisted of international consumers, regardless of their current location within China (North, South, East, or West). The SEM analysis will use data on consumer perception of platform language, as measured by intrinsic

cognitive load, extraneous cognitive load, germane cognitive load, consumer satisfaction, and repurchase intention. The survey participants represented different educational levels (undergraduates, masters, and doctoral students), further contributing to the diversity of the sample. Data were expected to be collected based on a 20:1 ratio, i.e., 20 participants per measured item (Jackson, 2003). Out of the 330 valid respondents, there were 167 (50.6%) and 163 (49.4%) male and female students, respectively. Further, 122 (37.0%) of the respondents were from the eastern part of China, 85 (25.8%) from the western part, 72 (21.8%) from the northern part, and 51 (14.8%) from the southern part. The study consisted of 133 consumers with undergraduate certificates (40.3%), 102 consumers with master certificates (30.9%), and 95 consumers with doctoral certificates (28.8%). Furthermore, 167 out of the total respondents were under 25 years of age, 118 were in the range of 25 and 35 years of age, and the remaining (45) were north of 35 years of age.

### 3.3.2 Control Variables

In line with the recommendations put forth by Shiao et al. (2024), our research has been carefully designed to include a series of control variables that are both informed by previous studies and grounded in theoretical considerations. These variables are organized into two primary categories: demographic characteristics and online shopping experience. Within the demographic category, we have identified four key variables: gender, age, educational level, and geographical region. Each of these has been selected due to its proven significance in the realm of consumer behaviour research. Gender, as detailed by Yi et al. (2024) plays a critical role in understanding consumer preferences and behaviours. Age, as discussed by Intani and Rojuaniah (2024) is crucial for insights into consumer repurchase intentions. Additionally, educational level is acknowledged for its role in explaining consumers' continued usage intentions (Liao et al., 2022). Lastly, the inclusion of geographical regions allows for an analysis of locational variances in consumer habits and preferences. The second category focuses on the consumer's online shopping experience, operationalized through the metric of the number of years the consumer has engaged in online shopping activities and the online platforms the consumer mostly uses. This variable is incorporated based on findings from Tarabieh et al. (2024). These control variables are integrated into our study to ensure a comprehensive understanding of the factors influencing consumer behavior, enriching our analysis by accounting for potential confounding influences.

### 3.3.3 Measures

In keeping with previous research, e.g., Lai et al. (2014), a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) was utilized to assess each item. The items were obtained from earlier investigations and refined to suit the objectives of this study. Appendix 1 gives details of the questionnaire items and the literature they were obtained from. A four-item scale derived from the studies by Khalifa and Liu (2007) and Bhattacharjee (2001) was used to measure consumer repurchase intention. A four-item scale about consumer satisfaction with a platform was adapted from the study by Flavián et al. (2006). Cognitive load measurements will include intrinsic cognitive load, assessed through questions evaluating the inherent difficulty of understanding the platform content; extraneous cognitive load, assessed through questions on the complexity of navigation and presentation of information on the platform; and germane cognitive load, assessed through questions on the effort required to process and integrate information from the platform (DeLeeuw & Mayer, 2008).

Table 1 gives a summary statistic of the items used in the study. Before beginning data analysis, we rigorously evaluated several key assumptions inherent to multivariate analysis. These assumptions included tests for linearity, normality, and multicollinearity, as well as ensuring the adequacy of the sample size. To assess linearity, we employed the curve estimation approach in regression analysis. Our findings revealed that the F-values, indicating linear correlations, were not only significant but also surpassed those of cubic, quadratic, inverse, and logarithmic relationships for all examined variables, as detailed in the work of Joshi & Yadav (2018a). The skewness values as shown in Table 2 were between -1 and 1 and kurtosis values were between -2 and 2 indicating our data is normally distributed (George & Mallery, 2019). Given the extensive size of the population, a sample of 330 is deemed suitable for conducting structural equation modeling, ensuring a 95% confidence level and a margin of error of 5%. This approach aligns with the guidelines suggested by Erkan and Evans (2016).

Table 1. Mean, standard deviation, skewness, and kurtosis of constructs

	Mean	Std. Deviation	Skewness	Kurtosis
<b>Intrinsic Load (INLD)</b>				
INLD1	2.78	1.150	.025	2.767
INLD2	3.48	1.203	-.520	-2.513
INLD3	3.04	1.195	-.113	-1.810
INLD4	2.90	1.067	-.183	2.442
<b>Extraneous Load (EXLD)</b>				
EXLD1	3.18	1.037	-.311	2.157
EXLD2	3.78	.938	-.469	3.065
EXLD3	3.81	.969	-.577	3.011
EXLD4	3.73	.953	-.506	3.102
<b>Germane Load (GELD)</b>				
GELD1	3.02	1.003	-.131	2.157
GELD2	3.17	.831	-.609	3.119
GELD3	3.55	.760	-.172	3.211
GELD4	3.39	.453	-.440	2.502
<b>Consumer Satisfaction with Platform (CSwP)</b>				
CSwP1	3.04	1.145	-.157	-1.550
CSwP2	3.03	1.125	-.298	2.478
CSwP3	3.33	1.131	-.334	-2.505
CSwP4	3.32	1.088	-.288	3.428
<b>Consumer Repurchase Intention (CRPI)</b>				
CRPI1	3.71	.980	-.325	2.476
CRPI2	3.85	.935	-.485	3.212
CRPI3	3.85	.927	-.363	3.450
CRPI4	3.64	1.016	-.479	3.066
Consumer Experience	2.06	1.108	.454	-1.260

### 3.3.4 Measurement Model Results

Three data analysis software were utilized in this study. SPSS 22.0 was utilized for information entry and validation, AMOS version 22.0 was utilized for data investigation and STATA17 MP was used for the ANCOVA comparison. The study implemented the confirmatory factor analysis to find construct validity and reliability. The Kaiser-Meyer-Olkin (KMO) test was 0.902, showing that the information is sufficient for additional investigation. Bartlett's test was also significant at the 0.01 significance level (see Table 3). The final measurement model fits the data well according to Joshi and Yadav (2021). The obtained values are within the specification limits and demonstrate a satisfactory fit for the hypothesized model with the data. Table 2 presents the model fit indices for the structural model.

Table 2. Model fit indices (Structural model)

Indices	Prescribed range	Study 1	Study 2	Study 3
CFI	Approaches 1	0.967	0.952	0.972
GFI	Approaches 1	0.958	0.944	0.966
AGFI	Approaches 1	0.943	0.953	0.918
NFI	Approaches 1	0.951	0.951	0.964
RMSEA	<.10	0.048	0.029	0.030



We considered the composite reliability score and Cronbach’s alpha value to evaluate the scale’s internal reliability. According to Royal and Hecker (2016), the values of both indices must exceed 0.7. All the results obtained for the composite reliability and the Cronbach alpha exceeded the minimum suggested level of 0.7. Convergent and discriminant validity were used to test the validity of constructs. The standardized loadings and the average variance explained (AVE) were used to explain the validity of the constructs. The minimum and maximum values of the item loadings of each variable met the minimum threshold value of 0.7, and the AVE values were higher than 0.5, which indicated an adequate internal consistency (Fornell & Larcker, 1981) (see Tables 4, 5, and 6). Discriminant validity was examined by contrasting each construct’s AVE with the variance of every other variable and the construct (Gefen et al., 2000). The findings show the construct’s variance was higher when compared to that of its items than when compared to that of other constructs, proving its discriminant validity (see Table 7).

Table 3. KMO and Bartlett’s Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.902
Bartlett's Test of Sphericity	Approx. Chi-Square	3501.333
	Df	120
	Sig.	.000

Table 4. Results of the measurement model for study 1

Factor	Items	Loadings	$\alpha$	CR	AVE
Intrinsic Load	INLD1	0.861	0.823	0.901	0.696
	INLD2	0.751			
	INLD3	0.848			
	INLD4	0.871			
Extraneous Load	EXLD1	0.781	0.842	0.913	0.724
	EXLD2	0.887			
	EXLD3	0.904			
	EXLD4	0.828			
Germane Load	GELD1	0.880	0.834	0.910	0.713
	GELD2	0.814			
	GELD3	0.797			
	GELD4	0.862			
Consumer Satisfaction with Platform	CSwP1	0.829	0.878	0.917	0.733
	CSwP2	0.892			
	CSwP3	0.879			
	CSwP4	0.824			
Consumer Repurchase Intention	CRPI1	0.898	0.920	0.945	0.810
	CRPI2	0.930			
	CRPI3	0.925			
	CRPI4	0.847			
OVERALL			0.918		

Table 5. Results of the measurement model for study 2

Factor	Items	Loadings	$\alpha$	CR	AVE
Intrinsic Load	INLD1	0.843	0.823	0.916	0.731
	INLD2	0.820			
	INLD3	0.871			
	INLD4	0.884			
Extraneous Load	EXLD1	0.821	0.842	0.921	0.745
	EXLD2	0.804			
	EXLD3	0.904			
	EXLD4	0.918			
Germane Load	GELD1	0.907	0.904	0.937	0.799
	GELD2	0.876			
	GELD3	0.892			
	GELD4	0.885			
Consumer Satisfaction with Platform	CSwP1	0.866	0.878	0.923	0.752
	CSwP2	0.792			
	CSwP3	0.959			
	CSwP4	0.843			
Consumer Repurchase Intention	CRPI1	0.898	0.920	0.945	0.810
	CRPI2	0.929			
	CRPI3	0.911			
	CRPI4	0.863			
OVERALL			0.906		

Table 6. Results of the measurement model for study 3

Factor	Item	Loading	$\alpha$	CR	AVE
Intrinsic Load	INLD1	0.876	0.916	0.896	0.741
	INLD2	0.894			
	INLD3	0.811			
	INLD4	0.832			
Extraneous Load	EXLD1	0.814	0.890	0.835	0.629
	EXLD2	0.791			
	EXLD3	0.773			
	EXLD4	0.811			
Germane Load	GELD1	0.748	0.806	0.796	0.566
	GELD2	0.693			
	GELD3	0.811			
	GELD4	0.805			
Consumer Satisfaction with Platform	CSwP1	0.839	0.791	0.849	0.655
	CSwP2	0.876			
	CSwP3	0.702			
	CSwP4	0.882			
Consumer Repurchase Intention	CRPI1	0.839	0.862	0.888	0.665
	CRPI2	0.838			
	CRPI3	0.787			

	CRPI4	0.796	
Overall			0.899

### 3.3.5 Testing for Common Method Bias

Harman's one-factor test was conducted to check the chances of common method bias (CMB). The value must not exceed 50% so that one component does not emerge as the main factor and explains the majority of the variance. The exploratory factor analysis (EFA) revealed that the major factors explained 73.87% of the variation in the data, and the initial factor explained 34.6% of the variance. CMB was, therefore, unlikely to be a problem in the data gathered for the study. Further, as represented in Table 7, the correlation coefficient indicates no significant correlation (>0.5) between any two factors. This is also proof of no CMB in our model.

Table 7. Correlation Matrix and Discriminant Validity

		Mean	SD	INLD	EXLD	GELD	SAT	RPI
Correlation	INLD	3.049	.910	<b>.834</b>				
	EXLD	3.628	.803	.448	<b>.851</b>			
	GELD	3.549	.902	.307	.411	<b>.884</b>		
	CSwP	3.18	.960	.432	.487	.352	<b>.856</b>	
	CRPI	3.76	.867	.400	.329	.428	.417	<b>.900</b>

\*\* bold items represent the square root of the AVE, INLD = Intrinsic Load, EXLD = Extraneous Load, GELD = Germane Load, CSwP = Consumer Satisfaction with Platform, CRPI = Consumer Repurchase Intention.

## 4. Results

### 4.1 Study 1

In study 1, a between-subject ANOVA was conducted to examine the difference in cognitive loading and repurchase intentions among consumers when they use a platform in their native language compared to consumers using the platform in a secondary language. The results (see Table 8) indicated that consumers using the platform in a secondary language reported higher mean intrinsic cognitive load ( $M = 3.863$ ,  $SD = 1.020$ ) compared to consumers using the platform in their native language ( $M = 2.921$ ,  $SD = 0.877$ ,  $f(203) = 5.806$ ,  $p < 0.001$ ). Also, the results indicated that consumers using the platform in a secondary language exhibited a higher mean extraneous cognitive loading ( $M = 3.667$ ,  $SD = 1.004$ ) compared to consumers using the platform in their native language ( $M = 2.220$ ,  $SD = 0.649$ ,  $f(203) = 6.551$ ,  $p < 0.001$ ). However, the study results indicate that consumers exhibited a lower mean germane cognitive loading when using the platform in a secondary language ( $M = 2.773$ ,  $SD = 0.955$ ) compared to consumers using the platform in a native language ( $M = 3.102$ ,  $SD = 0.910$ ,  $f(203) = 3.426$ ,  $p < 0.001$ ). Also, on the consumer intentions to repurchase from the platform, the results from the study indicated that consumers shopping from the platform in a native language reported a significantly higher mean intention to repurchase from the platform ( $M = 4.016$ ,  $SD = 1.217$ ) compared to consumers using the platform in a secondary language ( $M = 2.669$ ,  $SD = 0.881$ ,  $f(203) = 13.269$ ,  $p < 0.001$ ).

Table 8. ANOVA results for between-subject analysis in Study 1

Cognitive Load		N	Mean	SD	Mean Diff.	f-value
Intrinsic Load	Native	102	2.921	0.877	0.942	5.806
	Secondary	102	3.863	1.020		
Extraneous Load	Native	102	2.220	0.649	1.447	6.551
	Secondary	102	3.667	1.004		
Germane Load	Native	102	3.102	0.910	0.329	3.426
	Secondary	102	2.773	0.955		
Consumer Repurchase Intentions	Native	102	4.016	1.217	1.347	13.269
	Secondary	102	2.669	0.887		

#### 4.2 Study 2

In study 2, we used a within-subject experiment to examine the difference in cognitive loads when consumers use a shopping platform first in a secondary language and then afterward in a primary language. From study 2, consumers reported high mean intrinsic cognitive load when they used the platform in a secondary language ( $M = 3.201$ ,  $SD = 0.801$ ) compared to when they used the platform in their native language ( $M = 2.225$ ,  $SD = 0.887$ ,  $f(123) = 7.349$ ,  $p < 0.001$ ). Also, there was a significantly higher mean extraneous cognitive load when consumers used the platform in a second language ( $M = 3.778$ ,  $SD = 0.904$ ) compared to when they used the same platform in their native language ( $M = 2.593$ ,  $SD = 0.806$ ,  $f(123) = 9.014$ ,  $p < 0.001$ ). Further, consumers showed a low germane cognitive load when they used the platform in a secondary language ( $M = 2.668$ ,  $SD = 1.155$ ) compared to when they used the same platform in their native language ( $M = 3.109$ ,  $SD = 1.004$ ,  $f(123) = 4.330$ ,  $p < 0.001$ ). Additionally, study 2 measured the difference in consumer satisfaction and repurchase intentions when they used the platforms. Consumers reported higher mean satisfaction level when they used the platform in their native language ( $M = 3.741$ ,  $SD = 0.793$ ) compared to when they used the platform in a secondary language ( $M = 3.011$ ,  $SD = 0.510$ ,  $f(123) = 4.806$ ,  $p < 0.001$ ). Consumers also reported higher mean repurchase intentions when using the platform in their native language ( $M = 3.869$ ,  $SD = 0.608$ ) compared to when using the platform in a secondary language ( $M = 2.550$ ,  $SD = 0.929$ ,  $f(123) = 13.225$ ,  $p < 0.001$ ). The results obtained from Study 2 were consistent with that from Study 1 ensuring that our findings are robust (see Table 9).

Table 9. ANOVA results for within subject analysis in study 2

Cognitive Load		N	Mean	SD	Mean Diff.	f-value
Intrinsic Load	Native	124	2.225	0.887	0.976	7.349
	Secondary	124	3.201	0.801		
Extraneous Load	Native	124	2.593	0.904	1.185	9.014
	Secondary	124	3.778	0.806		
Germane Load	Native	124	3.109	1.004	0.441	4.330
	Secondary	124	2.668	1.155		
Consumer Satisfaction with Platform	Native	124	3.741	0.793	0.730	4.806
	Secondary	124	3.011	0.510		
Consumer Repurchase Intentions	Native	124	3.869	0.608	1.319	13.225
	Secondary	124	2.550	0.929		

#### 4.3 Study 3

The study tested the main effect model by estimating the relationship between the explanatory variable (i.e. cognitive loads) and the explained variable (i.e., consumer repurchase intention) through structural equation model (SEM) analysis in AMOS. The results reveal credible fit statistics, with  $\chi^2/19 = 2.386$ , CFI = .983, GFI = .964, NSI = .971 and RMSEA = .005. The mediation model analysis was obtained using a stepwise regression developed by Baron and Kenny (1986). First, the study reported the direct relationship between the explanatory and explained variables. The study proceeded to estimate the indirect relationship between them using a bootstrapping of 5000 samples. The result indicates that intrinsic cognitive load negatively influences consumer satisfaction with a platform ( $\beta = -.319$ ,  $p < .000$ ) and consumer repurchase intentions ( $\beta = -.541$ ,  $p < .001$ ). Further, extraneous cognitive load also negatively influences consumer satisfaction with the platform ( $\beta = -.190$ ,  $p < .000$ ) and consumer intentions to repurchase from the platform ( $\beta = -.491$ ,  $p < .000$ ). However, the germane cognitive load has a significant positive effect on consumer effect on both consumer satisfaction with the platform ( $\beta = .340$ ,  $p < .000$ ) and consumer intentions to repurchase from the platform ( $\beta = .471$ ,  $p < .000$ ). Additional results indicate that consumer satisfaction with the platform has a significant positive influence on consumer decisions to repurchase from the platform ( $\beta = .422$ ,  $p < .000$ ). Detailed analysis of the standard regression, with their corresponding standard errors, t-values, and corresponding significance for each relationship, are presented in Table 10.

Table 10. Regression weights

Direct Effects	Estimate	S.E.	C.R.	<i>p</i>
INLD → CRPI	-0.541	.090	-6.005	***
INLD → CSwP	-0.319	.109	-7.447	***
EXLD → CRPI	-0.491	.094	-5.188	***
EXLD → CSwP	-0.190	.060	-3.248	.001
GELD → CRPI	0.471	.059	7.835	***
GELD → CSwP	0.340	.067	5.148	***
CSwP → CRPI	0.422	.024	8.209	***
Indirect Effects	Estimate	LL	UL	<i>p</i>
INLD → CSwP → CRPI	-0.134	-.198	-.075	***
EXLD → CSwP → CRPI	-0.080	-.102	.015	
GELD → CSwP → CRPI	0.143	.056	.194	***

Note: INLD = Intrinsic Load, EXLD = Extraneous Load, GELD = Germane Load, CSwP = Consumer Satisfaction with Platform, CRPI = Consumer Repurchase Intention

#### 4.4 Post hoc Analysis

The study conducted a series of post hoc tests to ascertain the validity and robustness of our research results in Study 3.

**Sensitivity test:** In our study, we included five control variables to enrich our analysis. To assess the impact of these variables on our findings, we conducted a sensitivity analysis by excluding them and rerunning our model. The outcomes of this test revealed no significant changes in comparison to the original model where the control variables were included. Specifically, the direction and significance levels of all variables remained consistent, indicating that the inclusion of our control variables did not alter the effect direction of our main variables. This result highlights the robustness of our findings, demonstrating that our conclusions are not contingent on the presence of these control variables.

**Reverse Causality:** Addressing the potential issue of reverse causality, we posited that consumer satisfaction and consumer repurchase intentions do not significantly influence the consumer cognitive load. To empirically test this hypothesis, we reversed all pathways in our model and conducted an additional regression analysis. The findings from this test presented a markedly low model fit index ( $\chi^2(98) = 9.31, p = .107, CFI = .711, GFI = .602, AGFI = .573$  and  $RMSEA = .14$ ), indicating that our model does not suffer from reverse causality issues. This outcome supports our argument that it is indeed our independent variable that significantly influences consumer satisfaction and their subsequent repurchase intentions, rather than the other way around. This analysis further validates the directional accuracy of our model and reinforces the credibility of our conclusions.

## 5. Discussion

Running an e-commerce platform is a complex and competitive business where platforms must always find ways to meet consumer needs. Several factors come into play in ensuring platforms meet online consumer needs (Azadeh et al., 2018; Lu et al., 2012). These factors may include but are not limited to the quality of the relationship between the platform and consumers (Ren et al., 2021), consumer ease of assessing products (Burke, 2013), quality of product details provided on the platform (Cui et al., 2024) and success in gaining consumer loyalty (Kim, 2021). However, the role of consumers' platform language perception in shaping their decision-making is under-explored in the context of cross-border e-commerce. Based on the cognitive load theory which has been used in recent studies to examine consumer behaviour (Li et al., 2024), this research contributes to the existing literature in several ways. First, it adapts and extends cognitive load theory to the context of consumer decision-making in multilingual e-commerce environments. Second, it offers a comparative analysis of cognitive load differences when consumers use e-commerce platforms in their native versus a secondary language. Third, it examines the impact of cognitive load, as influenced by language perception, on consumer satisfaction and subsequent purchasing decisions. Understanding these dynamics provides valuable insights into consumer behaviour and enhances the theoretical framework of cognitive load in relation to e-commerce. By adopting the cognitive load theory framework, this study provides a deeper understanding of how language barriers affect consumer cognition, satisfaction, and purchasing behaviour in e-commerce settings. This research not only fills a significant gap in the literature but also offers practical implications for enhancing user experience on multilingual e-commerce platforms.

The results from studies 1 and 2 reveal significant differences in cognitive load, consumer satisfaction, and repurchase intentions when consumers use a shopping platform in a secondary language compared to their native language. The findings are clear and consistent, indicating the substantial impact of language familiarity on consumer experiences (Tan et al., 2024). Consumers reported a higher intrinsic cognitive load when using the platform in a secondary language compared to when they used it in their native language. This suggests that the inherent complexity of the information is more challenging to understand in a secondary language, requiring greater mental effort to process (Tan et al., 2024). When consumers use a platform in a language they are less proficient in, they must devote more cognitive resources to decode and comprehend the information. This increased effort reflects a higher intrinsic cognitive load, which can be attributed to the additional mental steps involved in translating and understanding the secondary language (Choi & Liu, 2024). Similarly, extraneous cognitive load was significantly higher when consumers used the platform in a secondary language compared to their native language. Extraneous cognitive load is influenced by how information is presented and the structure of tasks (Pannatier & Bétrancourt, 2024). When using a platform in a secondary language, consumers may encounter unfamiliar terminology and less intuitive navigation, increasing the cognitive effort required to manage these elements (Lu & Qiu, 2024). The higher extraneous load suggests that consumers found the interface and instructions more confusing and less user-friendly in a secondary language, further complicating their shopping experience.

Conversely, germane cognitive load was lower when consumers used the platform in a secondary language compared to their native language. Germane cognitive load relates to the mental effort dedicated to understanding and integrating information meaningfully (Zha et al., 2023). The lower germane cognitive load in a secondary language suggests that consumers were less able to engage deeply with the content, likely due to the additional cognitive resources needed to simply understand the language. In their native language, consumers could focus more on processing and synthesizing information, leading to a higher germane cognitive load and a more thorough engagement with the platform (Rohit et al., 2024). Additionally, consumer satisfaction and repurchase intentions were significantly higher when using the platform in their native language. Consumers reported higher satisfaction levels compared to when using the platform in a secondary language. Similarly, repurchase intentions were stronger when using the platform in their native language compared to the secondary language. These findings suggest that the ease and efficiency of using a platform in one's native language lead to greater satisfaction and a stronger intention to return. The cognitive ease and positive experience reinforce trust and loyalty, whereas the difficulties encountered in a secondary language diminish these positive outcomes.

The results from the third study indicate that intrinsic cognitive load negatively influences consumer satisfaction with the platform and consumer repurchase intentions. This negative influence suggests that the more challenging and complex consumers find the platform to understand, the less satisfied they are and the less likely they are to intend to use the platform again. High intrinsic cognitive load can lead to cognitive fatigue and frustration, which diminishes the overall user experience and reduces the likelihood of repeat usage (Hu et al., 2017). Similarly, extraneous cognitive load also negatively influences consumer satisfaction and repurchase intentions. Extraneous cognitive load pertains to the unnecessary cognitive effort imposed by poorly designed interfaces and complex navigation. When consumers encounter high extraneous cognitive load, they are likely to feel overwhelmed and frustrated, which adversely impacts their satisfaction with the platform (Cheng et al., 2020). This dissatisfaction, in turn, reduces their intention to repurchase from the platform. The negative impact of both intrinsic and extraneous cognitive loads highlights the importance of designing user-friendly interfaces and clear, straightforward information presentation to minimize cognitive strain and enhance user experience.

Inversely, germane cognitive load has a significant positive effect on both consumer satisfaction and repurchase intentions. Germane cognitive load is associated with the mental effort dedicated to processing, understanding, and integrating information meaningfully. When consumers experience high germane cognitive load, it indicates that they are deeply engaged with the content, leading to a more satisfying shopping experience (Cheng et al., 2020). This positive engagement enhances their satisfaction with the platform and increases their likelihood of repurchasing. The positive effect of germane cognitive load underscores the importance of creating platforms that facilitate meaningful engagement and learning, thereby fostering consumer loyalty and repeat usage. Furthermore, the results show that consumer satisfaction with the platform has a significant positive influence on their decision to repurchase from the platform. This finding reinforces the critical role of consumer satisfaction in driving repurchase intentions (Lee et al., 2024). When consumers are satisfied with their experience on the platform, they are more likely to develop trust and loyalty, which translates into higher repurchase intentions.

## 6. Theoretical Contribution

Based on the findings from the study, several theoretical contributions can be suggested. First, the study extends the application of cognitive load theory beyond educational settings to the domain of e-commerce. By demonstrating

how different types of cognitive loads (intrinsic, extraneous, and germane) affect consumer behavior on online shopping platforms, the research broadens the scope of cognitive load theory. It shows that cognitive load not only influences learning outcomes but also significantly impacts consumer satisfaction and repurchase intentions. The study goes further to provide an enhanced understanding of how intrinsic, extraneous, and germane cognitive loads differentially affect consumer experiences. The findings highlight that while intrinsic and extraneous cognitive loads negatively impact satisfaction and repurchase intentions, germane cognitive load has a positive influence. This differentiation is critical for refining theoretical models of consumer behavior, as it emphasizes the need to consider various cognitive processes separately rather than treating cognitive load as a singular construct.

Again, the research integrates the concept of language familiarity into cognitive load theory, demonstrating that using a shopping platform in a secondary language increases intrinsic and extraneous cognitive loads while decreasing germane cognitive load. This integration enriches the theoretical framework by incorporating language as a critical factor influencing cognitive processing. It suggests that language barriers can significantly alter the cognitive dynamics of consumer interactions with digital platforms.

Further, the study highlights the role of user interface (UI) design in managing cognitive load, particularly within multilingual e-commerce environments. Poorly designed interfaces and convoluted navigation structures contribute to extraneous cognitive load, which represents an unnecessary mental effort that distracts consumers from meaningful engagement with the content. When consumers encounter unfamiliar or poorly organized interfaces, especially in a secondary language, they face additional cognitive hurdles, such as deciphering unfamiliar terminology or grappling with unintuitive layouts. By intensifying the mental workload required to navigate and interpret the platform, a complex interface can lead to cognitive fatigue and frustration, which diminish users' overall experience and their likelihood of returning to the platform. These findings provide substantial theoretical support for the prioritization of simplicity, clarity, and linguistic adaptability in UI design, emphasizing that well-structured, intuitive interfaces can alleviate extraneous cognitive load. This not only improves usability but also enhances consumer satisfaction and loyalty by allowing users to engage with the platform more naturally and effectively.

## **7. Managerial Implications**

The study offers some managerial implications that can guide e-commerce platforms in enhancing user experience and driving consumer loyalty. These implications provide actionable insights for improving platform design, reducing cognitive load, and fostering positive consumer behavior. One key implication is the importance of minimizing intrinsic cognitive load by ensuring that the information presented on the platform is clear and easily understandable. Managers should focus on simplifying product descriptions, using familiar terminology, and providing concise and relevant information. This can help consumers process the information more efficiently, reducing cognitive strain and enhancing their overall experience. Another critical implication is the need to reduce extraneous cognitive load by optimizing the design and navigation of the platform. Ensuring that the user interface is intuitive and straightforward can significantly improve usability. This includes organizing information logically, minimizing unnecessary steps in the shopping process, and using clear labels and instructions. By making the platform easier to navigate, managers can decrease consumer frustration and increase satisfaction. The positive impact of germane cognitive load highlights the value of designing platforms that encourage meaningful engagement with the content. Managers should consider incorporating features that facilitate deeper cognitive processing, such as detailed product comparisons, interactive elements, and personalized recommendations. These features can help consumers make more informed decisions, leading to higher satisfaction and stronger repurchase intentions.

The integration of language familiarity into platform design is another important managerial implication. Given that language unfamiliarity was found to significantly increase cognitive load, managers must prioritize making their platforms linguistically accessible to users who may not be fluent in the platform's primary language. One key strategy is to offer the platform in multiple languages, particularly those commonly spoken by the target consumers. However, this approach requires more than simple translations. Managers should ensure that translations are accurate, culturally relevant, and reflective of local language nuances. This may involve engaging native speakers of the target languages to review and refine the content, ensuring it resonates with local consumers and avoiding misunderstandings that could arise from direct or automated translations. Additionally, content rearrangement based on linguistic and cultural norms can help reduce cognitive load. Different cultures may prioritize information differently or prefer certain formats. For instance, some cultures may appreciate more visual aids like images and icons to complement text, whereas others might prefer detailed written explanations. Managers can consider reorganizing content and navigation to reflect these preferences, which would make the platform more intuitive and user-friendly for diverse language speakers. This might include modifying payment systems, color schemes, or even how product categories are displayed, in ways that reflect the cultural preferences of different regions. Such adjustments can ease cognitive processing by providing a more intuitive shopping experience that aligns with users' expectations based on their native language and cultural

background. Providing additional images, visual instructions, and icons can also help convey meaning where language might be a barrier, reducing the cognitive effort required to interpret the information.

Another crucial step is to integrate native speakers into the platform's quality control processes. This can help identify and address any unnatural phrasing or unclear instructions that could confuse non-native users. Native speakers can serve as a bridge, ensuring that the language used is not only grammatically correct but also culturally appropriate, minimizing the risk of miscommunication and increasing the platform's overall accessibility. Moreover, localizing the platform's design to account for region-specific customs, idiomatic expressions, and culturally significant symbols can enhance comprehension and create a more familiar and welcoming environment for users. Additionally, the findings highlight the crucial role of consumer satisfaction in driving repurchase intentions. Managers should prioritize delivering a satisfying shopping experience by focusing on key factors that influence satisfaction. This involves offering high-quality products, ensuring reliable customer service, and streamlining the shopping process to be seamless and efficient. By fostering positive interactions with the platform, managers can build consumer trust and encourage repeat purchases.

## 8. Limitations and Future Research

Like other studies, this study comes with some limitations. First, the sample was made up of consumers living in China, which may explicitly limit its generalizability. Future research may incorporate samples from more countries to generalize the effect of consumers' perception of platform language. Second, consumers' perception of platform language was measured using the cognitive load theory perspective. Further studies can examine the language barriers to consumer decision-making from a different perspective. Third, the analysis of Study 1 is based on consumers' use of two different e-commerce platforms (Taobao and Amazon), which may have introduced design-related variables that affected cognitive load beyond language differences. Although task standardization helped minimize this impact, platform differences remain a potential confounder. Future research should further control platform design by using the same platform in multiple languages or identical experimental platforms to better isolate the effects of language on cognitive load.

## REFERENCES

- Abumalloh, R., Ibrahim, O., & Nilashi, M. (2020). Loyalty of Young Female Arabic Customers towards Recommendation Agents: A new Model for B2C E-commerce. *Technology in Society*, 61, 101253. <https://doi.org/10.1016/j.techsoc.2020.101253>
- Alnawas, I., Al Khateeb, A., & El Hedhli, K. (2023). The effects of app-related factors on app stickiness: The role of cognitive and emotional app relationship quality. *Journal of Retailing and Consumer Services*, 75, 103412. <https://doi.org/10.1016/j.jretconser.2023.103412>.
- Azadeh, A., Salehi, V., Salehi, R., & Hassani, S. M. (2018). Performance Optimization of an Online Retailer by a Unique Online Resilience Engineering Algorithm. *Enterprise Information Systems*, 12, 319 - 340. <https://doi.org/10.1080/17517575.2017.1365173>
- Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of personality and social psychology*, 51 6, 1173-1182. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Bastos, W. (2020). "Speaking of purchases": How conversational potential determines consumers' willingness to exert effort for experiential versus material purchases. *Journal of Interactive Marketing*, 50(1), 1-16. <https://doi.org/10.1016/j.intmar.2019.10.001>
- Bhattacharjee, A. (2001). Understanding Information Systems Continuance: An Expectation-Confirmation Model. *Management Information Systems Quarterly*, 25, 351-370. <https://doi.org/10.2307/3250921>
- Burke, P. F. (2013). Seeking simplicity in complexity: The relative value of ease of use (EOU)-based product differentiation. *Journal of Product Innovation Management*, 30(6), 1227-1241. <https://doi.org/10.1111/jpim.12056>
- Cheng, X., Fu, S., De Vreede, T., De Vreede, G.-J., Seeber, I., Maier, R., & Weber, B. (2020). Idea convergence quality in open innovation crowdsourcing: A cognitive load perspective. *Journal of Management Information Systems*, 37(2), 349-376. <https://doi.org/10.1080/07421222.2020.1759344>
- Chiu, C.-M., Wang, E. T. G., Fang, Y.-H., & Huang, H.-Y. (2014). Understanding Customers' Repeat Purchase Intentions in B2C e-commerce: the Roles of Utilitarian Value, Hedonic Value and Perceived Risk. *Information Systems Journal*, 24(1), <https://doi.org/10.1111/j.1365-2575.2012.00407.x>
- Choi, J., & Liu, K. (2024). Knowledge building through collaborative, translation and translanguaging practices. *Journal of Language, Identity & Education*, 23(1), 141-156. <https://doi.org/10.1080/15348458.2021.1974866>



- Cui, L., Li, X., Yan, K., & Cheng, T. (2024). How Should Brand Manufacturer Cooperate with Influencer in Live Streaming E-commerce? *Journal of Electronic Commerce Research*, 25(2).
- DeLeeuw, K. E., & Mayer, R. E. (2008). A comparison of three measures of cognitive load: Evidence for separable measures of intrinsic, extraneous, and germane load. *Journal of educational psychology*, 100(1), 223.
- Dogra, N., Adil, M., Sadiq, M., Dash, G., & Paul, J. (2023). Unraveling Customer Repurchase Intention in OFDL Context: An Investigation using a Hybrid Technique of SEM and fsQCA. *Journal of Retailing and Consumer Services*, 72, 103281. <https://doi.org/10.1016/j.jretconser.2023.103281>.
- Dong, X., Liao, J., Chang, Y., & Zhou, R. (2022). Consumer responses to online advertising and online reviews: the mediating role of cognitive responses and affective responses. *Journal of Electronic Commerce Research*, 23(4), 207-222.
- Erkan, I., & Evans, C. (2016). The influence of eWOM in social media on consumers' purchase intentions: An extended approach to information adoption. *Computers in human behavior*, 61, 47-55.
- Fan, X., Chai, Z., Deng, N., & Dong, X. (2020). Adoption of augmented reality in online retailing and consumers' product attitude: A cognitive perspective. *Journal of Retailing and Consumer Services*, 53, 101986.
- Flavián, C., Guinalú, M., & Gurrea, R. (2006). The Role Played by Perceived Usability, Satisfaction and Consumer Trust on Website Loyalty. *Information & management*, 43(1), 1-14.
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of marketing research*, 18, 39-50.
- Gefen, D., Straub, D. W., & Boudreau, M.-C. (2000). Structural Equation Modeling and Regression: Guidelines for Research Practice. *Communications of the Association for Information Systems*, 4, 7.
- George, D., & Mallery, P. (2019). *IBM SPSS statistics 26 step by step: A simple guide and reference*. Routledge.
- Greenberg, K., & Zheng, R. (2023). Revisiting the debate on germane cognitive load versus germane resources. *Journal of Cognitive Psychology*, 35(3), 295-314.
- Gupta, S., & Kim, H.-W. (2007). The Moderating Effect of Transaction Experience on the Decision Calculus in On-line Repurchase. *International Journal of Electronic Commerce*, 12(1), 127-158.
- Hiver, P., Al-Hoorie, A. H., Vitta, J. P., & Wu, J. (2024). Engagement in language learning: A systematic review of 20 years of research methods and definitions. *Language teaching research*, 28(1), 201-230.
- Hu, H.-h., & Ma, F. (2023). Human-like bots are not humans: The weakness of sensory language for virtual streamers in livestream commerce. *Journal of Retailing and Consumer Services*, 75, 103541. <https://doi.org/https://doi.org/10.1016/j.jretconser.2023.103541>
- Hu, P. J.-H., Hu, H.-f., & Fang, X. (2017). Examining the mediating roles of cognitive load and performance outcomes in user satisfaction with a website. *Mis Quarterly*, 41(3), 975-A911.
- Intani, V., & Rojuaniah, R. (2024). The effect of customer expectations and experience on satisfaction and repurchase intention on hijab products. *Journal of Management Science (JMAS)*, 7(1), 487-495.
- Jackson, D. L. (2003). Revisiting Sample Size and Number of Parameter Estimates: Some Support for the N:q Hypothesis. *Structural Equation Modeling: A Multidisciplinary Journal*, 10, 128 - 141.
- Jain, N. K., Gajjar, H. K., & Shah, B. J. (2020). Electronic Logistics Service Quality and Repurchase Intention in E-tailing: Catalytic Role of Shopping Satisfaction, Payment Options, Gender and Returning Experience. *Journal of Retailing and Consumer Services*, 102360.
- Javed, M. K., & Wu, M. (2020). Effects of online retailer after delivery services on repurchase intention: An empirical analysis of customers' past experience and future confidence with the retailer. *Journal of Retailing and Consumer Services*, 54, 101942.
- Joshi, R., & Yadav, R. (2021). Captivating Brand Hate Using Contemporary Metrics: A Structural Equation Modelling Approach. *Vision*, 25(4), 439-447. <https://doi.org/10.1177/0972262919892173>
- Kachlicka, M., Patel, A. D., Liu, F., & Tierney, A. (2024). Weighting of cues to categorization of song versus speech in tone-language and non-tone-language speakers. *Cognition*, 246, 105757. <https://doi.org/https://doi.org/10.1016/j.cognition.2024.105757>
- Kaushik, K., Mishra, R., Rana, N. P., & Dwivedi, Y. K. (2018). Exploring reviews and review sequences on e-commerce platform: A study of helpful reviews on Amazon.in. *Journal of Retailing and Consumer Services*, 45, 21-32. <https://doi.org/https://doi.org/10.1016/j.jretconser.2018.08.002>
- Khalifa, M., & Liu, V. (2007). Online Consumer Retention: Contingent Effects of Online Shopping Habit and Online Shopping Experience. *European Journal of Information Systems*, 16, 780-792.
- Kim, H.-W., & Gupta, S. (2009). A comparison of purchase decision calculus between potential and repeat customers of an online store. *Decision Support Systems*, 47(4), 477-487.
- Kim, J. (2021). Platform Quality Factors Influencing Content Providers' Loyalty. *Journal of Retailing and Consumer Services*, 60, 102510.

- Lai, J.-Y., Ulhas, K. R., & Lin, J.-D. (2014). Assessing and Managing E-commerce Service Convenience. *Information Systems Frontiers*, 16, 273-289.
- Lee, J., Yu, J., Radic, A., & Han, H. (2024). Uncovering air traveler purchase behavior: Influence of airline goods product characteristics towards repurchase intention. *Journal of Retailing and Consumer Services*, 79, 103858. <https://doi.org/10.1016/j.jretconser.2024.103858>
- Lee, L., & Charles, V. (2021). The Impact of Consumers' Perceptions Regarding the Ethics of Online Retailers and Promotional Strategy on their Repurchase Intention. *International Journal of Information Management*, 57, 102264.
- Li, C., Xia, X., Lin, Y., & Wen, H. (2024). Polluted cognition: The effect of air pollution on online purchasing behavior. *Journal of Retailing and Consumer Services*, 79, 103839.
- Liao, J., Li, C., & Filieri, R. (2022). The Role of Humor in Management Response to Positive Consumer Reviews. *Journal of Interactive Marketing*, 57(2), 323-342. <https://doi.org/10.1177/10949968221083095>
- Lin, J., Li, T.-Y. D., & Guo, J. (2021). Factors Influencing Consumers' Continuous Purchase Intention on Fresh Food E-commerce Platforms: An Organic Foods-centric Empirical Investigation. *Electronic Commerce Research and Applications*, 50, 101103.
- Lin, J., Xiao, S., & Lin, H. (2024). Exploring Customer Satisfaction Across Language Backgrounds: A Hybrid Framework on Multilingual eWOM. *Journal of Electronic Commerce Research*, 25(3).
- Loewen, S. (2020). *Introduction to instructed second language acquisition*. Routledge.
- Lu, B., Yan, L., & Chen, Z. (2022). Perceived values, platform attachment and repurchase intention in on-demand service platforms: A cognition-affection-conation perspective. *Journal of Retailing and Consumer Services*, 67, 103024. <https://doi.org/10.1016/j.jretconser.2022.103024>
- Lu, Y., Lu, Y., & Wang, B. (2012). Effects of dissatisfaction on customer repurchase decisions in e-commerce-an emotion-based perspective. *Journal of Electronic Commerce Research*, 13(3), 224.
- Lu, Y., & Qiu, J. (2024). Influence of cognitive and emotional frames on Weibo users' information dissemination behavior in natural disaster emergencies: The moderating effect of psychological distance. *Library & Information Science Research*, 46(2), 101298. <https://doi.org/10.1016/j.lisr.2024.101298>
- Meilatinova, N. (2021). Social Commerce: Factors Affecting Customer Repurchase and Word-of-Mouth Intentions. *International Journal of Information Management*, 57, 102300.
- Miozzo, M., Navarrete, E., Ongis, M., Mello, E., Giroto, V., & Peressotti, F. (2020). Foreign language effect in decision-making: How foreign is it? *Cognition*, 199, 104245.
- Novak, E., McDaniel, K., & Li, J. (2023). Factors that impact student frustration in digital learning environments. *Computers and Education Open*, 5, 100153. <https://doi.org/10.1016/j.caeo.2023.100153>
- Nugroho, A., & Wang, W.-T. (2024). APPLYING JUSTICE THEORY TO INVESTIGATE THE EFFECTS OF CONSUMER COMPLAINTS AND OPPORTUNISTIC INTENTION ON BRAND REPUTATION AND CONSUMER REPURCHASE BEHAVIOR. *Journal of Electronic Commerce Research*, 25(1).
- Ou, C. X., Pavlou, P. A., & Davison, R. M. (2014). Swift Guanxi in Online Marketplaces: The Role of Computer-Mediated Communication Technologies. *Management Information Systems Quarterly*, 38(1), 209-230.
- Pannatier, M., & Bétrancourt, M. (2024). Learning from academic video with subtitles: When foreign language proficiency matters<sup>11</sup>The study received ethics approval from the local ethics committee at the Faculty of Psychology and Educational Sciences of the University of Geneva (decision number: PSE.20200303.03). Informed consent was obtained from each participant before the selection procedure. The data were managed and stored according to the ethical guidelines of the University of Geneva. *Learning and Instruction*, 90, 101863. <https://doi.org/10.1016/j.learninstruc.2023.101863>
- Presbitero, A. (2020). Foreign language skill, anxiety, cultural intelligence and individual task performance in global virtual teams: A cognitive perspective. *Journal of International Management*, 26(2), 100729.
- Ren, J., Yang, J., Zhu, M., & Majeed, S. (2021). Relationship between consumer participation behaviors and consumer stickiness on mobile short video social platform under the development of ICT: based on value co-creation theory perspective. *Information Technology for Development*, 27(4), 697-717.
- Rohit, K., Shankar, A., Katiyar, G., Mehrotra, A., & Alzeiby, E. A. (2024). Consumer engagement in chatbots and voicebots. A multiple-experiment approach in online retailing context. *Journal of Retailing and Consumer Services*, 78, 103728. <https://doi.org/10.1016/j.jretconser.2024.103728>
- Royal, K. D., & Hecker, K. G. (2016). Understanding reliability: A review for veterinary educators. *Journal of Veterinary Medical Education*, 43(1), 1-4.
- Shiau, W.-L., Chau, P. Y., Thatcher, J. B., Teng, C.-I., & Dwivedi, Y. K. (2024). Have we controlled properly? Problems with and recommendations for the use of control variables in information systems research. In (Vol. 74, pp. 102702): Elsevier, <https://doi.org/10.1016/j.jinfomgt.2023.102702>.

- Skulmowski, A., & Xu, K. M. (2022). Understanding cognitive load in digital and online learning: A new perspective on extraneous cognitive load. *Educational Psychology Review*, 34(1), 171-196.
- Sun, Y., Tian, S., & Zhou, M. (2024). How Texts Confuse Online Buyers: Quantifying Text Quality of Online Product Descriptions. *Journal of Electronic Commerce Research*, 25(2).
- Sweller, J. (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and instruction*, 4(4), 295-312.
- Tan, F., Li, X., Agarwal, R., Joshi, Y., & Yaqub, M. Z. (2024). Does multilingual packaging influence purchasing in retail segment? Evidence from multiple experiments. *Journal of Retailing and Consumer Services*, 79, 103878. <https://doi.org/10.1016/j.jretconser.2024.103878>
- Tarabieh, S., Gil, I., Salvador, J. L. G., & AlFraihat, S. F. A. (2024). The new game of online marketing: How social media influencers drive online repurchase intention through brand trust and customer brand engagement. *Intangible Capital*, 20(1), 103-125.
- Trivedi, S. K., & Yadav, M. (2020). Repurchase Intentions in Y Generation: Mediation of Trust and E-satisfaction. *Marketing Intelligence & Planning*, 38, 401-415.
- van Nooijen, C. C., de Koning, B. B., Brammer, W. M., Isahakyan, A., Asoodar, M., Kok, E., van Merriënboer, J. J., & Paas, F. (2024). A Cognitive Load Theory Approach to Understanding Expert Scaffolding of Visual Problem-Solving Tasks: A Scoping Review. *Educational Psychology Review*, 36(1), 12.
- Weiß, T., & Pfeiffer, J. (2024). Consumer Decisions in Virtual Commerce: Predict Good Help-Timing Based on Cognitive Load. *Journal of Neuroscience, Psychology, & Economics*, 17(2).
- Yeo, S. F., Tan, C. L., Teo, S. L., & Tan, K. H. (2021). The Role of Food Apps Servitization on Repurchase Intention: A Study of FoodPanda. *International Journal of Production Economics*, 234, 108063.
- Yi, M., Chen, M., & Yang, J. (2024). Understanding the self-perceived customer experience and repurchase intention in live streaming shopping: evidence from China. *Humanities and Social Sciences Communications*, 11(1), 1-13.
- Zha, X., Wang, X., Yan, Y., Gao, Y., & Yan, G. (2023). Exploring influencing mechanism of herd behavior in academic information use: The perspective of cognitive load. *The Journal of Academic Librarianship*, 49(3), 102705. <https://doi.org/10.1016/j.acalib.2023.102705>
- Zhang, L., Xuan, Y., Li, Z., Gao, P., & Zheng, Y. (2024). How to obtain customer requirements for each stage of the product life cycle from online reviews: Using mobile phones as an example. *Journal of Retailing and Consumer Services*, 80, 103928. <https://doi.org/10.1016/j.jretconser.2024.103928>

## Appendix 1

### **Consumer Satisfaction with a Platform (Flavián et al., 2006)**

I assume I settled on the right choice to use this platform  
In general, this platform provides satisfactory product details  
Overall, I'm happy with the way this platform does transactions  
In general, I'm happy with the services I have gotten from this platform

### **Consumer Repurchase Intention (Khalifa & Liu, 2007)**

I will return to this shopping site to purchase comparable items later on  
I will consider this platform the best option to purchase comparative items later on  
I will like to keep utilizing this shopping site to buy items  
I will still choose this platform to make purchases even if I have many other choices

### **Intrinsic Cognitive Load (DeLeeuw & Mayer, 2008)**

I found it difficult to understand the content on the platform.  
The tasks I had to perform on the platform were complex.  
It was challenging for me to process the information provided on the platform.  
I found it difficult to learn the new information presented on the platform.

### **Extraneous Cognitive Load (DeLeeuw & Mayer, 2008)**

I found the navigation of the platform confusing or unclear.  
The layout of the platform seemed complicated to me.  
The instructions provided on the platform were not clear to me.  
The way information was presented on the platform was distracting.

### **Germane Cognitive Load (DeLeeuw & Mayer, 2008)**

I put a lot of effort into understanding the content on the platform.  
I invested a significant amount of mental effort into engaging with the content on the platform.  
I put considerable effort into solving problems or completing tasks on the platform.  
It took a lot of effort to integrate the information from different parts of the platform