A STUDY OF THE INFLUENCE OF SOCIAL PRESENCE ON CONSUMER PURCHASE INTENTION IN E-COMMERCE LIVE STREAMING

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AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT
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This Independent Study has been Approved as a Partial Fulfillment of the Requirements for the Degree of Master of Business Administration

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ABSTRACT

In recent years, e-commerce live streaming has developed rapidly. When selling products or services through live e-commerce, the anchor often introduces product or service information in a variety of special ways, which simultaneously meets the dual needs of consumers for shopping and entertainment, thus making live e-commerce one of the main shopping methods for many consumers. In addition, the convenience of live e-commerce has also prompted many merchants to expand their sales channels online, realizing a significant increase in sales, and many merchants have flocked to it, which has brought about another round of emergence of the anchor industry and a large number of live e-commerce platforms. However, the rapid development of e-commerce live broadcast brought about by the emergence of live platform merchants and anchors has also led to uneven quality of e-commerce live broadcast content, serious homogenization and fierce competition. Based on the cognitive-emotional system theory and the social facilitation theory, this study introduced the immersion experience as a mediating variable as well as the need for cognitive closure as a moderating variable, constructed a research model for this study, and put forward the following research objectives: 1. To explore the impact of social presence on consumer immersion experience.2. To explore the impact of social presence on consumer purchase intention. 3. To explore the impact of immersion experience on consumer purchase intention. 4. To examine the mediating role of immersion experience in the relationship between social presence and consumer purchase intention. 5. To examine the moderating role of cognitive closure need in the relationship between immersion experience and purchase intention.

This study used the quantitative research method with a questionnaires survey. 321 questionnaires were collected, and data analysis software such as SPSS and AMOS were used to conduct empirical analysis. The following conclusions were drawn: 1. Social presence positively affects immersion experience and consumer purchase intention; 2. Immersion experience positively affects consumer purchase intention; 3. Immersion experience plays a mediating role in the influence of social presence on consumer purchase intention; 4. Cognitive closure need plays a moderating role in the influence of immersion experience on consumer purchase intention; 5. The positive relationship between immersion experience and consumer purchase intention is stronger in the case of high level of cognitive closure need than in the case of low level of cognitive closure need.

Keywords: social presence, immersive experience, purchase intention, cognitive closure need

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HUANG ZONGXIAO

DECLARATION

I, HUANG ZONGXIAO, hereby certify that the work embodied in this independent study entitled "A STUDY OF THE INFLUENCE OF SOCIAL PRESENCE ON CONSUMER PURCHASE INTENTION IN E-COMMERCE LIVE STREAMING" is result of original research and has not been submitted for a higher degree to any other university or institution.

(HUANG ZONGXIAO)

Nov 11, 2024

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1.1 Background of the Study

In 2016, Mushroom Street first introduced live streaming to e-commerce shopping. In the same year, large e-commerce giants such as Taobao and JD.com also added live streaming functions to their respective e-commerce platforms, and E-commerce LIVE gradually approached consumers (Zhang, 2019). In 2018, the development of E-commerce LIVE gradually became systematic, penetrating into many industries and fields, and achieving large-scale growth (Li & Wang, 2020). In 2019, many e-commerce platforms opened live streaming functions. E-commerce LIVE developed rapidly, and some Internet celebrity live streaming hosts became well-known network stars, ushering in the first year of E-commerce LIVE (Chen, 2021).

At the end of 2019, the COVID-19 pandemic outbreak brought economic stagnation. Many merchants eventually closed down due to insufficient offline sales, and even the profits of the supported merchants were greatly reduced (Wang et al., 2020). However, during the epidemic prevention and control period, the e-commerce industry released huge potential. Online shopping facilitated consumers to meet their daily needs and enabled merchants to sell products, break down space barriers, broaden sales channels, and avoid product backlogs (Liu, 2021). To a certain extent, it eased the pressure on merchants caused by the epidemic outbreak and helped them resume work and production. It also received attention from various industries and fields (Zhou, 2022).

When selling products or services through E-commerce LIVE, live streaming hosts often introduce product or service information in various characteristic ways, meeting the dual needs of consumers for shopping and entertainment (Huang, 2020). E-commerce LIVE has gradually penetrated into consumers' lives and has become one of the main shopping methods for many consumers (Zhang & Li, 2021). According to the data from the China Internet Network Information Center, the national online retail sales in 2022 were 13.79 trillion yuan. Among them, the cumulative number of live broadcasts on e-commerce platforms exceeded 120 million, and the cumulative viewing exceeded 1.10 trillion people. There were over 95 million live products and nearly 1.10 million active live streaming hosts; the number of live broadcast users increased from 703.37 million to 750.65 million, with a growth rate of 6.7% (CNNIC, 2023).

Like traditional website shopping, the ultimate goal of E-commerce LIVE is to achieve the sale of products or services. However, at present, the barrier to entry for E-commerce LIVE is low, and a large number of E-commerce LIVE platforms and live

streaming hosts have emerged. The types and content of live broadcasts are increasingly rich, but there are also issues such as homogeneity, strong substitution, and intense competition (Wu, 2022). Consumers can choose more, and the cost of attention conversion is low. How to keep consumers in the live broadcast platform or live broadcast room and improve the purchase rate and repurchase rate has become the focus of E-commerce LIVE platforms and live streaming hosts (Yang, 2023). At the same time, E-commerce LIVE shopping is no longer a simple individual consumption but a group, interactive, and social shopping behavior with "companionship" and "sharing" elements (Liu & Chen, 2021). E-commerce LIVE also involves a third-party LIVE platform other than buyers and sellers. Based on this study, social presence is introduced to investigate the authenticity and experience brought by the interactive environment (E-commerce LIVE room) perceived by consumers, and the significant degree of feeling the presence of others and communicating with them affects consumers' immersion experience and purchase intention (Gao, 2022). In addition, E-commerce LIVE shopping is a more vague situation than offline shopping, with incomplete product display, asymmetric information between buyers and sellers, and consumers unable to truly feel the quality of the product. The product information obtained is less than offline, and the perceived follow-up services, such as logistics quality, returns, and exchanges, are also uncertain (Zhao, 2023). Based on this study, cognitive closure needs are introduced as a regulatory variable to investigate the impact of its high and low levels on consumers' purchase intentions (Sun, 2023).

1.2 Problems of the Study

E-commerce live shopping, in contrast to traditional offline shopping, initially presents a more ambiguous scenario for consumers. Key issues include incomplete product displays, information asymmetry between buyers and sellers, and inability for consumers to physically assess product quality. As a result, consumers often have access to less comprehensive product information compared to offline shopping. Additionally, uncertainties surrounding post-purchase services—such as logistics quality, return policies, and exchange processes—further complicate the decision-making process. To address these challenges, this study introduces the need for cognitive closure as a moderating variable, examining how varying levels of this need influence consumers' purchase intentions in the context of live shopping.

1. How does social presence affect consumer immersion experience in live e-commerce?

2. How does social presence affect consumer purchase intention in live e-commerce?

3. How does immersion experience affect consumer purchase intention?

4. Does immersive experience mediate the relationship between social presence and consumer purchase intention?

5. Does the need for cognitive closure moderate the relationship between immersion experience and consumer purchase intention?

1.3 Objectives of the Study

Based on the cognitive affective system theory and the social facilitation theory, this study introduces immersion experience as a mediating variable, explores the influence of social presence on consumer purchase intention in the context of E-commerce LIVE, and examines the need for cognitive closure as a moderating variable in the relationship between immersion experience and consumer purchase intention. The research objectives are as follows:

1. To explore the impact of social presence on consumer immersion experience.

2. To explore the impact of social presence on consumer purchase intention.

3. To explore the impact of immersion experience on consumer purchase intention.

4. To examine the mediating role of immersion experience in the relationship between social presence and consumer purchase intention.

5. To examine the moderating role of cognitive closure need in the relationship between immersion experience and consumer purchase intention.

1.4 Scope of the Study

The study focused on shopping scenarios in e-commerce live streaming platforms and analysed the relationship between social presence, immersion experience, need for cognitive closure and purchase intention in live interactive environments. This study adopted a quantitative research method, using a questionnaire survey to collect data, and the target group of this study was consumers who participated in e-commerce live shopping.

1.5 Significance of the Study

Theoretical significance: By exploring the impact of social presence on immersion experience and purchase intention, this study provides new perspectives for existing research on social presence in e-commerce and expands its application scenarios. Under the framework of social facilitation theory, this study explores how social interactions

influence consumers' purchase decisions, which helps to promote the development of the theory in digital and social shopping environments.

Practical significance: This study can help platforms optimise the design of live broadcasting, and increase consumers' purchase intention by enhancing social presence and immersion experience, which in turn improves the platform's commercial conversion rate. This study reveals how the need for cognitive closure affects the consumer decision-making process, which can provide consumers with rational shopping guidance in live shopping to avoid impulsive consumption and decision-making errors.

Chapter 2 Literature Review

2.1 Introduction

By studying the variables of social presence and immersion experience, consumer purchase intention and cognitive closure needs for the first time, as well as their previous conceptual connotations, the corresponding definitions are given according to the specific research objective of this study. After sorting out the relevant research status of each variable, it can be found that the research on social presence originated in the field of communication, and has been carried out in many fields.

In recent years, cognitive closure needs have been widely used to study consumer behavior as a factor that significantly affects individual decision-making preferences, and its predictability makes it an important variable in the study of consumer behavior. Scholars have rich research results on its action path, and determined its influence in fuzzy situations. E-commerce LIVE shopping is consistent with this feature. Studying how it affects E-commerce LIVE consumer purchase intention can supplement the mechanism by which consumers make purchase decisions. Finally, the cognitive affective system theory and the social facilitation theory are introduced to provide theoretical support for subsequent research.

2.2 Social Presence

Social presence was first proposed in 1976 by the scholars Short, Williams and Christie. The theory of social presence describes the degree of realism and the prominence of the presence of others in the media, and it points out that verbal or non-verbal cues in the media will prompt individuals to develop a sense of social presence, so that they can obtain a three-dimensional sense of real interaction in the media, and psychologically perceive a deeper degree of connection between others and themselves.

Scholars in different fields and from different perspectives have different understandings of the concept of social presence. Biocca (2001) divided social presence into three dimensions: sense of presence, psychological involvement, and behavioral fit, describing the connotation of social presence from these three dimensions. Cyr et al. (2007) and other scholars believed that the sense of social presence refers to the sense of social presence that the user feels as if he is in an interpersonal social interaction when he is using a website, and this sense of social presence is the feeling of being in a social interaction. Hassanein (2007) defined social presence as the psychological feeling of warmth and social interaction that a website conveys to its users, and Choi (2009) argued that social presence is a kind of psychological perception that consumers

have when shopping on the Internet, and it can reflect the psychological experience of consumers when they are shopping on the Internet. Lv (2012) argued that social presence is the emotional and cognitive congruence that consumers feel with other consumers when shopping online, thus feeling the conscious presence of other consumers more strongly. Bulu et al. (2012) argued that social presence has the characteristics of intimacy and immediacy, so when users use the medium to communicate, the medium itself affects the user's ability to communicate with other consumers.

EunJung et al. (2014), in their study of online shops, found that online shopping can also provide consumers with the same sense of interpersonal interaction as shopping in offline physical shops, and he defined social presence as the sense of social reality and scene that a virtual shopping space can generate for consumers. sense of scene.

Hong (2017) pointed out that the main connotations of social presence lie in 'co-presence', 'proximity', and 'connection' and so on, and summarises the conceptual definitions of social presence in various fields. and 'connection', etc. Dai et al. (2019) considered social presence as a key attribute of social media, describing the presence of other consumers felt by consumers when making purchases and identifying with them, never immersing themselves in such a socialised scenario. Xie et al. (2021) divided social presence into three dimensions: situational presence, communicative presence, and warmth presence, and argued that social presence describes the degree of prominence of others in interactions and the consequent prominence of interpersonal relationships in a live environment.

Research related to social presence first originated in the field of communication, but with the rapid development of information technology has gradually been valued and cited in the fields of online education, information systems, e-commerce, etc., and related research has been carried out rapidly. The development of information technology has greatly deepened the importance of virtual space, and the convenience it brings has attracted a large number of users to enter, shortening the distance between time and space, but also reducing the opportunities for people to communicate face to face. The traditional 'person-to-person' communication is gradually replaced by 'person-to-machine' communication, and users' offline social needs are also shifted to online.

Salinas (2005) and Fonner (2012) explored the influence of different communication methods on social presence from different perspectives. In the field of online education, social presence has been researched mainly in the areas of student engagement, satisfaction, and student performance, etc. Gunawardena et al. (1997)

defined social presence as the perceived experience of students when they are engaged in online learning, and Tu (2000) pointed out that the social presence of a virtual learning community consists of the social context, online communication, and interactivity, thus exploring the relationship between social presence and online interactivity. relationship between social presence and online interaction; Kovanovic et al. (2017) and Molinillo (2018) pointed out through their studies that social presence can positively influence students' motivation and satisfaction in learning, thus improving learning performance.

In the field of information systems, research on social presence revolves around the optimization of information system design, user participation behavior, etc. The results of related research confirm that an information system that can convey warmth and human touch to users and make them feel a sense of social experience can stimulate the level of users' social presence, so as to increase the likelihood of their use of and participation in information systems.

In 2003, social presence was introduced into marketing and e-commerce, and then the rapid development of e-commerce live broadcasting and the high fit between social presence and e-commerce live broadcasting context made scholars pay attention to the application of social presence in the field of e-commerce live broadcasting. In this field, research on social presence influencing factors and result orientation has also been carried out in the academic community, and certain research results have been accumulated. Among them, the focus of the research on influencing factors is mainly centred on the characteristics of e-commerce live broadcasting platforms, the characteristics of anchors, and consumer interaction, etc., and the research confirms that these factors are the social sense of presence.

The research confirms that these factors are the preconditions for the generation of social presence, and they can prompt consumers to feel the real scene like the offline environment. The result-oriented research focuses on consumer trust, loyalty, psychological perception, purchase intention, etc., which confirms that the improvement of the level of social presence can positively influence consumer psychology and behavior.

2.3 Immersion Experience

Immersion was first introduced in 1975 by psychologist Csikszentmihalyi, who argued that immersion describes when people are so fully engaged in an activity that they are unconcerned about anything else. The experience is so pleasurable that people are even willing to go to great lengths to achieve it.

In 1989, Csikszentmihalyi & LeFevre added that immersive experiences include ‘optimal experiences’ and ‘key components of pleasure’. This optimal experience immerses the individual and is so appealing that the individual will put more effort into participating in order to maintain this state of pleasurable immersion. In 1997, Csikszentmihalyi conducted another study in which he defined immersion as a state of psychological fulfilment in which the individual enters into a state of immersion that is so pleasurable that the individual is completely absorbed in it, resulting in the creation of a state of psychological fulfilment. Ghani Satish (1994) defined immersion experience as a state of psychological equilibrium, in which an individual is engaged in an activity that matches his or her abilities, and has a pleasurable experience.

In the field of communication, scholars have adapted the definition of immersion to the specific characteristics of the field, and in 1996, Hoffman and Novak began to introduce the theory of immersion in online environments, which they defined as a pleasurable state of mind that occurs when a user participates in online interactions, where the user seems to be unconscious of him/herself, and can only feel the participation in the moment, and thus is interested in the human-computer interaction. behavior, thus producing a continuous response to the human-computer interaction. Seligman & Csikszentmihalyi (2000) argued that immersive experience makes participants enjoy their engagement behavior in the present moment, and in order to maintain this enjoyment, they will continue their engagement behavior and even ignore other things as a result. Feng (2014), on the other hand, defined immersion experience as a temporary, subjectivized experience. Sorrentino et al. (2011) suggested that immersion experience is a kind of good perception that an individual unconsciously and uninterruptedly generates during smooth participation in an activity. Chen (2014) argued that immersion experience is a positive emotion that makes individuals feel that time flies when they are fully engaged in an activity, even if they feel that nothing else matters. Li (2015) defined immersion experience as a kind of psychological emotion generated by individuals themselves, who will actively engage in an activity in the hope of achieving an immersive state. Yu & Xu (2017), in their study of user information participation behaviour in the field of webcasting platforms, proposed that immersion experience is a psychological experience that an individual cannot control or be aware of on his own due to the control and stimulation of the webcasting platform, which makes the user develop a certain curiosity so that he keeps investing his attention and immersing himself in it, enjoying the use of that live broadcasting platform. After summarising Csikszentmihalyi's research, Kong (2019) argued that immersion is a kind of feeling produced by individuals in the process of achieving ‘dynamic equilibrium’.

Xia (2020) defined immersion experience as an involuntary positive psychological state produced by an individual who feels that he or she is capable of performing the activity during the process of participating in the activity, and under the influence of this psychological state, the individual will be completely devoted to the activity and even ignore all things outside the activity.

On the basis of Csikszentmihalyi's proposal and research on immersive experience, more scholars began to pay attention to immersive experience, and introduced immersive experience into many fields such as reading, sports, travelling, online environment, online learning, e-commerce and so on.

In 1996, Hoffman and Novak began to use the theory of immersive experience in the field of online network environments. They constructed a theoretical model of immersive experience in network environments, and proved that immersive experience can significantly affect the learning effect, control perception, and exploration tendency of users. Subsequently, in 1999, Chen et al. pointed out that immersive experience in the online environment can significantly enhance users' dependence on and satisfaction with the platform, and make users have an excellent experience.

Research on immersive experience in the Internet domain mainly focuses on aspects such as user behavioral patterns. Huang (2003) argued that immersion theory is crucial for understanding online user behavior. Novak et al. (2000), Chen et al. (2000), Skadberg & Kimmel (2004), and Lin (2018), among others, pointed out that users wish to maintain this state or reach a higher state after experiencing an immersive state, resulting in persistent online engagement behaviors.

Research on the antecedents of immersion experience has also accumulated certain research results, mainly focusing on perceived usefulness, perceived ease of use, perceived control, etc. Animesh et al. (2011) proved through their research that meaningful social interactions can lead to a sense of pleasure, which in turn generates an immersion experience. Wu (2015) argued that interactivity in turn has a significant positive effect on immersion experience. Xue & Xu (2016) proved through research that usefulness, ease of use, etc. can significantly influence the generation of immersion experience. Gao & Bai (2017) argued that the entertainment and effectiveness of perceived interactions affect the user's motivation to participate in an online travel agency, which in turn generates an immersion experience. Jiang (2020) argued that immersion experience is different from addiction, it is a temporary psychological experience, and factors such as perceived enjoyment, perceived purposefulness, and perceived control are the antecedent conditions for the generation of immersion

experience, and individuals also experience a sense of time distortion when they are in an immersed state, and wrongly perceive the speed of time passing.

Koufaris (2002) classified the immersion experience into three dimensions: perceived controllability, perceived enjoyment, and attentional focus, while Hausman & Siekpe (2008) classified it into four dimensions: challenge, perceived control, perceived enjoyment, and attentional focus, and Guo & Poole (2009) suggested that the immersion experience consists of concentration, perceived control, time distortion, action, and concentration. control, sense of time distortion, integration of action and awareness, self-transcendence, and clarity of purpose. Zaman et al. (2010), on the other hand, classified the immersion experience into two dimensions: perceived enjoyment and perceived control. Xu et al. (2018) classified immersion experience into dimensions of perceived enjoyment, perceived utility, perceived control, concentration and time distortion.

2.4 Consumer Purchase Intention

Ajzen and Driver (1992) believed that willingness is an antecedent to behavior, that willingness determines behavior, and that the strength of willingness directly affects the likelihood of behavior. Willingness to buy refers to the likelihood of consumers to buy a certain product, which is the subjective psychological willingness of consumers, thus taking consumer willingness to buy as a key indicator for predicting consumer purchasing behavior.

Zhu (1984) argued that consumers will measure whether the object of purchase can satisfy their needs before making purchases, thus generating the idea of purchasing, i.e., consumers' purchase intention is the prior condition of consumers' purchasing behavior.

Zeithaml (1993) classified consumers' willingness to shop into three dimensions: willingness to buy, highly likely to buy and certainty to buy. Han and Tian (2005) defined willingness to buy as the likelihood of consumers to buy a certain product. Feng (2006) pointed out that willingness to buy is the basis for the emergence of purchasing behavior by combing and summarizing the studies related to consumers' willingness to purchase.

In traditional shopping scenarios, research has focused on consumer personality traits, product cues, consumption experience and socio-economic environment, etc. Consumer attitudes, perceived risks, etc. affect consumer purchase intention. In online virtual scenarios, research mainly focuses on consumer trust, loyalty, platform characteristics, etc. It is found that the virtual environment atmosphere of the media

system, technological features, online merchant information, interpersonal interactions, etc. all have an impact on consumer purchase intention. Diao (2010) found that consumers' purchase intention is affected by the convenience and aesthetics of the website and consumers' perceived usefulness of the information. Koufaris & Hampton-Sosa (2004) argued that consumers' perceived trust positively affects consumers' purchase intention. From the perspective of consumer experience, He & Zhou (2013) confirmed that online shopping provides consumers with a better and stronger sense of experience, which positively affects the value of shopping experience and thus positively affects consumers' purchase intention.

In the field of e-commerce live streaming, research on consumer purchase intention mainly focuses on topics such as e-commerce live streaming platforms and anchor characteristics, e-commerce website technology improvement, consumer interactive participation (e.g., online comments, pop-ups, etc.) and perceived usefulness, consumer trust, and consumer loyalty and identification. The research on anchor characteristics points out that qualities such as anchor's professionalism, trustworthiness and personal charisma can significantly influence consumers' purchase intention. Yang & Zhang (2018) confirmed that the professionalism and attractiveness of Netflix enhance consumers' purchase intention through the mediating effect of consumer identity when studying the relationship between the characteristics of "Netflix" information sources and consumers' purchase intention. Zhang (2018) constructed a model of the influence of self-media opinion leaders' recommendation on consumers' purchase intention, and divided self-media characteristics into five aspects: reputation, professionalism, homogeneity, user stickiness, and product consistency, confirming that consumers' purchase intention is affected by the above five factors, and that trust plays an intermediary role in it. Meng et al. (2020) confirmed that the credibility, professionalism, interactivity and other characteristics of live netizens can make consumers identify more strongly with live broadcasts, thus promoting the generation of purchase intention.

Wu's (2020) study confirmed the reasonableness and accuracy of the model of anchor-consumer communication style-consumer quasi-social interaction perception-consumer purchase intention. Based on SOR research, Wang et al. (2002) confirmed that the entertainment, quality and informativeness of the anchor's linguistic content in the live broadcasting situation affect consumers' purchase intention to varying degrees by influencing their perceived utilitarian value and perceived hedonic value, respectively.

Research on the characteristics of e-commerce live broadcasting platforms points out that the technical characteristics, media attributes, and social cues of e-commerce live broadcasting platforms can significantly affect consumers' purchase intention. Liu (2018) proposed and verified the relationship between consumers' psychological cognitive emotion and purchase intention in the context of e-commerce live broadcasting by combining the media attributes of live broadcasting. Based on the mediating role of cognition and emotion in the influence of e-commerce live streaming mode on consumers' purchase intention, Wang et al. (2019) confirmed that the entertainment features and interactivity of e-commerce live streaming positively affect consumers' purchase intention. Gong et al. (2019) confirmed through empirical analyses when studying the atmosphere of live broadcasting scenes that live broadcasting atmosphere cues can positively influence consumers' impulse consumption intention by positively influencing the mindstream experience. Li et al. (2021) explored the influence of central and marginal cues on consumer attitudes by studying the information and environmental cues of live e-commerce broadcasts to further analyse consumers' live purchase intention. Zhou et al. (2021) classified the features of live e-commerce broadcasting into the degree of reach, cue multiplicity, and natural language in the cognitive social presence dimension, and the sense of authenticity, intimacy, and real-time interaction in the emotional social presence dimension, and pointed out that the above features affect consumers' purchase intention through perceived usefulness and perceived trust. Based on social cognitive theory, Li & Hua (2021) pointed out that learning from alternative experiences, learning from others' behaviors and peer communication can shorten consumers' perceived psychological distance, thus promoting consumers' purchase intention. Luo (2023) explored the influence path of e-commerce live streaming attributes-psychological contract-consumers' purchase intention based on the psychological contract perspective.

2.5 Cognitive Closure Need

Scholars believe that the need for cognitive closure is rich in predictive power and can provide a good understanding of individual behavioral patterns in ambiguous situations. Cognitive closure need is a very important concept in the field of psychology, accumulating rich research results, and was later introduced into the fields of group interaction and consumer purchase behavior. In today's increasingly complex and ambiguous consumer scenarios, scholars have paid more attention to the role of cognitive closure needs in the field of marketing, which can be a good predictor of consumer behavioral decisions in ambiguous situations.

When researching on cognitive closure needs, scholars usually measure the level of subjects' cognitive closure needs in the study and divide them into high-level cognitive closure needs and low-level cognitive closure needs, and explore whether subjects with different levels will have the same effect and effect for the study. The research that has been done on cognitive closure needs has focused on two main aspects, which coincide with the two meanings of cognitive closure needs. On the one hand, the level of an individual's need for cognitive closure is considered to be a relatively stable variable used to describe the level of an individual's characteristics that can be measured by a scale. Webster & Kruglanski (1994) designed and developed the Need for Cognitive Closure Scale, which divides the need for cognitive closure into five dimensions that are measured in terms of discomfort with ambiguity, the need for structure, and psychological closure.

On the other hand, scholars believe that the level of cognitive closure needs can be temporarily altered within a short period of time, and that external environmental factors can be changed to increase the pressure felt by individuals, thus increasing the level of consumers' cognitive closure needs. It is the manipulation of environmental variables that affects an individual's level of cognitive closure in a short period of time. Regarding the antecedent factors affecting the level of cognitive closure needs, scholars have pointed out through research that environmental noise (Kruglanski & Webster, 1991), and time pressure (Webster & Kruglanski, 1998), can briefly increase the level of an individual's need for cognitive closure by making the individual perceive that the thinking that he is doing in the activity he is engaged in at the moment is boring and can also influence an individual's decision-making behavior. Zhu (2015) pointed out through his research that an individual's level of cognitive closure needs affects an individual's purchasing decisions, and that people with high levels of cognitive closure needs are more inclined to make choices quickly than people with low levels of cognitive closure needs.

2.6 Cognitive Affective System Theory

Research on the cognitive affective system theory mainly focuses on medicine, psychology, education management and other fields, and has been introduced into the study of user information behavior in recent years. Cognitive affective system theory was first proposed by Mischel in 1973 to make up for the shortcomings of trait research. In 1995, Mischel and Shoda pointed out that cognitive affective system theory can predict the generation of individual behavior from the cognitive-affective level. When external stimuli activate individual cognitive or affective units, they will cause

individual cognitive or affective responses, thereby affecting individual behavior. These two units also constitute an interactive system. Individuals process information from external situations to generate internal cognition. This cognitive stimulus then awakens individual emotions, and finally prompts individual behavior. The activation of one unit of the individual will awaken another unit, thereby affecting individual behavior. Therefore, based on the theory of cognitive-affective systems, a mechanism model of consumer purchase intention in the context of E-commerce LIVE can be constructed from the perspective of cognition-emotion.

2.7 Social Facilitation Theory

The theory of social facilitation was first put forward by Robert (1965), who pointed out through experiments that the presence of others has different effects on individual performance under different conditions. When individuals face simple and easy-to-complete tasks, the presence of others has a positive impact on their performance. When individuals face complex and unfamiliar tasks that are not easy to complete, the presence of others will have a negative impact on their performance. Social facilitation theory describes that when an individual completes a certain job or makes a certain decision, the presence of others, whether real or virtual presence through communication media, can awaken the internal drive of the individual, make the individual feel the socialization scene psychologically, and produce an interpersonal impact effect, which will promote the growth of the quantity and quality of individual behavior and improve the efficiency of individual behavior. Academics believe that there are two paths for the impact of social facilitation theory on individual behavior. The first is the internal drive, in which the individual will notice the presence of others and think that others will also pay attention to themselves, so as to focus on their own actions, strengthening the individual's social drive, resulting in the emergence of social fueling effect. The second is guidance, in which the individual feels the presence of others and takes the behavior of others as its own imitation object, thus producing a guiding effect and a social fueling effect. The research on social facilitation theory focuses on psychology, marketing, online shopping and other fields. In the context of E-commerce LIVE, real-time and efficient interaction between consumers in the live stream can form a social shopping scene like offline shopping, allowing consumers to feel the presence of others psychologically. Purchasing decisions are relatively simple and easy to complete, so they can promote the generation of consumer behavior performance. Based on this, the influence mechanism model of social presence on consumer purchase intention in E-commerce LIVE can be used.

2.8 Conceptual Framework

Based on the cognitive affective system theory and the social facilitation theory, this study constructs a conceptual framework of the relationship between the four components of social presence, immersion experience, consumer purchase intention and cognitive closure need.

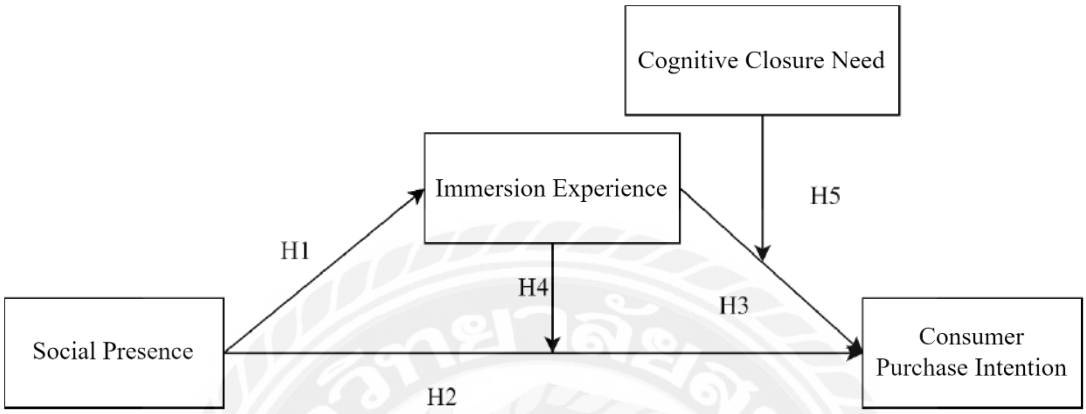

Figure 2.1 Conceptual Framework

Chapter 3 Research Methodology

3.1 Research Design

This study used the quantitative research methods to explore the four research variables of this study: social presence, immersion experience, consumer purchase intention and cognitive closure need, constructed a theoretical framework, and put forward research hypotheses. On the basis of the existing mature scale, a questionnaire was designed according to the specific situation of E-commerce LIVE, and data were collected through the questionnaire and data analytics were carried out to test the research hypotheses and draw research conclusions.

3.2 Questionnaire Design

The variables included in this study are social presence, immersion experience, consumer purchase intention and cognitive closure need, and the measurements are all on a five-point Likert scale. Since the research context of this study is e-commerce live streaming, the scale was adjusted and modified based on summarising and referring to relevant mature scales, in combination with the research background of this study.

Table 3.1 Measurement Scale

Variable	Items	Measurement Item
Social Presence	1	I can sense the presence of live streaming hosts and other consumers in the live stream.
	2	The live streaming host and other consumers in the live stream can perceive my presence.
	3	I will closely monitor the behavior of live streaming hosts and other consumers in the live stream.
	4	The live streaming host and other consumers in the live stream can affect my mood.
	5	My participation can affect the live streaming host and other consumers in the live stream.
	6	I feel that I interact with the emotional state of the live streaming host and other consumers in the live stream.
	7	Through live streaming and interaction, I can understand what live streaming hosts and other consumers mean.
	8	Through live streaming and interaction, live streaming hosts and other consumers can understand what I mean.

	9	Live streaming and interaction help me understand and communicate with live streaming hosts and other consumers.
Immersion Experience	1	I really enjoyed watching the live stream.
	2	I'm fully engaged when watching the live stream and don't think about anything else or don't like to be disturbed.
	3	When I watched the live stream, I felt that time passed quickly.
	4	For me, watching the live stream or interacting in the live stream is fun.
	5	For me, watching or interacting in a live stream gives me a sense of harvest and satisfaction.
Consumers' Purchase Intention	1	I would like to browse the live stream for longer.
	2	I am willing to spend more in this live stream.
	3	I will come to this live stream to shop in the future.
	4	I would choose this one more than other similar live broadcast rooms.
	5	I would recommend this studio to others.
Cognitive Closure Need	1	I think having clear rules and organization at work is a necessary condition for success.
	2	I don't like situations of uncertainty.
	3	I don't like questions that can have many different answers.
	4	I like having friends who behave unpredictably. *
	5	When I go out to eat, I like to go to the places I have been before, because it keeps my heart in check.
	6	I hate changing my plans at the last minute.
	7	When shopping, I have a hard time deciding what I really want. *
	8	I usually make important decisions quickly and confidently.
	9	I always find many possible solutions to the problems I encounter. *
Note: The questions with * are reverse scoring questions.		

3.3 Hypothesis

H1: Social presence positively affects immersion experience.

H2: Social presence positively affects consumer purchase intention.

H3: Immersion experience positively affects consumer purchase intention.

H4: Immersion experience plays a mediating role in the influence of social presence on consumer purchasing intention.

H5: Cognitive closure need plays a moderating role in the relationship between immersion experience and consumer purchase intention.

3.4 Sampling and Data Collection

This research focused on the impact of social presence on consumer purchase intention in the context of E-commerce LIVE, so the respondents were mainly consumers who have watched E-commerce LIVE and made purchases. This study adopted anonymous collection and ensured that the subject's information was not leaked and not used for any commercial purpose. After excluding the respondents who that did not watch E-commerce LIVE and shop, 321 valid questionnaires were obtained, with an effective collection rate of 88.43%.

3.5 Data Analysis

The responses from the questionnaire were screened, and valid questionnaires were selected for descriptive statistical analysis, reliability analysis and validity analysis of the questionnaire, correlation analysis, and hypothesis testing, including main effect test, mediation effect test, and moderation effect test. Data were analysed using SPSS and AMOS to test the hypotheses by exploring the pathways through which social presence affects consumer purchase intention and to verify the mediating role of immersive experiences and the moderating role of cognitive closure need.

3.6 Reliability and Validity Analysis of the Scale

3.6.1 Reliability Analysis of the Scale

In order to ensure the reliability of the data analytics results, it is necessary to test the reliability and validity of the questionnaire before conducting a hypothesis test. Reliability reflects the degree of internal consistency between a latent variable and an observed variable. Cronbach's alpha coefficient value is between 0-1, and the larger the value, the higher the reliability. It is generally believed that the alpha coefficient value is above 0.8, and the reliability of the test is very good, and the coefficient value above 0.7 is acceptable. In this study, the reliability analysis of the questionnaire using SPSS reliability analysis was tested with the four variables. The items are represented by SP, IE, CI, and NC respectively, and the results are shown in Table 3.2.

Table 3.2 Reliability Test

Variable	Cronbach's Alpha	
SP	0.843	0.919
IE	0.811	
CI	0.820	
NC	0.739	

In this study, the alpha coefficient of social presence was 0.84, the alpha coefficient of immersion experience was 0.811, the alpha coefficient of consumer purchase intention was 0.820, the alpha coefficient of cognitive closure need was 0.739, and the alpha coefficient of the overall questionnaire reached 0.919, all above 0.7, indicating that the reliability of the questionnaire designed in this study is good.

3.6.2 Validity Analysis of the Scale

As can be seen from Table 3.3, the KMO value of the overall scale was 0.936, which is more than 0.7. The significance probability of the Bartlett's test of sphericity is 0.000, which is less than the 0.05 significance level. These indicators show that the scale has good validity and is suitable for factor analysis.

Table 3.3 KMO and Bartlett's Test[a]

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.936
Bartlett's Test of Sphericity	Approx. Chi-Square	4210.190
	df	105
	Sig.	0.000

Chapter 4 Findings

4.1 Descriptive Statistical Analysis

After screening the qualified remaining 321 questionnaires, data were subjected to frequency analysis, as shown in Table 4.1.

Table 4.1 Demographic Characteristics of Sample (N=321)

Type	Subject	Number of people	%
Gender	Male	127	39.6
	Female	194	60.4
Age	Under 19 years old	9	2.8
	19-29	263	81.9
	30-39	42	13.1
	40-49	5	1.6
	Over 49 years old	2	0.6
Educational attainment	High school and below	8	2.5
	College	29	9.0
	Undergraduate	220	68.5
	Master's degree and above	64	19.9
Vocation	Students	206	64.2
	School employees	12	3.7
	Company employees	74	23.1
	Government employees	12	3.7
	Freelancers	14	4.4
	Others	3	0.9
Frequency of live e-commerce shopping	Less than 2 times per month	165	51.4
	3-5 times per month	111	34.6
	6-10 times per month	31	9.7
	More than 10 times per month	14	4.4
Note: N=321			

Table 4.1 presents the demographic characteristics of sample consisting of 321 participants. In terms of gender, 39.6% of the participants are male, and 60.4% are female. The age distribution shows that most participants (81.9%) are between 19 and 29 years old, followed by 13.1% aged 30-39, 2.8% under 19, 1.6% aged 40-49, and 0.6% over 49 years old. Regarding educational attainment, 68.5% of the participants hold an undergraduate degree, 19.9% have a master's degree or higher, 9.0% have a college degree, and 2.5% have a high school education or below. In terms of vocation, 64.2%

of the participants are students, 23.1% are company employees, 4.4% are freelancers, 3.7% are school employees, 3.7% are government employees, and 0.9% fall into other categories. The frequency of live e-commerce shopping among participants is as follows: 51.4% shop less than 2 times per month, 34.6% shop 3-5 times per month, 9.7% shop 6-10 times per month, and 4.4% shop more than 10 times per month.

With a general understanding of the sample structure, descriptive statistics were analysed using SPSS for each of the measured variables, looking specifically at the mean, standard deviation, and skewness and kurtosis, as shown in Table 4.2 below.

Table 4.2 Descriptive Statistical Analysis

Variable	Mean	Standard deviation	Skewness	Kurtosis
Gender	1.60	0.490	-0.429	-1.828
Age	2.15	0.505	2.165	8.128
Education	3.06	0.622	-0.667	1.869
Vocation	1.83	1.241	1.290	0.753
Frequency of shopping	1.67	0.823	1.152	0.741
Social Presence	3.603	0.634	-0.467	1.105
Immersion experience	3.596	0.715	-0.642	0.774
Consumer purchase intention	3.604	0.688	-0.588	1.414
Cognitive closure Need	3.384	0.336	0.277	0.875

4.2 Validation Factor Analysis

This study used AMOS to conduct a validated factor analysis to test validity. Social Presence (SP), Immersion Experience (IE), Consumer Intention to Purchase (CI) and Cognitive Closure Need (NC) were included in the structural equation modelling and their outputs were corrected as shown in Figure 4.1 below.

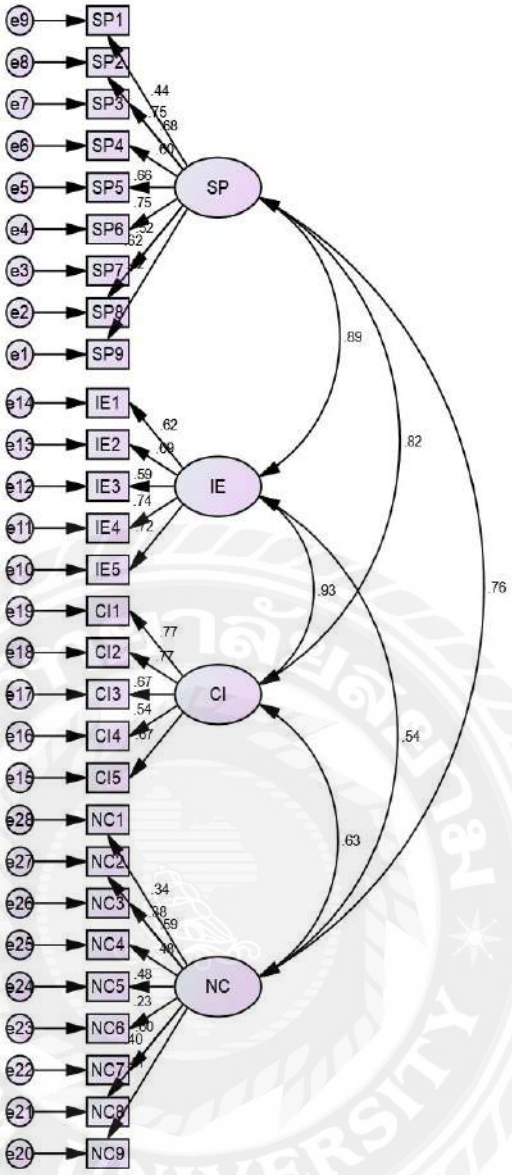

Figure 4.1 Structural Equation Model

4.2.1 Construct Validity

Table 4.3 Overall Fitting Coefficient

Statistical tests	X2/df	RMSEA	GFI	NFI	TLI	CFI	AGFI	IFI	PGFI
Criteria for fit	<3	<0.05	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.5
Test result data	1.172	0.023	0.934	0.919	0.982	0.987	0.901	0.987	0.739

It can be seen from the data in the table above that the absolute fitting index X2/df of the model is less than 3; the approximate error index RMSEA is less than 0.05; the relative fitting index CFI is greater than 0.9, NFI is greater than 0.9, IFI is greater than 0.9; the goodness of fit GFI is greater than 0.9, AGFI is greater than 0.9. Therefore, all the fitting indexes of the model in this study meet the standards, the adaptation is ideal, and the structural validity is good.

4.2.2 Discriminate Validity

On the basis of verifying its structural validity, AMOS was used to fit the three-factor model, two-factor model and one-factor model and compare them with the original model fit to verify whether the discriminant validity of the model in this study is up to standard. The results are shown in Table 4.4 below.

Table 4.4 Results of Discriminate Validity

Model	X^2	df	X^2 /df	CFI	TLI	RMSEA	ΔX^2	Δdf
Original model	317.724	271	1.172	0.987	0.982	0.023		
Three-factor model	1261.418	347	3.635	0.743	0.720	0.091	928.023***	73
Two-factor model	1318.181	349	3.777	0.728	0.705	0.093	984.786***	75
One-way model	1372.855	350	3.922	0.713	0.690	0.096	1039.46***	76
Note: ***p < 0.001								

Three-factor model: social presence, immersive experience, consumer purchase intention + cognitive closure need

Two-factor model: social presence + immersion experience, consumer purchase intention + cognitive closure need.

One-factor model: social presence, immersive experience, consumer purchase intention and cognitive closure need.

From the above table, it can be seen that the three-factor model, two-factor model and one-factor model are worse than the original model, and passed the chi-square test with a significant level of 0.001, which indicates that the model in this study has good discriminative validity.

4.3 Correlation Analysis

Correlation analysis is used to analyse whether or not there is a linear relationship between two variables, thus reflecting the degree of closeness between them. When looking at the results of correlation analysis, first focus on whether there is a correlation between the two, and then look at the correlation coefficient, the larger the absolute value of the correlation coefficient, the closer the relationship between the two. In this study, SPSS was used to conduct correlation analysis, and the results of the statistical indicators of the correlation coefficients of each research variable are shown in Table 4.5.

Table 4.5 Results of Correlation Analysis

variable	1	2	3	4	5	6	7	8
Gender	1							
Age	-0.008							

Education	0.087	-0.198**						
Occupation	-0.053	0.415**	-0.234**					
Shopping Frequency	-0.123*	0.077	-0.096	0.086				
Social Presence	-0.033	0.098	0.001	-0.010	0.173**			
Immersion Experience	-0.050	0.128*	-0.025	-0.069	0.211**	0.707**		
Purchase Intention	-0.025	0.056	0.026	-0.072	0.233**	0.674**	0.752**	
Cognitive Closure Need	0.112*	-0.107	0.163**	-0.097	-0.098	0.160**	0.106	0.178**
Note: * $p < 0.05$, ** $p < 0.01$ (two-tailed test)								

It can be seen from the above table that social presence is significantly positively correlated with immersion experience ($r = 0.707$, $p < 0.01$) and consumer purchase intention ($r = 0.674$, $p < 0.01$), with H1 and H2 receiving preliminary support; immersion experience is significantly positively correlated with consumer purchase intention ($r = 0.752$, $p < 0.01$), and H3 is initially supported; cognitive closure need is significantly positively correlated with social presence ($r = 0.160$, $p < 0.01$) and consumer purchase intention ($r = 0.178$, $p < 0.01$).

4.4 Hypothesis Test

4.4.1 Main Effect Test

This study tested the hypothetical model through hierarchical regression analysis. When testing the relationship between social presence and consumer purchase intention, i.e. H2, the control variables of gender, age, education, occupation and frequency of e-commerce live shopping are firstly put into the regression analysis, and then social presence is included in it, with consumer purchase intention as the dependent variable, and the results are shown in Table 4.6 Model 4 below. The standardised coefficient β of social presence on consumer purchase intention is 0.649 ($p < 0.001$), indicating that social presence has a significant positive effect on consumer purchase intention, and H2 that social presence positively affects consumer purchase intention is established.

4.4.2 Test of Mediating Effect of immersion experience

In testing H1, with immersion experience as the dependent variable, control variables of gender, age, education, vocation and frequency of e-commerce live purchases are first put into the regression analysis, and then social presence is put into the regression analysis. As shown in Model 2 in the table, social presence positively affects immersion experience ($\beta = 0.688$, $p < 0.001$), and H1 is established. In testing H3, with consumer purchase intention as the dependent variable, the control variables of gender, age, education, occupation and frequency of e-commerce live shopping are put into the regression analysis first, and then the immersion experience is put into the regression analysis. As shown in model 5 in the table, the immersion experience positively influences consumer purchase intention ($\beta = 0.777$, $p < 0.001$), and the H3 of this study is established. Mediation generally refers to the role played by a variable when it explains the relationship between the independent variable and the dependent variable to a certain extent, and is generally used to illustrate the internal mechanism of the relationship between variables. In this study, cascade regression analysis was used to verify the mediating role of immersion experience, and the specific results are shown in Table 4.6 below.

Table 4.6 Mediating Effect of Immersive Experience

Variable		Immersion experience			Consumer purchase intention		
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control Variables	Gender	-0.055	-0.054	-0.004	0.007	0.019	0.017
	Age	0.121*	0.021	0.096	0.019	-0.037	-0.034
	Education	-0.107	-0.061	-0.039	0.022	0.043	0.035
	Occupation	-0.140*	-0.092*	-0.123*	-0.078	-0.123	-0.015
	Frequency of shopping			0.239***	0.129***	0.086*	0.079*
Dependent Variable	Social presence		0.688***		0.649***		0.281***
Mediating Variable	Immersion experience					0.741***	0.542***
	R^2	0.080	0.552	0.071	0.474	0.576	0.615
	Adjusted R^2	0.065	0.513	0.056	0.464	0.568	0.606
	F	5.457***	57.090***	4.820***	47.242***	71.027***	71.422***
	ΔR^2	0.080***	0.442***	0.403***	0.403***	0.505***	0.141***
	ΔF	5.457***	290.202***	4.820***	240.988***	373.558***	114.261***
Note: *p<0. 05, ** p<0. 01, ***p<0.001							

Using consumer purchase intention as the dependent variable, control variables (gender, age, education, occupation, and shopping frequency) are sequentially entered into the regression model, followed by social presence and immersion experience, as shown in Model 6 in the table. After including the mediating variable of immersion experience in the regression equation, it is found that immersion experience positively affects consumer purchase intention (β=0.542, $p<0.001$). At this point, social presence still has a significant positive impact on consumer purchase intention (β=0.281, $p<0.001$), though the coefficient decreases compared to before. Therefore, immersion experience partially mediates the effect of social presence on consumer purchase intention, confirming H4, which proposed that immersion experience mediates the relationship between social presence and consumer purchase intention.

Finally, Process was used to validate the results. The confidence intervals of the total effect, direct effect and the mediating effect of immersion experience did not include 0, and the conclusions drawn were consistent with the above. According to the output results of Process, the total effect, direct effect and mediation effect decomposition table can be drawn, and it can be found that the mediation effect of immersive experience accounts for 56.75% of the total effect, as shown in Table 4.7 below.

Table 4.7 Total Effect, Direct Effect and Mediating Effect

	Effect Value	BootULCT upper limit	Lower BootLLCT limit	Relative effect value
Total effect	0.7045	0.7938	0.6152	
Direct effect	0.3047	0.4109	0.1985	43.25%
Mediating effect of immersion experience	0.3998	0.4933	0.3119	56.75%

4.4.3 Test of Moderating Effect of Cognitive Closure Need

In this study, H5 was tested through hierarchical regression analysis, i.e., the effect of immersion experience on consumer purchase intention was moderated by cognitive closure need, and the positive relationship between immersion experience and consumer purchase intention was stronger at high levels of cognitive closure need orientation than at low levels of cognitive closure needs. Before testing the hypothesis of moderating effect, the mediating variable of immersion experience and moderating variable of cognitive closure need are now decentred and then calculated using computational variables to find the positive relationship between immersion experience and consumer purchase intention. The interaction term between the two is derived using computational variables for subsequent manipulation. After the treatment, SPSS

hierarchical regression analysis is used to conduct the test, with consumer purchase intention as the dependent variable, and the control variables (gender, age, education, occupation, shopping frequency), immersion experience, cognitive closure need, and the interaction term between immersion experience and cognitive closure need are put in the order of sequence. As shown in Model 4 in Table 4.8 below, the effect of immersion experience on consumer purchase intention is moderated by cognitive closure need ($\beta = 0.082$, $p < 0.05$).

Table 4.8 Moderating Effect of Cognitive Closure Need

Variable		Consumer purchase intention			
		Model 1	Model 2	Model 3	Model 4
Control Variables	Gender	-0.004	0.019	0.009	0.012
	Age	0.096	-0.037	-0.028	-0.021
	Education	-0.039	0.043	0.030	0.033
	Occupation	-0.123*	-0.001	-0.001	0.000
	Frequency of shopping	0.239***	0.086*	0.096*	0.103**
Dependent Variable	Social Presence				
Mediating Variable	Immersion Experience		0.741***	0.726***	0.693***
Moderator Variable	Cognitive Closure Need			0.102**	0.122***
Interaction term	immersion experience x Cognitive closure				0.082*
	R^2	0.071	0.576	0.585	0.591
	Adjusted R^2	0.056	0.568	0.576	0.580
	F	4.820***	71.027***	63.131***	56.308***
	ΔR^2	0.071***	0.505***	0.010**	0.005*
	ΔF	4.820***	373.588***	7.260**	4.129*

The effect of immersion experience on consumer purchase intention is moderated by cognitive closure need.

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

In recent years, many scholars have studied consumer behaviour in the context of e-commerce live streaming, and introduced a variety of variables and theories into the field of e-commerce live streaming. On this basis this study introduced cognitive-emotional system theory and the social facilitation theory to explore the mechanism of the influence of social presence on consumer purchase intention. Due to the richness and entertainment of e-commerce live streaming content, this study also introduced immersive experience as a mediating variable to explore the mediating role of immersive experience in the path of social presence influencing consumer purchase intention. While there are uncertainties and ambiguities in the e-commerce live streaming bandwagon environment, for example, consumers can't intuitively feel the quality and details of the products and services like offline shopping, can't experience and try the products to a certain extent, and can't know the integrity of the merchants or anchors, etc., so this study introduced the need for cognitive closure as a moderating variable to explore its moderating role in the relationship between immersion experience and consumer purchase intention. The five research hypotheses based on the mechanism and conditions of social presence and consumer purchase intention are all supported, and the following conclusions are drawn:

First, social presence positively influences consumer purchase intention. According to the social fuelling theory, along with the increase in the number of people in the live broadcasting room and the enhancement of interactivity, which creates a highly three-dimensional real-time interactive social scene and shopping scene, consumers feel a higher level of social presence, and psychologically feel the real presence of others, which generates the audience effect to promote the efficiency of their actions, so that they can quickly make a purchase decision. In addition, consumers will be more willing to stay in the live broadcast for a long time in order to further communicate and interact with the anchor and other consumers, enhance the emotional connection with them, thus creating a stronger user stickiness to the live broadcast, and in the process of watching the live broadcast of e-commerce to learn about the product information and listen to the anchor's recommendations and the evaluation of other consumers, which will increase the probability of purchasing the products sold in the live broadcast.

Second, immersion experience plays a mediating role in the influence of social presence on consumer purchase intention. According to the cognitive-emotional system

theory, in the e-commerce live broadcast situation, the communication and interaction between consumers and anchors and other consumers in the e-commerce live broadcast make consumers produce a high level of social presence, feeling the significant interpersonal relationship between themselves and others, this external stimulus awakens the consumers‘ cognitive response and produces positive cognition, and the positive cognition awakens the consumers’ affective response, which makes consumers produce a positive emotion such as immersion experience. At this point, consumers will be more immersed in the live broadcast, spend more time to stay and more actively respond to the recommendations of the anchor and other consumers, their communication and interaction, so as to produce a stronger consumer purchase intention for their recommended products.

Third, cognitive closure need plays a moderating role in the positive effect of immersion experience on consumer purchase intention. Specifically in the e-commerce live situation, in the first stage of cognitive closure needs social presence makes consumers have a sense of trust in the anchor, immersion experience makes consumers feel the virtual environment that the e-commerce live room to bring a sense of companionship and enjoyment, and e-commerce live compared to offline shopping, high uncertainty, the situation is more ambiguous, so that high level of cognitive closure in the face of the e-commerce live more inclined to listen to the anchor and other The high level of cognitive closure is more inclined to listen to the implied recommendations of the anchor and other consumers when facing live e-commerce, in order to make a quick purchase decision to eliminate this uncertainty and ambiguity, so when they face the anchor's recommendation, they will choose to want to buy it without thinking too much. In the second stage, those with high cognitive closure need will stick to their judgement in the first stage, because they are more closed and less receptive to new information, so even if there is new information proving that the product is not worth buying or that there are problems with the live broadcasting room, they will not change their stance and will still choose to buy. Therefore, the positive effect of immersion experience on consumer purchase intention is stronger under the regulation of cognitive closure need.

5.2 Recommendation for Future Study

This study has certain limitations and shortcomings. Firstly, the respondents were primarily concentrated among students and company employees, with the majority aged between 19 and 29. However, as live e-commerce continues to evolve, there is an increasing need to include consumers from other professions and age groups. Secondly,

this study did not differentiate between types of live streams or categories of products and services, instead providing a general measurement of all live streaming scenarios. Thirdly, the study did not explore the antecedents of social presence and the need for cognitive closure, leaving room for further research on how to specifically enhance levels of social presence and consumers' need for cognitive closure. In future research, it would be beneficial to increase the sample size, broaden the scope of sample selection to include multiple professions and age groups, and incorporate measurements of the types of live streams watched and the categories of products or services purchased. This would help determine whether the findings of this study apply across different types of live streams and various product or service categories. Additionally, a more in-depth exploration of the antecedents influencing social presence and the need for cognitive closure could be conducted to identify effective methods for enhancing these levels in the context of live e-commerce.

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Appendix

Dear Sir/Madam,

Thank you for taking the time to participate in this survey. This questionnaire aims to collect data for research on how social presence in e-commerce livestreaming affects consumer purchase intentions. Your responses are valuable to our study, and the data collected will be used solely for academic purposes, with full anonymity ensured. Please feel free to answer honestly. Thank you again for your participation!

Question Options

1. Have you ever shopped through e-commerce livestreaming? ○ Yes ○ No

2. How frequently do you shop through e-commerce livestreaming? ○ Less than 2 times per month ○ 3–5 times per month ○ 5–10 times per month ○ More than 10 times per month

3. Which e-commerce livestreaming platforms do you frequently use for shopping? (Multiple) □ Taobao Live □ Pinduoduo Live □ Douyin Live □ Kuaishou Live □ Xiaohongshu Live □ JD Live □ Suning Live □ Others...

4. Social Presence in Livestreaming (Matrix Scale)

Please evaluate the extent to which you agree with the following statements based on your livestream viewing experiences.

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I can perceive the presence of the host and other users in the livestream.	○	○	○	○	○
2. The host and other users in the livestream can perceive my presence.	○	○	○	○	○
3. I closely follow the behavior of the host and other users in the livestream.	○	○	○	○	○
4. The behavior of the host and other users in the livestream influences my emotions.	○	○	○	○	○
5. My participation influences the host and other users in the livestream.	○	○	○	○	○
6. The emotional state of the host and other users in the livestream affects me.	○	○	○	○	○
7. Through livestreaming and interactions, I can understand the host and other users.	○	○	○	○	○

8. The host and other users in the livestream can understand me through interactions. ○ ○ ○ ○ ○

9. Livestreaming and interactions help improve mutual understanding and communication. ○ ○ ○ ○ ○ ○

5. Immersion Experience in Livestreaming (Matrix Scale)

Please evaluate the extent to which you agree with the following statements based on your livestream viewing experiences.

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I feel very enjoyable when watching livestreams.	○	○	○	○	○
2. I am fully engaged when watching livestreams and dislike being disturbed.	○	○	○	○	○
3. Time flies quickly when I watch livestreams.	○	○	○	○	○
4. Watching or interacting in livestreams is fun for me.	○	○	○	○	○
5. Watching or interacting in livestreams gives me a sense of fulfillment and satisfaction.	○	○	○	○	○

6. Purchase Intention in Livestreaming (Matrix Scale)

Please evaluate the extent to which you agree with the following statements based on your livestream viewing experiences.

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I am willing to browse for a longer time in this livestream.	○	○	○	○	○
2. I am willing to spend more in this livestream.	○	○	○	○	○
3. I will shop in this livestream again in the future.	○	○	○	○	○
4. I prefer this livestream over similar ones.	○	○	○	○	○
5. I would recommend this livestream to others.	○	○	○	○	○

7. Need for Cognitive Closure (Matrix Scale)

Please evaluate the extent to which you agree with the following statements.

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Clear rules and structure are necessary for success at work.	○	○	○	○	○
2. I dislike uncertain situations.	○	○	○	○	○
3. I dislike questions with multiple answers.	○	○	○	○	○
4. I enjoy having unpredictable friends.*	○	○	○	○	○
5. I prefer dining at familiar places to feel assured.	○	○	○	○	○
6. I hate changing plans at the last minute.	○	○	○	○	○

7. I find it hard to decide what I really want when shopping.* ○ ○ ○ ○ ○

8. I make important decisions quickly and confidently.○ ○ ○ ○ ○

9. I always find multiple solutions to the problems I face.* ○ ○ ○ ○ ○

Demographics

Question Options

8. Your gender: ○ Male ○ Female

9. Your age: ○ Below 19 ○ 19–29 ○ 30–39 ○ 40–49 ○ Above 49

10. Your education level: ○ High school or below ○ Associate degree ○ Bachelor's degree ○ Master's degree or above

11. Your occupation: ○ Student ○ School staff ○ Corporate employee ○ Government employee ○ Freelancer ○ Other