



**ELABORATION LIKELIHOOD MODEL PERSPECTIVE ON MILLENNIAL
LIVE STREAMING BUYERS' IMPULSIVE BUYING TENDENCY**

By

LUO XI

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

June 2023

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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Chair : Jacky Cheah Jun-Hwa, PhD
School : Business and Economics

Accelerated by the COVID-19 pandemic, an increasing number of retailers are shifting away from physical stores to digital shopping. In e-commerce, product presentation has shifted from basic textual or graphical descriptions to the adoption of live streaming (i.e., real-time video). Due to the experiential, engaging, and persuasive nature of live streaming shopping, increasing e-retailers adopted live-streaming as a competitive advantage to boost sales. Nielson's survey shows that 82% of customers have unplanned purchase experiences in broadcasting rooms with 61% of customers being persuaded by streamers' recommendations. However, streamers' performances are varied; not all streamers are able to deliver persuasive content and increase sales through live streaming, which exposes important live streaming challenges. Existing literature mainly focused on the customer or platform's perspective to identify the drivers of impulsive buying tendency, which is not enough to understand customers' impulsive purchase intention in a persuasive communication context.

To address this issue, this research aims to bridge the gap in the existing literature by investigating the various information cues in the environment that influence Chinese Millennial shoppers' impulsive purchase in live streaming shopping. Firstly, underpinned by the Elaboration Likelihood Model (ELM), the central route is related to customers' cognitive processing of information conveyed by streamers, while the peripheral route is related to customers' emotional processing of cues signalled by co-viewers. Thus, streamers' information quality, interaction quality and credibility were adopted as central route factors, while review consistency and resonant contagion were chosen as peripheral route factors that facilitate customers' impulsive purchase decisions. Secondly, the Stimulus-Organism-Response (S-O-R) model was applied to explain the mediating role of customer engagement. Lastly, the acquisition-transaction utility theory (ATUT) was used to explain the moderating effect of deal proneness on the relationship between central route elements and customer engagement; the social exchange theory (SET) was used to explain the moderating effect of guanxi orientation on the relationship between peripheral route elements and customer engagement; the

social response theory (SRT) was used to explain the moderating effect of frugality on the relationship between customer engagement and impulsive buying tendency. In terms of data collection, an online questionnaire was designed using Wenjuanxing and was distributed to target respondents from June to August 2022. Purposive and quota sampling were used to select the respondents where they must be Millennials (born between 1981 and 2000), have live streaming shopping experience within the last two months, and live in Beijing, Shanghai, or Guangzhou. Finally, a total of 735 valid responses were collected using Structural Equation Modelling Partial Least Squares (SEM-PLS) for data analysis.

The findings showed that customers' processing of three central information (i.e., information quality, interaction quality and streamer credibility) and one peripheral cue (i.e., review consistency) significantly influenced Millennials' engagement and impulsive buying tendency. Second, customer engagement was identified as a key mediator between ELM elements and impulsive buying tendency. Thirdly, deal-prone customers tended to put more emphasis on central information processing while guanxi-oriented customers were more likely to focus on peripheral route information processing. Moreover, Millennial customers with high frugality were less likely to make unplanned purchases. In essence, this study provides e-retailers with useful insights on the way to strengthen customer dual-route information processing in facilitating their impulsive purchase decisions. Despite these interesting findings, this study also has several limitations, for example, this study only focused on China and did not differentiate streamer types. Thus, future studies may conduct cross-country research and explore the impacts of different types of streamers in triggering customers' impulsive purchase decisions.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**PENGHURAIAN KEBARANGKALIAN MODEL PERSPEKTIF TERHADAP
PEMBELI MILENIAL PENSTRIMAN SIARAN LANGSUNG
KECENDERONGAN PEMBELIAN IMPULSIF**

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Disebabkan oleh pandemik COVID-19, semakin banyak peruncit beralih daripada kedai fizikal kepada membeli-belah di dunia digital. Di dalam e-dagang, persembahan produk telah beralih daripada penerangan tekstual atau grafik asas kepada penggunaan penstriman langsung (iaitu, video masa nyata). Disebabkan sifat membeli-belah penstriman langsung yang berpengalaman, menarik dan menyakinkan, terdapat peningkatan e-peruncit menggunakan penstriman langsung sebagai suatu kelebihan daya saing untuk meningkatkan jualan. Tinjauan Nielson menunjukkan bahawa 82% pelanggan mempunyai pengalaman pembelian yang tidak dirancang didalam bilik penyiaran dengan 61% pelanggan dipujuk oleh rekomendasi streamer. Walau bagaimanapun, persembahan streamer adalah berbeza-beza dan tidak semua penstriman dapat menyampaikan kandungan yang meyakinkan dan meningkatkan jualan melalui penstriman langsung lalu mendedahkan cabaran penstriman langsung yang penting. Sastera sedia ada tertumpu terutamanya pada perspektif pelanggan atau platform untuk mengenal pasti pemacu kecenderungan pembelian impulsif yang tidak mencukupi untuk memahami niat pembelian impulsif pelanggan dalam konteks komunikasi yang meyakinkan.

Dalam menangani masalah ini, kajian ini bertujuan untuk merapatkan jurang dalam kesusasteraan sedia ada dengan menyiasat pelbagai isyarat maklumat dalam persekitaran yang mempengaruhi pembelian impulsif pembeli Milenium Cina dalam membeli-belah penstriman langsung. Pertama, bersandarkan kepada Model Kebarangkalian Penghuraian (ELM), laluan pusat adalah berkaitan dengan pemprosesan kognitif pelanggan maklumat yang disampaikan oleh penstrim, manakala laluan persisian berkaitan dengan pemprosesan emosi pelanggan bagi isyarat yang diisyaratkan oleh penonton bersama. Oleh itu, kualiti maklumat, kualiti interaksi dan kredibiliti streamer telah diterima pakai sebagai faktor laluan pusat, manakala konsistensi semakan dan penularan resonans dipilih sebagai faktor laluan persisian yang memudahkan keputusan pembelian impulsif pelanggan. Kedua, model Rangsangan-Organisme-Tindakbalas (S-

O-R) digunakan untuk menjelaskan peranan pengantara penglibatan pelanggan. Akhir sekali, teori utiliti urus niaga perolehan (ATUT) digunakan untuk menerangkan kesan penyederhanaan kecenderungan urus niaga ke atas hubungan antara elemen laluan pusat dan penglibatan pelanggan; teori pertukaran sosial (SET) digunakan untuk menjelaskan kesan penyederhanaan orientasi guanxi terhadap hubungan antara elemen laluan persisian dan penglibatan pelanggan; teori tindak balas sosial (SRT) digunakan untuk menjelaskan kesan penyederhanaan berjimat cermat terhadap hubungan antara penglibatan pelanggan dan kecenderungan membeli impulsif. Dari segi pengumpulan data, soal selidik dalam talian direka bentuk menggunakan Wenjuanxing dan diedarkan kepada responden sasaran dari bulan Jun hingga Ogos 2022. Persampelan bertujuan dan kuota digunakan untuk memilih responden di mana mereka mestilah Milenium (lahir antara 1981 dan 2000), mempunyai hidup penstriman pengalaman membeli-belah dalam tempoh dua bulan lalu, dan tinggal di Beijing, Shanghai atau Guangzhou. Akhir sekali, sejumlah 735 respons sah telah dikumpul menggunakan Pemodelan Persamaan Struktur Separa Kuasa Dua Terkecil (PLS-SEM) untuk analisis data.

Penemuan mendedahkan bahawa pemprosesan tiga maklumat utama pelanggan (iaitu, kualiti maklumat, kualiti interaksi dan kredibiliti penstrim) dan satu isyarat persisian (iaitu, konsistensi semakan) secara signifikan mempengaruhi penglibatan Milenial dan kecenderungan pembelian impulsif. Kedua, penglibatan pelanggan dikenal pasti sebagai pengantara utama antara elemen ELM dan kecenderungan pembelian impulsif. Ketiga, pelanggan yang terdedah kepada urus niaga cenderung untuk memberi lebih penekanan pada pemprosesan maklumat pusat manakala pelanggan yang berorientasikan guanxi lebih cenderung menumpukan pada pemprosesan maklumat laluan persisian. Lebih-lebih lagi, pelanggan Milenium mempunyai jimat cermat yang tinggi lebih berkemungkinan untuk membuat pembelian yang tidak dirancang. Pada dasarnya, kajian ini menyediakan e-peruncit dengan pandangan berguna tentang cara untuk mengukuhkan pemprosesan maklumat dwi-laluan pelanggan dalam memudahkan keputusan pembelian impulsif mereka. Dibalik dapatan yang menarik, kajian ini juga mempunyai beberapa batasan, antaranya, kajian ini hanya tertumpu kepada negara China dan tidak membezakan jenis-jenis streamer. Oleh itu, kajian masa depan disarankan untuk menjalankan penyelidikan merentas negara dan meneroka kesan pelbagai jenis streamer dalam mencetuskan keputusan pembelian impulsif pelanggan.

ACKNOWLEDGEMENTS

I would like to take this opportunity to extend my sincere gratitude to the individuals who have played a pivotal role in the successful completion of my doctoral journey.

First and foremost, I am deeply thankful to my main supervisor, Dr. Cheah Jun-Hwa (Jacky). Your unwavering guidance, boundless expertise, and unflagging support have been the cornerstones of my research. Your mentorship has not only enriched my academic experience but also shaped me into a better researcher. I am truly fortunate to have had the privilege of working under your supervision.

I also want to express my heartfelt appreciation to my co-supervisor, Dr. Ng Siew Imm (Serene). Your valuable insights, constructive feedback, and dedication to my research have been invaluable. Your mentorship and collaborative spirit have contributed significantly to the depth and quality of this thesis.

Furthermore, I extend my gratitude to Dr. Lim Xin-Jean for her contributions to my academic journey. Your mentorship and scholarly guidance have broadened my horizons and enriched my research perspective. Your keen insights and meticulous comments on the proposed framework not only strengthened the academic rigor of this work but also deepened my understanding of the subject matter.

I would also like to acknowledge the support of my friends, and fellow students who have been a source of inspiration and encouragement throughout this endeavor. Your camaraderie has made the academic journey all the more rewarding.

To my family, especially my husband, Cao Yangfan, whose unwavering belief in my abilities has been my pillar of strength, I am eternally thankful. Your support and love have sustained me through the challenges of this journey.

Finally, I express my deepest appreciation to all the participants who generously shared their time and insights for my research. Your contributions have been instrumental in shaping the outcomes of this study.

This thesis represents the collective effort of many, and I am profoundly grateful for each and every contribution. While words may fall short in capturing the depth of my gratitude, please accept my heartfelt thanks.

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

AFE	Affective Engagement
ATT	Attractiveness
ATUT	Acquisition-Transaction Utility Theory
AVE	Average Variance Extracted
BEE	Behavioral Engagement
BEL	Believability
BPNT	Basic Psychological Needs Theory
CB	Covariance-Based
CET	Cognitive Evaluation Theory
CI	Confidence Interval
CMB	Common Method Bias
CMV	Common Methods Variance
COE	Cognitive Engagement
CR	Composite Reliability
DP	Deal Proneness
ELM	Elaboration Likelihood Model
EMP	Empathy
EXP	Expertise
f^2	Effect Size
FC	Full Collinearity
FRU	Frugality
GMV	Gross Merchandise Volume
GO	Guanxi Orientation
HCI	Human-Computer Interaction

HCMs	Hierarchical Component Models
HOCs	Higher-Order Constructs
HTMT	Heterotrait-Monotrait Ratio of Correlations
IBT	Impulsive Buying Tendency
LM	Linear Model
LOCs	Low-order Constructs
MAE	Mean Absolute Error
N	Number
OIT	Organismic Integration Theory
PLS	Partial Least Square
POEs	Privately-Owned Enterprises
Q ²	Predictive Relevance
R ²	Coefficient of Determination
RCN	Review Consistency
RCT	Resonant Contagion
RES	Responsiveness
RMSE	Root Mean Square Error
RTI	Real-Time Interaction
SD	Standard Deviation
SDT	Self-Determination Theory
SEM	Structural Equation Modelling
SET	Social Exchange Theory
SOE	Social Engagement
SOEs	State-Owned Enterprises
S-O-R	Stimulus-Organism-Response

SPSS	Statistical Package for Social Science software
SRT	Social Response Theory
TRU	Trustworthiness
UGT	Uses and Gratification Theory
USE	Usefulness
VIF	Variance Inflation Factor
VIV	Vividness
α	Cronbach Alpha
β	Beta



CHAPTER 1

INTRODUCTION

1.1 Introduction

This study aims to explain how Millennials process persuasive information to make a spontaneous purchase decision on live streaming commerce platforms. Chapter One begins by presenting the evolution of e-commerce. The following section delivers an overview of live streaming commerce in the China market. Then, based on the problem statement, the research questions and objectives are generated, followed by an explanation of the study's significance. Lastly, the definition of the terms and organisation of the thesis are delivered.

1.2 Evolution of E-commerce

The evolution of electronic commerce (e-commerce) is highly related to the advancement of information technology. Improvements in transmission, processing, and storage technologies have vastly improved communication effectiveness in terms of presentation forms, information availability, and information timeliness (Molla and Licker, 2001). Since the development of the Internet in the 1990s, a wide range of business opportunities with technologies have been utilised by companies and buyers (Tian and Stewart, 2006). After recognising information technology's potential, more and more business operators have begun to adopt it to communicate with their customers. This initially began with a display of basic product information, which was then upgraded to receive orders and deliver goods or services via information technology. Finally, as the digital world evolved, e-commerce became ideal for the reception and execution of business transactions (Dos Santos et al., 2017).

E-commerce has been developed since the 1990s. The early definition of e-commerce is "the transaction of goods or services by means of communication and information technology" (Tian and Stewart, 2006). E-commerce has become a new platform that attracts numerous small vendors to start their business online; meanwhile, customers also gain convenience as they can utilise e-commerce platforms to conduct transactions without leaving their homes to perform tasks from shopping to paying bills (Weathers et al., 2007). This could be done at any time, including weekends and holidays. In traditional e-commerce, customers can retrieve basic product information through pictures and text (Dos Santos et al., 2017). However, basic product information alone is sometimes insufficient for customers to make a purchase decision as they cannot experience products when they shop online, which produces adverse effects of product uncertainty (Weathers et al., 2007; Kim and Krishnan, 2015). To reduce product uncertainty, some shopping sites apply specific techniques (e.g., live chat) to assist customers by providing more product information in one-to-one conversations (Lv et al., 2018). However, throughout the communication, information about the identities of clients and sellers are restricted under the condition of anonymity (Rotman, 2010,

Wongkitrungrueng et al., 2020). In traditional e-commerce, a lack of personal and social signs such as emotions, facial expressions, and body language are also connected to lack of trust and commitment (Lu et al., 2016; Clement et al., 2021).

In the early to mid-2000s, commercial applications of web 2.0 (Participatory or Social Web) brought in social commerce (s-commerce); a new form of e-commerce that encompasses social networking systems and social software tools that support social interaction among users and facilitate user-generated contents (Kim and Park 2013; Aydin, 2019; Chocarro et al., 2021). In comparison to e-commerce, s-commerce marks a significant shift away from anonymity and impersonality towards transparency and disclosure (Lee, 2015). It revolutionised e-commerce with new features for users to utilise, such as recommendation lists, likes, comments, ratings and sharing abilities (Turban et al., 2010; Clement et al., 2021). Therefore, s-commerce became an ideal platform for information transmission and socialisation, thereby boosting the online transaction of sales (Lim et al., 2019). However, s-commerce still has limitations. It lacks the presence of human-human interactions to some level due to the advent of avatars that resemble human behaviour (Huang and Benyoucef, 2013). Besides that, only text, photos, or videos can be used to display product information in social commerce (Wongkitrungrueng et al., 2020).

In recent years, live streaming commerce has become increasingly popular, which is a new form of e-commerce (or s-commerce) that is embedded with real-time social interaction (Cai and Wohn, 2019; Wongkitrungrueng, Dehouche, and Assarut, 2020). Due to the popularity of this novel technology, many vendors on traditional e-commerce platforms or s-commerce platforms have adopted live streaming as a tool to gain competitive advantages and improve sales performance (Sun et al., 2019; Clement et al., 2021). Compared with traditional e-commerce and s-commerce, live streaming commerce provides a synchronous environment that supports real-time computer-mediated communication between customer-streamer as well as customer-customer (Gong et al. 2020; Hilvert-Bruce et al., 2018). Live streaming commerce has transformed customers' shopping experiences via three unique characteristics. First, it focuses more on experiential consumption instead of functional consumption. Customers can easily experience a state of pleasure as a result of an immersive shopping experience, and their pleasure will directly impact their purchasing behaviour (Sun et al., 2019). Secondly, it applies a more engaging and user-centric business mode rather than a product-centric business mode. Unlike traditional e-commerce platforms, where customers need to consume text or graphic information about products, live streamers will introduce products more vividly and customise information for different customers through real-time interaction (Clement et al., 2021). Live streaming provides the advantages of multi-scene, fragmented time, and mobile network environment optimisation, which means that streamers can do live streaming without geographic and time restrictions (Zhang, 2021). Besides that, live streaming commerce shares some similarities and differences with traditional electronic commerce and social commerce as summarised in Table 1.1,

Three types of e-commerce are different in terms of development time, way of communication and interaction, ease of product evaluation, and service personnel (Wongkitrungrueng et al., 2020). Firstly, e-commerce began to evolve in the early 2000s, followed by the emergence of social commerce in the mid-2000s, and live streaming

commerce made its debut starting in 2017. Secondly, both e-commerce and social commerce rely on written text-based communication, whereas live streaming commerce utilizes face-to-text communication. In traditional e-commerce platforms, buyers can engage in limited verbal or nonverbal interactions (e.g., emojis) through live chat (e.g., Ali Wangwang) (Lv et al., 2018). On social commerce platforms, user-generated content such as likes, comments, and sharing within social networking sites enhances the communication environment, increasing the level of entertainment and interaction (Chen et al., 2018a). However, in comparison to the asynchronous communication found in the first two types of e-commerce, live streaming commerce facilitates real-time communication between users and streamers, even when they are physically distant from each other (Chen and Lin, 2018). Regarding the ease of assessing products, live streaming shopping offers the advantage of streamers presenting viewers with tangible product details in real-time. This enhances the richness and reliability of the product information. Additionally, when viewers actively engage in live streaming shopping to gather product insights, they experience a sense of immersion (Sun et al., 2019). In contrast, within e-commerce and social commerce, product evaluation is more challenging because customers typically rely on static product images, which sellers can manipulate (Dos Santos et al., 2017). Lastly, in e-commerce and social commerce, there's often a restricted availability of information concerning the identity of the seller, and it's plausible that automated systems, such as chatbots, may be handling customer inquiries (Rotman, 2010). In contrast, in the realm of live streaming shopping, the service personnel are genuine individuals. Consequently, viewers experience a more personal and familiar interaction, akin to conversing with a close friend (Quan et al., 2020; Xu et al., 2020).

Table 1.1: Comparison of live streaming commerce with e-commerce and s-commerce

	E-commerce	Social commerce	Live-streaming commerce
Time period	1990s	2000s	Late 2000s
Way of Communication	• Text-to-text written communication. (e.g., chat with words and emoji)	Text-to-text written communication. (e.g., subscribe, likes, comments, sharing)	Face-to-text communication (e.g., subscribe, like, sharing, instant message)
Way of Interaction	• One to one • Asynchrony	• One to many • Asynchrony	• One to many • Synchrony
Ease of Product Evaluation	Difficult, sellers can edit photos.	Quite difficult, sellers can edit photos.	Easier, product displayed in real-time, streamers' guidance shopping
Service Personnel	Robots or real person reply, information about the seller's identity is limited.	Robots or real person reply, information about the seller's identity is limited	The real person or virtual influencer, identity of the sellers can be seen via real-time interaction

(Source: Lv et al., 2018; Wongkitrungrueng et al., 2020; Chen and Lin, 2018; Chen et al., 2018a; Sun et al., 2019; Rotman, 2010; Quan et al., 2020; Xu et al., 2020)

1.3 Overview of Live Streaming Commerce in China Market

1.3.1 Live Streaming Commerce Market Value and Customer Profile

In recent years, especially since the COVID-19 pandemic, the live streaming commerce industry has grown at an unparalleled rate (Sun et al., 2019). According to an industry report, live streaming commerce took less than five years to develop into an innovative sales channel, and the total market value of China's live streaming commerce market grew at a compound annual growth rate of more than 280% between 2017 and 2020 (McKinsey Digital, 2021). The market size of live streaming commerce soared from 120 billion yuan in 2018 to 2.27 trillion yuan in 2021 (see Figure 1.1). Besides that, it is predicted that the market value of the live streaming commerce industry in China will reach 4.9 trillion yuan by 2023 (Statista, 2022 November).

According to the *Statistical Report on China's Internet Development*, China has 617 million live streaming users, which accounts for 62.4% of the total internet user population as of December 2020 (CNNIC, 2021). Among live streaming users, Millennial shoppers (i.e., people born between 1981 and 2000) form the core consumer group, accounting for over 80% (Taobangdan and Taobao Live Streaming, 2020; Forword, 2021). Besides that, women are the leading user group, accounting for over 60% (Taobangdan and Taobao Live Streaming, 2020). During the period of quarantine, live streaming commerce has undoubtedly changed public consumption patterns. Statistics show that 66.2% of live streaming commerce users shop at least once via the platform, and 17.8% spend more than one-third of their total expenses shopping online via live streaming platforms (CNNIC, 2021).

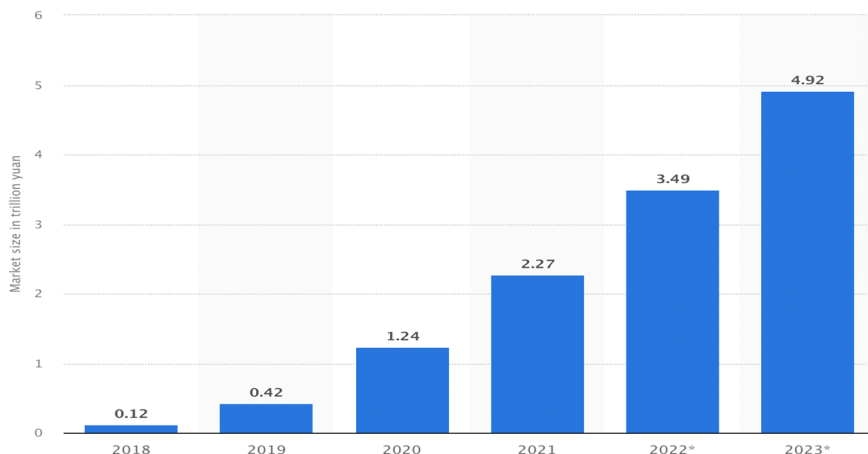


Figure 1.1: Market size of live streaming commerce in China from 2018 to 2021 with an estimate for 2023

(Source: Statista, 2022 November)

1.3.2 Live streaming shopping platforms

According to Statista (2021 November), the top ten most well-known live streaming commerce platforms in China are Taobao, Douyin (Chinese Tik-Tok), Kuaishou, JD.com, Pinduoduo, Little Red Book, Vip.com, Mogujie, Douyu, and Huya (Figure 1.2). Taobao and Douyin are the two most popular live streaming shopping platforms, with around 77 percent of respondents having heard about Taobao Live, followed by Douyin Live with 67 percent of respondents knowing about it. Based on its definition (Wongkitrungrueng and Assarut, 2020), live streaming commerce is a hybrid of social media and e-commerce that incorporates real-time social interaction into e-commerce. Thus, it typically takes place in three types of channels: 1) e-commerce sites integrating live streaming features (Taobao, JD.com); 2) social networking sites (SNSs) that add live streaming features to facilitate selling (e.g., Douyin, Kuaishou); and 3) live streaming platforms incorporating commercial activities (e.g., Douyu, Huya). Taobao Live and Douyin Live are the two most popular live streaming commerce platforms in China, representing the first two types of live streaming commerce. The following subsections will introduce the two platforms in detail.

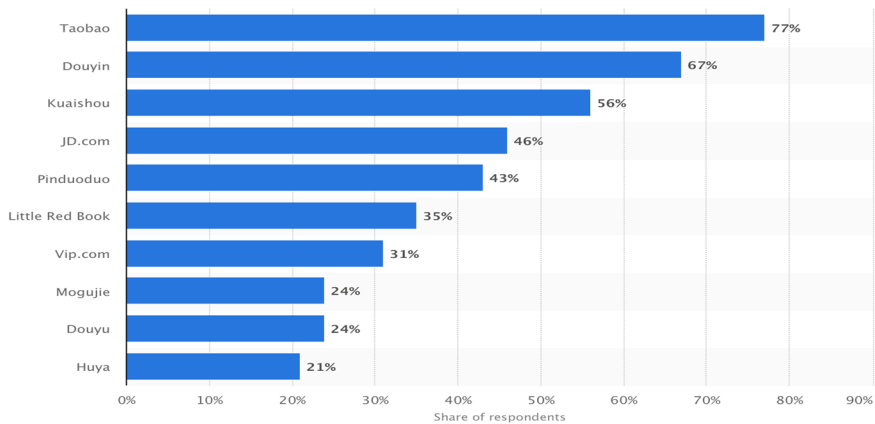


Figure 1.2: Most known live streaming commerce platforms in China 2020

[Source: Statista, 2021 November]

1.3.2.1 Taobao Live

Taobao, an e-commerce giant, is representative of the successful transformation of traditional e-commerce platforms. In May 2016, Taobao opened its live streaming platform (i.e., Taobao Live) and quickly occupied a leading position in the live streaming commerce industry for the next few years (iResearch, 2019). Its first rapid growth began in 2018, where Taobao Live's annual gross merchandise volume (GMV) exceeded 100 billion RMB (nearly 400% growth from the previous year) where the GMV generated by Taobao Live accounted for 70% of the total GMV (iResearch, 2019). In 2020, during the Singles' Day shopping festival (from 1 to 11 November), the number of broadcasting

rooms on Taobao Live ballooned by 220% year-on-year (Taobangdan and Taobao Live Streaming, 2020). On Singles' Day (November 11), Taobao Live hit 498.2 billion RMB (around 74.10 billion U.S. dollars) in GMV (People's Daily Online, 2020 November). The business relies on its efficient platform governance capability and huge existing user population, Taobao Live currently occupies more than 70% of the market share in China (Pandaily, 2020).

1.3.2.2 Douyin Live

Based on the classification mentioned above, Douyin (Chinese version of TikTok) can be defined as a kind of social platform that adds live streaming features to facilitate selling (Li, 2021). Originally, Douyin was a short video-sharing platform founded in 2016 (Li et al., 2020; Masciantonio et al., 2021). With its innovative and entertaining features, Douyin has attracted many users and has become one of the most downloaded applications worldwide (Ma and Hu, 2021). Douyin transformed from a social platform to a live streaming commerce platform in two stages. In the initial stage, due to the lack of an e-commerce platform, Douyin partnered with Taobao to launch a shopping feature and facilitate the redirection of Taobao purchasing links. Due to its powerful AI-based recommendation engine in attracting new potential customers, Douyin drove huge traffic to Taobao; meanwhile, Douyin's commercial activities relied heavily on Taobao's supply chain (Ma and Hu, 2021). Thus, in the second stage (i.e., around August 2020), Douyin began to build its e-commerce ecosystem and cut its tie with third parties. Douyin stopped embedding external links on live streaming and encouraged e-retailers to use its in-house stores, which allowed customers to complete transactions without leaving the platform (Ryu, 2022). To date, according to a report from Everbright (a financial services firm in China), Douyin takes second place in China's live streaming commerce industry with 13% of the total market value (Pandaily, 2020).

1.3.3 Live streaming celebrities

A growing number of retailers are recognising the business potential in the live streaming commerce industry and have begun to use the platforms as a new interactive direct selling channel. According to China's live streaming commerce industry report in 2021, the most often displayed product categories in live streaming events include apparel, beauty, food, electronic products, home decoration and textile, baby products, and accessories. These items range from Fast-Moving Customer Goods to daily necessities, which attract massive users from different age groups. Consequently, more merchants are resorting to live streaming platforms to boost their sales, and several well-known live streaming superstars, such as Li Jiaqi, have found success. For example, Li Jiaqi, 'the Lipstick King', was designated one of Forbes' top 50 Chinese opinion leaders in 2019. He is famous for selling beauty goods on Douyin Live, with almost 40 million followers, solidifying him as the most well-known KOL in China. (Ma, 2021).

Many e-vendors have also adopted live streaming to improve sales performance in China, however, they experience different levels of success with this medium; not all e-vendors can be as successful as Li Jiaqi. According to the China Network Performance

(Live) Industry Development Report in 2020, the number of anchor accounts in China's live streaming industry exceeded 130 million by the end of 2020, with a daily peak of 43,000 new anchors. In terms of age distribution, the anchors between the age of 24 and 30 accounted for approximately 40% of all the anchors. In terms of geographical distribution, anchors are mainly concentrated in first, second and third-tier cities. Most anchors earn between RMB 3,000 to RMB 5,000 per month (Fubaore, 2021).

1.4 Problem Statement

Live streaming commerce has developed rapidly in China since 2017, and its market size kept increasing from 0.019 trillion yuan in 2017 to 3.49 trillion yuan in 2022 (Statista, March 2023). Given these promising figures in the live streaming commerce market, many e-retailers have adopted live streaming as a tool to expand their online marketplace and gain a competitive advantage (Sun et al., 2019). One interesting market phenomenon that can be observed is that many customers make impulsive purchases when shopping on live streaming platforms. According to a Nielson survey in 2020, 82% of respondents made unplanned purchases, with 61% of those purchases driven by streamers' recommendations (Chen, 2020). This contrasts with the comparatively low purchase rates observed on traditional e-commerce platforms, and relatively few studies have delved into the reasons behind impulsive buying behavior in live streaming commerce.

Compared to traditional e-commerce, live streaming commerce provides a richer online shopping environment. On traditional e-commerce, products can only be demonstrated by image and text (Gao et al., 2021). By contrast, to provide consumers with more detailed product information, live streaming commerce allows streamers to display products in real-time, which helps to engage customers in a more immersive shopping experience (Hu and Chaudhry, 2020). Meanwhile, streamers can answer questions raised from co-viewers by the bullet screen (Zhang et al., 2020). With the aid of new technologies (real-time interaction, bullet screen), live streaming commerce offers a richer shopping experience that impacts consumers' psychological mechanism of impulsive buying and earns more sales revenue (Lu and Chen, 2020). From marketing perspective, streamers and co-viewers co-create a rapidly shopping atmosphere since streamers act as a central node of communication that connects all viewers in virtual community (Hu and Chaudhry, 2020). The customer who watches livestreaming shopping pays more attention to the immersive shopping experiences and then simultaneously places the order in broadcasting room (Fu and Hsu, 2023). However, the specific stimulus factors that influence customers' inclination toward impulsive buying during live streaming shopping remain unknown. To address this gap, this study aims to uncover the precursor elements that influence the psychological process of impulsive buying in the context of live streaming shopping.

From an academic perspective, research on live streaming commerce is still at an early stage (Sun et al., 2019). Existing literature has paid inadequate attention to customer purchase decision-making, particularly on how individuals change their convictions towards persuasive information that lead to unplanned purchases. For instance, early research has mainly focused on the message recipient (i.e., customer's perspectives), the individual's internal motivations (Chen and Lin, 2018; Lin et al., 2022), perceived values

(Wongkitrungrueng and Assarut, 2020; Xue and Liu, 2023), perceived benefits, and sacrifice (Yu and Zheng, 2022; Chen and Zhang, 2023), the motivations that influence their attitudes, trust, and their engagement with respect to entertainment or knowledge sharing purposes. Some researchers consider live streaming as a new technology that is applied in e-commerce/s-commerce; thus, they adopt different approaches and focus more on external factors such as technical characteristics (Sun et al., 2019; Liu and Yu, 2022) and socio-technical characteristics (Li et al., 2021; Ma et al., 2022). However, people's moods, talents, and motives change with time; consequently, the way they elaborate on the received message also varies (Gao et al., 2021; Lo et al., 2023). Also, individuals may not always perceive the complete message or thoroughly analyse and investigate all the contents (Shahab et al., 2021). There still lack of enough research on how various types of information cues facilitate information processing (high/low cognitive processing) in triggering impulsive purchase decisions.

By integrating Petty and Cacioppo's Elaboration Likelihood Model (ELM) with the Stimulus-Organism-Response (S-O-R) model, this study aims to examine how customers process streamer and co-viewers' informational cues (i.e., issues-related information and cue-based information) to engage in live streaming shopping and make an unplanned purchase. Specifically, this study proposes information quality, interaction quality, and streamer credibility as central route (i.e., issue-related) factors, and adopts review consistency and resonant contagion as peripheral factors (i.e., cue-based) that facilitate customers' impulsive purchase decisions. This is because streamers' information quality, service quality and reputation are important and unique factors that may greatly influence viewers' cognitive processing of information in decision-making (Xu et al., 2020; El Hedhli et al., 2021). Meanwhile, co-viewers' review and the atmosphere created in the shopping environment appear to be affective-related cues that trigger customers' positive emotion and impulsive purchase decision (Thomas et al., 2019; Hu et al., 2017).

Based on the above issues, the present research builds upon three literature gaps. Firstly, existing literature has paid little attention to the effectiveness of message processing on persuasion outcomes. The ELM not only introduces the dual-way persuasion process but also clarifies the conditions in which a message recipient's perception is more influenced by a particular route (Shahab et al., 2021). Hence, this research helps to identify live streaming-related cues that shape and persuade customers' succeeding behaviours under the condition of high or low cognition in terms of the information process. Based on the nature of the context, the model adds interaction quality and streamer credibility as new elements in the central route since real-time interaction is one of the unique characteristics of live streaming shopping (Brady and Cronin, 2001; Zhang et al., 2020), and streamer credibility is an important issue-relevant information (Chen and Lin, 2018; El Hedhli et al., 2021). Besides that, as suggested by Chen et al. (2020), the co-viewer is an essential part of creating a favourable atmosphere and rich heuristic cues in live streaming commerce. Thus, review consistency and resonant contagion are proposed as two new constructs in the peripheral route. Putting it all together, this study adopted central route factors (i.e., information quality, interaction quality, and streamer credibility) and peripheral route factors (i.e., review consistency and resonant contagion) as important cues that may contribute to better persuasion outcomes.

Secondly, existing researchers have paid less attention to the whole process of purchase decision-making. Most research merely examined the relationship between the factors that affect users' impulsive buying tendency, thereby underestimating the overall predictive power. The ELM model can be improved by including an engagement mechanism that helps to understand the customer's potential process of stimulating impulsive buying tendencies. Brodie et al. (2013) and Hollebeek et al. (2014) suggested that customer engagement has become increasingly crucial in virtual communities and that online communities serve as a tool to facilitate sales performance. According to a recent study (Danniswara et al., 2017), there is a favourable correlation between online environmental cues and consumers' purchase decision-making. By including customer engagement, this correlation may be further developed (Hollebeek and Macky, 2019; Viswanathan et al., 2017). In a service context, Ou et al. (2020) also showed that customer engagement may both directly and indirectly increase impulsive purchase behaviours. Moreover, the Stimulus-Organism-Response (S-O-R) model (Mehrabian and Russell, 1974) can be used to support this mechanism, particularly in developing the understanding of how central and peripheral information cues drive customer engagement and ultimately lead to customers' impulsive purchase intention.

Lastly, an important aspect of ELM is to explore potential moderators that facilitate the information process in dual routes. According to Petty and Cacioppo (1986), constructs that are related to an individual's motivation and ability to process information can be potential moderators. Thus, the model can be further explored by having moderators in the dual routes. Deal-prone customers are more likely to be involved in promotion or deal-related activities and perceive greater shopping value than others (Flacandji and Vlad, 2022; Lee, 2018). Besides that, due to promotional intensity, deal-prone customers are more motivated to search for promotion information and rationally analyse the information they possess to find the best deal (Volle, 2001). Since the central route is a more effortful processing of judgment-relevant information, deal proneness is proposed as a potential moderator that may facilitate central route information processing and lead to engagement behaviour. People with different levels of deal proneness may have different motivations to engage in shopping activities via central route information processing.

Besides, guanxi orientation can be defined as an individual's cognition of the importance towards the concept of the relationship with sellers/streamers, which is also a type of motivation that affects an individual's exerted efforts and succeeding behaviours in social interaction (Bin, 2003). People with different levels of guanxi orientation may have different motivations to share information with peers in virtual communities (Zhang and Zhang, 2014). In addition, guanxi-oriented customers have a higher likelihood to process heuristic cues from peers, and they are more likely to engage and influence others (Guo et al., 2021). In fact, the peripheral route is the less effortful process of heuristic cues. Therefore, this study proposed guanxi orientation as a moderator in the relationship between peripheral route factors and customer engagement.

Moreover, due to the worldwide economic downturn spurred by the COVID-19 pandemic, many customers have become more frugal, and some researchers have highlighted the need to explore the effects of frugality on customers' purchase decisions (Genoveva et al., 2021). Frugality is defined as "a unidimensional customer lifestyle trait

that contributes to customers' restraint in obtaining and resourcefulness in using economic products and services to attain longer-term goals" (DeYoung, 1986; Lastovicka et al., 1999). Customers who are frugal tend to limit their overall expenditures and avoid purchasing impulsively (Wakefield and Inman, 2003; Shin, 2022). Thus, frugality is proposed as a potential moderator that may inhibit customers' impulsive buying tendency in live streaming shopping.

In short, this study attempts to understand how live streaming shoppers process different information cues to make impulsive purchase decisions. Underpinned by the ELM model, central route elements (i.e., information quality, interaction quality and streamer credibility) and peripheral route elements (i.e., review consistency and resonant contagion) are proposed as predictors that influence customers' decision-making process, which has implications for small sellers to enhance the relationship quality and help them to better understand customer expectations for online products. Corresponding to the S-O-R model (Mehrabian and Russell, 1974), customer engagement is included as an internal mechanism in the whole decision-making process. Lastly, three moderators are examined in this study. Deal-proneness and guanxi orientation are constructed as moderators that may strengthen the central route and peripheral route information processing, respectively. The third moderator is frugality, which is suggested as a potential factor that weakens the relationship between customer engagement and impulsive buying tendency.

1.5 Research Questions

To address the research gaps mentioned in the preceding section, the focal research question of this study is to examine the determinants that affect customer impulsive buying tendency on live streaming commerce among Millennials in China. Hence, three specific research questions are addressed:

- i. Do central route factors (i.e., information quality, interaction quality, and streamer credibility) and peripheral route factors (i.e., review consistent and resonant contagion) affect customer engagement and impulsive buying tendency on live streaming commerce platforms?
- ii. Does customer engagement mediate the relationship between antecedents (both central and peripheral factors) and impulsive buying tendency on live streaming commerce platforms?
- iii. Does deal-proneness and guanxi orientation moderate the central and peripheral route information processing, and does customer frugality moderate the relationship between customer engagement and impulsive buying tendency on live streaming commerce platforms?

1.6 Research Objectives

Accordingly, the following objectives are designed:

- i. To evaluate the extent to which central route factors (i.e., information quality, interaction quality, and streamer credibility) and peripheral route factors (i.e., review consistent and resonant contagion) influence customer engagement and impulsive buying tendency on live streaming commerce platforms.
- ii. To examine the mediating role of customer engagement in the relationship between antecedents and impulsive buying tendency on live streaming commerce platforms.
- iii. To investigate the moderating role of deal proneness and guanxi orientation in central and peripheral route information processing, and the moderating role of frugality in the relationship between customer engagement and impulsive buying tendency on live streaming commerce platforms.

1.7 Significance of Study

1.7.1 Theoretical significance

This study adds value to academic perspectives threefold. First, the present study contributes to the existing literature by examining the effectiveness of persuasive messages on customer engagement and impulsive buying tendency. This study is a new attempt to extend the ELM model to explore new persuasion outcomes (i.e., impulsive buying tendency) as the ELM model originally highlights the effects of information processing on an individual's attitude change (Yang et al., 2006; Bhattacharjee and Sanford, 2006; Wang and Doong, 2010). To adapt the ELM model in this research, this study proposed information quality, interaction quality and streamer credibility as central route factors and adopted review consistency and resonant contagion as peripheral route factors based on the new context (i.e., live streaming shopping).

Secondly, this study improved the ELM model by incorporating the Stimulus-Organism-Response (S-O-R) model (Mehrabian and Russell, 1974) in understanding how the mechanism (i.e., customer engagement) may impact impulsive buying tendency. In this research, customer engagement was acknowledged as an essential proxy to explore customers' impulsive buying tendency (Prentice et al., 2019). The S-O-R model serves as a theoretical ground to support the understanding of the mechanism by which central and peripheral information cues drive customer engagement and ultimately lead to customer purchase intention.

Thirdly, this study explores the moderating impact of deal proneness on the effectiveness of the persuasive message in the central information processing route. Supported by

Acquisition-Transaction Utility Theory (ATUT), deal-prone customers may respond more favourably towards incentives given by streamers, which is an excellent criterion to determine whether a product will be purchased in a customer's purchase decision-making process. This study offers a deeper understanding of how deal proneness affects customers' cognitive processing in the live streaming commerce context. Besides that, this study offers novel insights for exploring the moderating impact of guanxi-based psychological predisposition on buyers' engagement behaviour in peripheral information processing routes. The guanxi orientation is an indigenous Chinese concept that has received little attention in existing literature. Supported by the Social Exchange Theory (SET), a reciprocal relationship is suggested as an important aspect of benefit in service exchange in a business context. This study thus offers a deeper understanding of the concept of guanxi orientation in the live streaming commerce context. Moreover, this study seeks to add value to the body of knowledge by providing empirical evidence in exploring how frugality affects impulsive buying tendency in the live streaming commerce context. Supported by the social response theory (SRT), frugal customers are more disciplined in their spending, and they are merely influenced by others in their decision-making process. Thus, the theory will offer a better explanation of how frugality weakens customer's impulsive buying tendency in the live streaming commerce context. As such, this study fills the existing literature gaps by proposing frugality as a potential moderator that facilitates or hinders the effect of persuasive messaging on purchase intention.

1.7.2 Practical significance

In terms of practical significance, this study can contribute beneficial insights to online commercial activities management by highlighting the effectiveness of individuals' cognitive process to central route factors and peripheral route factors. The study results may provide some guidance for retailers to design a compelling relationship management strategy and facilitate Millennial live streaming shoppers' impulsive buying tendency.

Secondly, the outcome of this study provides e-retailers in live streaming platforms with guidance on how to identify the way customers choose to elaborate on information and cues, thereby maximising the effectiveness of dual-route information processing that leads to purchase decisions among Millennial shoppers. Precisely, this study implies that e-retailers should endeavour to assess customers' level of deal proneness and guanxi orientation before deciding which influence strategy to pursue in the live streaming room. The research on deal proneness's moderating impacts provides a strong foundation for live streaming commerce business operators to adopt market segmentation strategies based on customer reaction disparities to promotions. Besides that, this study contributes to a better understanding of China's indigenous concept (i.e., guanxi) and has implications for worldwide organisational and management practices.

In the last practical lens, the research on frugality's moderating impact provides a strong foundation for live streaming commerce business operators to adopt market segmentation strategies based on customers' different levels of frugality. Since the global economic recession caused by the COVID-19 pandemic has compelled many customers to be increasingly frugal, the findings on frugality may also provide some insights for

government agencies (i.e., policymakers); for instance, they can have a deeper understanding of the impacts of different levels of frugality on their impulsive buying tendency, which also significantly influence economic consumption at a national level.

1.8 Definition of Terms

The definition for each of the constructs used throughout this study is presented in Table 1.4. Altogether, ten main constructs, namely information quality, interaction quality, streamer credibility, customer engagement, guanxi orientation, deal proneness, frugality, and impulsive buying tendency are highlighted.



Table 1.2: Definitions of the terms

No	Construct	Definition	Source
1	Information quality	The extent to which a customer views the information provided by the streamer. It includes information usefulness, believability (trustworthiness) and vividness.	Zhang et al. (2020)
2	Interaction quality	The extent to which a customer perceives the quality of interaction provided by the streamer. It includes real-time interaction, responsiveness, and empathy.	Zhang et al. (2020)
3	Streamer credibility	The source of the message (i.e., streamer) is perceived to be attractive, expert, and trustworthy.	El Hedhli, Zourrig and Becheur (2021)
4	Review consistency	The degree to which the content is consistent across different online reviews (bullet-screen comments) that discuss the same target.	Luo et al. (2015)
5	Resonant contagion	Viewers' behaviours have a reciprocal effect on one another.	Hu et al. (2017)
6	Customer engagement	"The emotional or psychological state of mind in which customers are invested with a focal object, which leads to the frequent interaction with that object beyond a simple transactional motive".	Brodie et al. (2011)
7	Guanxi Orientation	The degree to which people perceive the importance of guanxi that is reflected in their guanxi-oriented behaviour mode.	Zhang and Zhang (2014)
8	Deal Proneness	Deal proneness refers to customers' responsiveness to promotions and deals.	Lichtenstein et al. (1990)
9	Frugality	A unidimensional customer lifestyle trait is defined by customers' restraint in using or reusing possessed resources carefully to attain long-term goals.	Lastovicka et al. (1999)
10	Impulsive Purchase Tendency	"Customer's tendency to buy spontaneously, unreflectively, immediately and kinetically with no pre-shopping intentions either to buy the specific product category or to fulfil a specific buying task".	Beatty and Ferrell (1998)

1.9 Organisation of Thesis

There are six chapters in this thesis. In chapter one, the researcher reviewed the research background and the study's problem statement, followed by six research questions, six research objectives, as well as the significance of the study. In chapter two, the researcher presents a comprehensive review of the literature relating to the theories and earlier research in the context of live streaming commerce. The section is followed by reviewing the concept of central route factors (i.e., information quality, interaction quality, and streamer credibility), peripheral route factors (i.e., review consistency and resonant contagion), and customer engagement as well as the link between these concepts in live streaming commerce research. Besides that, this study also provides an in-depth review regarding the two moderators (i.e., deal proneness and guanxi orientation) in dual-route information processing and one moderator on impulsive buying tendency (i.e., frugality). Subsequently, this chapter was concluded by highlighting the research gaps in the existing literature. In chapter three, the researcher discusses the theoretical framework as well as the assumptions that were empirically tested. The fourth chapter concerns the research methodology, where the researcher outlines the research design, data collecting technique, and data analysis strategy employed in the present study. In chapter five, the findings and analysis are presented. Finally, in chapter six, the discussion, contributions (i.e., theoretical and managerial), and future research direction are concluded.

1.10 Conclusion

In summary, this study intends to analyse how Chinese Millennials process persuasive information via central route and peripheral routes to make an unplanned purchase intention in the live streaming commerce context. This chapter addressed the study background, problem statement, research objectives and questions, the significance of the study, as well as the definition of the terms. The next chapter examines the literature on customer purchase decision mechanisms in live streaming commerce as well as gaps in the research that remain unsolved.

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