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**Exploring consumers' serendipitous experiences in online
marketplaces: characteristics, development route and factors
influencing it**

By:

Xuanning Chen

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To my loving mother and father

ABSTRACT

This research aims to explore and understand the nature of serendipity within online marketplaces (i.e. e-commerce serendipity). The motivation for setting this aim stems from a recognised misalignment between the practical applications and theoretical explorations of e-commerce serendipity.

E-commerce consumers and practitioners acknowledge the practical value of serendipity. However, they lack a strong theoretical foundation to fully benefit from this phenomenon. In contrast, serendipity-focused studies, especially within information science, have not focused on e-commerce serendipity before and doubted the feasibility of consciously design serendipity. Thus, these studies have resulted in insufficient theoretical support for consumers and practitioners.

To bridge the gap between theory and practice, this research adopts a participant-centric narrative approach. This approach aims to contribute to creating more consumer-friendly online marketplaces and to deepen the understanding of serendipity. Participants were prioritised as the main contributors, sharing their experiences and perceptions of e-commerce serendipity through storytelling. Thirty-two Chinese online consumers took part in the research, contributing a total of 123 real-life stories. All these stories were collaboratively analysed with the participants, ensuring a faithful portrayal of e-commerce serendipity as experienced by the consumers themselves.

The findings reveal that e-commerce serendipity is an *artificially facilitated unplanned experience*, jointly shaped by consumers and online platforms along with their designers. Being an artificial serendipity, e-commerce serendipity is characterised by its expectedness, thrillingness, and varied outcomes. Three routes were presented for consumers to experience e-commerce serendipity: *coincidence*, *unexpected discovery*, *encountering*. These routes differed via the varying interaction patterns between serendipitists and third parties under different conditions. The findings regarding e-commerce serendipity as a form of artificial serendipity have significant implications for both research and practice.

Theoretically, this research contributes to serendipity-focused studies, particularly in the field of information science. It enhances the current understanding of serendipity and suggests that serendipity-focused research should embrace the concept of serendipity by design. This involves expanding beyond the narrow research scope and definitions that currently dominate the research context, offering a broader and more inclusive perspective.

Practically, this thesis contributes to the fostering of mutually beneficial artificial serendipity in online marketplaces. This involves e-commerce practitioners listening attentively to consumers' voices and for consumers to enhance their digital literacy.

Beyond these directly related areas, the research further contributes to Human-Computer Interaction (HCI) studies due to its choice of research context. It provides insights into how better to design recommender systems and create a harmonious online ecosystem.

DICTIONARY

This dictionary section elaborates on key concepts that affected this PhD research. Some of these concepts trace their roots back to existing literature, with references to these sources duly noted. Others stem directly from the contributions of the participants involved in this research.

Notably, the issues presented in this dictionary are not concrete definitions. Instead, they serve as a guide to facilitate a better understanding of the content presented in this thesis.

Artificial serendipity – Serendipity whose happening and evolution depend on an agent’s (human or non-human) conscious design. The interpretation of this concept is initially learned from de Melo (2018) and latter updated via participants’ narratives.

Bad serendipity – Serendipity that ultimately results in unfavourable outcomes for the experiencer (i.e., serendipitists).

E-commerce serendipity – Serendipity that occurs within the realm of online marketplaces.

Everyday life context – The non-work, routine, ordinary environments and situations in which individuals engage on a daily basis (Ocepek, 2018).

Good serendipity – Serendipity that ultimately brings benefits or gains to the serendipitists. This is the type of serendipity most existing theories refer to.

Intelligent context(s) – Contexts equipped with intelligent techniques, such as artificial intelligence (AI).

Intelligent technique(s)/technolog(ies) – All advanced systems, algorithms or software that exhibit features associated with human intelligence, particularly AI techniques.

Natural serendipity – Serendipity that arises from natural randomness (de Melo, 2018). This is the type of serendipity most existing theories refer to.

Non-shopping professionals (relating to shopping professionals) – Platforms and e-commerce practitioners for whom shopping is a secondary aspect of their business. Examples include platforms like WeChat, Bilibili.com, and Weibo.

Online marketplace(s) – Any online environment that facilitates the buying or selling of products and/or services (Laudon & Traver, 2020; Ryan et al., 2012).

Serendipity – An unexpected yet valuable occurrence that stems from natural randomness and is only recognisable by individuals with sagacity (de Melo, 2018; Foster & Ford, 2003; Makri & Blandford, 2012b; McCay-Peet & Toms, 2017).

Serendipitist(s) – The experiencer(s) of serendipity (van Anandel, 1994).

Shopping expertise – An umbrella term covering shopping preferences and shopping skills.

Shopping preference (relating to shopping expertise) – The mindset of knowing what should be prioritised and discarded during shopping.

Shopping professionals (relating to non-shopping professionals) – Platforms and e-commerce practitioners whose core business centres around shopping. Typical representatives include platforms like Taobao, JD.COM, Pinduoduo, Goofish, and all associated vendors.

Shopping skills (relating to shopping expertise) – The ability of knowing how to conduct satisfying shopping.

Third parties – All entities that directly influence participants’ e-commerce serendipity but have no close interpersonal relationship with the participants. This includes e-commerce practitioners, e-commerce platforms and the technical agents equipped in the platforms.

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Chapter 1 Introduction

1.1 Background of the research

This section provides an introduction to this PhD research, which explored serendipity in online marketplaces (subsequently referred to as e-commerce serendipity) – an underappreciated phenomenon that affects both the development of serendipity theories and e-commerce practice.

Specifically, the development and diffusion of information communication technologies (ICTs) has created the potential to transfer consumption to digital contexts and digital channels (Hsieh et al., 2014; Wu et al., 2016). In recent years, online platforms have matured into full-fledged marketplaces, becoming the primary channels for individuals' shopping activities (Alaei et al., 2022; Ilbahar & Cebi, 2017).

This shift in consumption channels has contributed to novel modes of consumer behaviour. Through informative and interactive online platforms, online consumers now have access to a broader range of alternatives, often at reduced costs (Chung et al., 2017). Furthermore, this shift has enabled consumers to more frequently and easily access a diverse range of products (Karimi et al., 2018), thereby enhancing consumers' opportunities to find new products that align with their personal interests (Wu et al., 2015). Over time, this ease of access has aided online consumers in becoming more informed and proactive (Rose et al., 2011). Their motive when visiting online marketplaces has transitioned beyond the traditional goals of making basic purchases and seeking value for money (Kim & Mattila, 2013; Yu & Wu, 2019). Nowadays, consumers increasingly desire a pleasurable and engaging experience during their visits to online marketplaces; specifically, they desire an experience that affords the discovering something that are intriguing and out of the ordinary (Bischof et al., 2020; Yu & Wu, 2019).

In this case, serendipity, often experienced as a pleasant surprise (Kim et al., 2021; Kosuge & Yasuda, 2022), has garnered increasing appreciation amongst online consumers (Grange et al., 2019; Kim et al., 2021; Shibly & Chatterjee, 2020). Serendipitous experiences typically result in the discovery of new and interesting products (Grange et al., 2019; Kosuge & Yasuda, 2022), thereby enhancing the sense of pleasure experienced by consumers during their online visits (Kim et al., 2021; Shibly & Chatterjee, 2020). This heightened sense of pleasure, in turn, bolsters online consumer satisfaction and trust in specific e-commerce practitioners (Grange et al., 2019). Consequently, these practitioners can secure higher customer return rates and foster long-term consumer loyalty (Kim & Mattila, 2013). In some cases, serendipity can even spur unplanned purchasing, thereby directly yielding tangible gains for consumers and increasing practitioners' sales (Akram et al., 2018; Chung et al., 2017). Thus, overall, serendipity offers

reciprocal benefits for both online consumers and e-commerce practitioners, thereby enhancing the shopping experience and contributing to business success.

Given the reciprocal value of serendipity, making conscious design to curating serendipity has emerged as an increasingly popular focus amongst e-commerce practitioners (Kim et al., 2021; ; Kosuge & Yasuda, 2022; Oh et al., 2022). Industry giants such as Amazon and eBay have all invested in incorporating serendipity into their platforms (Kim et al., 2017; Reviglio, 2019) to enhance consumer engagement and satisfaction (Yi et al., 2017). Advanced technologies and algorithms using artificial intelligence (AI) and other machine learning techniques have been consciously introduced to establish more serendipity-prone marketplaces. These technologies and their algorithms analyse user preferences, with the intent of delivering more pleasant surprises to individual consumers (Hyvönen, 2020; Jiang et al., 2021).

The design strategies introduced, while receiving some commendations and facilitating practical successes (e.g., Grange et al., 2019; Kim et al., 2021), have also faced scepticism from serendipity-focused studies, particularly within information science, a discipline which has made a significant contribution to the understanding of serendipity (Liu et al., 2022; Reviglio, 2023).

The root of this scepticism lies in the perceived lack of a solid theoretical basis for e-commerce practitioners' designs. In the realm of consumer behaviour, there is a notable dearth of research exploring the nature and definition of serendipity. Most studies about consumer behaviour have focused primarily on the potential practical value of serendipity, hastily embarking on its design to harness this value. However, they often overlook the possibility that e-commerce serendipity may not be a phenomenon that can be easily designed (Makri et al., 2014; McBirnie, 2008). Designs not validated by theoretical research might not only fail to effectively curate e-commerce serendipity; they could instead signal the end of serendipity in online marketplaces (Schmidt, 2021).

When examining this issue in greater detail, it becomes clear that the concerns that serendipity-focused studies have proposed are twofold. First, as online platforms are designed to be more intelligent, they may increasingly impinge on consumers' decision-making autonomy (Schmidt, 2021). All the content consumers come across will be the result of conscious selections made by the technologies and algorithms; thus, consumers might not encounter anything that is genuinely novel and surprising. Instead, they might be ensnared within a filter bubble in which they are continually confronted with familiar content (Erdelez & Jahnke, 2018; Erdelez et al., 2019). Second, if consumers grow accustomed to these artificially created surprises and even start to anticipate more of them, it may become dubious whether these expected events can still be classified as genuine surprises (Liang, 2012; Makri et al., 2014). Put simply, knowing that

an event is pre-determined could negate its inherent surprisingness, which is the key element of serendipity (van Andel, 1994; Maloney & Conrad, 2016).

Despite highlighting the potential risks associated with the design of serendipity by e-commerce practitioners, serendipity-focused studies have yet to offer solutions to these identified risks. This situation can be attributed to two main reasons:

- 1) First, within serendipity-focused research itself, there are diverse opinions regarding the design practices of e-commerce practitioners. While some studies have raised doubts about the design approaches of e-commerce practitioners, others believe that these practitioners can effectively curate serendipity through technologies such as AI (e.g., Makri et al., 2014; Reviglio, 2023). This difference in perspective signifies an ongoing debate regarding the conscious design of serendipity, particularly in the field of information science.
- 2) Second, there is a lack of extensive research into the nature of e-commerce serendipity within existing serendipity-focused studies. Shopping and online marketplaces are not the primary focus of these studies. This has resulted in a lack of theoretical guidance for e-commerce practitioners operating in this domain.

In light of the above discussion, it is evident that there is a notable gap between practical attempts and theoretical developments related to e-commerce serendipity. Due to the emergence of online shopping as a mainstream consumer activity (Alaei et al., 2022; Ilbahar & Cebi, 2017) and the growing implementation of AI in modern society (Reviglio, 2019, 2023), addressing this gap is crucial. This would involve an in-depth exploration of the essence of e-commerce serendipity.

A thorough exploration and understanding of the nature of e-commerce serendipity can contribute to both practice and research. Practically, it can offer valuable insights to e-commerce practitioners, helping them to craft more consumer-friendly shopping environments. Theoretically, it can provide new theoretical perspectives to serendipity-focused studies, particularly in the field of information science. Such insights have the potential to expand the research scope of these studies, thereby enhancing our understanding of dynamic nature of serendipity in contemporary society.

1.2 Research questions and objectives

In responding the identified gap, this PhD research sets out targeted research question and the research objectives. Regarding the research question, this research aims to explore and understand and answer the following:

- **What constitutes online consumers' serendipitous experiences in online marketplaces?**

In greater detail, this research is dedicated to exploring and understanding the nature of e-commerce serendipity by learning from the real-life experiences of online consumers. The rationale for concentrating on this research question and this research approach is twofold: (1) First, both current serendipity-focused studies and studies regarding consumer behaviour lack solid theoretical foundations that are specific to e-commerce serendipity. To gain insights into e-commerce serendipity, it is necessary to forge a new pathway for investigation rather than solely relying upon existing theoretical frameworks. (2) Second, amongst various research approaches, the real-life experiences of online consumers are arguably the most insightful for understanding the nature of e-commerce serendipity. Notably, serendipity is inherently subjective (Makri & Blandford, 2012b; McCay-Peet & Toms, 2017); this means that the essence of serendipity is most faithfully captured by those who directly experience it (Björneborn, 2017; Smets, 2023) – the serendipitists (van Andel, 1994). In the context of an online marketplace, these serendipitists are the consumers themselves.

To effectively address this research question, four research objectives have been established. These objectives have been proposed to break down the research question and to guide the execution of the study. These objectives are as follows:

- 1) *To explore and understand online consumers' interpretations of e-commerce serendipity.*
- 2) *To identify the routes that direct consumers to experience e-commerce serendipity.*
- 3) *To reveal the factors influencing consumers' experiences of e-commerce serendipity.*
- 4) *To propose a conceptual space to illustrate the features of e-commerce serendipity.*

These four research objectives have been strategically devised to progressively deepen the understanding of e-commerce serendipity from the perspective of online consumers.

It is worth discussing the four objectives listed above in more detail. The first objective is to delve into how online consumers perceive e-commerce serendipity. Understanding this objective is crucial to clearly define both the scope and focus of the research. This can legitimise the notion that the following exploration and representation of e-commerce serendipity are authentic and resonant with the experiences of consumers. In essence, as perceived by online consumers, e-commerce serendipity is regarded as *an artificially-facilitated unplanned experience*, namely, an *artificial serendipity* whose occurrence and evolution depend upon an agent's (human or non-human) conscious design (de Melo, 2018). This experience is co-created by consumers and third parties (i.e. e-commerce practitioners, e-commerce platforms and the technical agents equipped in the platforms) and is characterised by its *expectedness*, *thrillingness* and the *varied outcomes*.

Building upon the initial understanding of how consumers perceive e-commerce serendipity, this research embarks on a more in-depth exploration of the development routes and factors

influencing e-commerce serendipity. The aim is to comprehend how consumers experience the serendipity they perceive, as reflected in their actual behaviours within real-life contexts. This exploration constitutes the basis of the second and third objectives of the research. By addressing the second and third objectives, this research aims to reinforce the understanding of e-commerce serendipity established through the first objective. This deeper exploration has facilitated the identification of three serendipitous routes that consumers take, namely, *coincidence*¹, *unexpected discovery*² and *encountering*.³ Alongside these routes, the following groups of influencing factors are also recognised: those related to *serendipitists*, *third parties* and *conditional factors*.

The fourth objective shifts the focus to reinterpreting and translating the serendipity that consumers perceive and experience into a conceptual space. This space is designed to clarify the characteristics, development routes and influencing factors of artificial serendipity – the nature of e-commerce serendipity as viewed from the perspective of consumers. Notably, this framework is not intended to rigidly define artificial serendipity. Instead, its purpose is to provide insightful guidelines for understanding artificial serendipity and related phenomena. As future research delves deeper into these topics, this conceptual space is expected to evolve and incorporate new insights and perspectives. In this manner, the subjectiveness of serendipity can be preserved, thus enabling a thorough comprehension of what serendipity is.

By undertaking these objectives and answering the core research question, the research aspires to construct a nuanced and comprehensive understanding of e-commerce serendipity; it simultaneously respects its subjective nature and offers valuable insights regarding both theoretical and practical applications (which will be discussed in the subsequent section).

1.3 Justification for the research

This section reaffirms the significance of answering the research question and achieving the four research objectives by highlighting the practical and theoretical contributions of this research.

¹ *Coincidence*, which arises from interactions between serendipitists and an altruistic context. The supportiveness of the context may lead serendipitists on a journey in which all desires are met with ease, ultimately guiding serendipitists to a fulfilling serendipitous outcome that offers satisfaction. Thus, a coincidence is often termed a good serendipity.

² *Unexpected discovery*, which occurs when a knowledgeable context offers surprises that challenge or revolutionise serendipitists' existing knowledge. By cautiously engaging with the insightful context, serendipitists can gain new insights, broadening their horizons and potentially transforming aspects of their everyday and professional endeavours. Thus, unexpected discovery is often termed a good serendipity.

³ *Encountering*, which stems from dynamic interactions between serendipitists and a context that actively pursue its own interests. In these scenarios, the context recommended good surprises primarily to advance its own interests. Thus, as the serendipitists navigated the encountering route, the situation they identified is often more uncertain and dynamic, leading them toward either a good or a bad outcome. Thus, encountering is often termed either as a good or a bad serendipity.

Regarding the practical contributions of this research, the findings of this research provide a foundation for e-commerce practitioners to design a more consumer-friendly online marketplace. Understanding how consumers perceive and experience e-commerce serendipity can guide e-commerce practitioners toward identifying what constitutes an ideal design for serendipity in online marketplaces. In essence, for consumers, effective serendipity-prone designs are those that *focus on personalisation, ensure user control and modestly promote curated serendipity*. Armed with these insights gleaned directly from consumers, e-commerce practitioners can build their designs on solid ground, thus mitigating unwarranted scepticism, as proposed by information science research. Moreover, by adhering to these consumer-provided insights, practitioners can tangibly reap the benefits of serendipity – namely, enhanced consumer return rates, increased consumer loyalty and direct business income (Chung et al., 2017; Kim & Mattila, 2013).

Theoretically, the findings of this research enhanced the existing serendipity-focused studies, particularly in the field of information science, a discipline that serve as the main contributor to serendipity-related theories. The contributions of this research to the field of information science and its theoretical framework are multifaceted:

- 1) First, this research advocates for a broader contextual focus in information science. Information science need to devote greater attention to everyday life contexts. While most serendipity studies have concentrated on business and academic contexts, this research shifts the focus towards more ordinary contexts, that is, the online marketplaces. By exploring this overlooked context, this research uncovers a new type of serendipity – artificial serendipity. The discovery of this new type reveals that everyday contexts are replete with previously unknown insights about serendipity. To fully capture these insights and to understand the dynamics and nature of serendipity, a shift in the contextual focus of current information science is necessary.
- 2) Second, this research introduces a novel type of serendipity found in online marketplaces: artificial serendipity. This type of serendipity is characterised by its expectedness, thrillingness and its varied outcomes, and it is co-created by serendipitists and their context(s). The features presented by artificial serendipity challenge the traditional understanding of serendipity as an unexpected, valuable experience predominantly influenced by a sagacious individual. This challenge to the status quo enriched the existing body of serendipity-related theories; it also opens new avenues for future studies.
- 3) Third, by identifying artificial serendipity, this research addresses the ongoing debate concerning the concept of serendipity by design. Through learning from online consumers, this research demonstrates that the design strategies employed by e-commerce

practitioners have not extinguished serendipity but have instead facilitated it. This finding resolves the debate within information science regarding the effectiveness of serendipity by design, thus allowing researchers to embrace intelligent techniques more confidently, including AI. The embrace of new technologies can undoubtedly enable us to update serendipity-related theories to align them more closely with contemporary social developments.

Indeed, in addition to consumer behaviour and information science, addressing the research question also has significant implications for human–computer interaction (HCI) studies. This is particularly relevant because in online marketplaces, all consumer activities are conducted through interactions with computer-mediated information systems (Hausman & Siekpe, 2009; Ilbahar & Cebi, 2017). The contributions of this research to HCI studies are primarily twofold:

- 1) First, this research provides insights into how to design more effective and user-friendly recommendation systems. Serendipity has long been a crucial topic within the realm of recommendation system design (Kotkov et al., 2023). The concept of artificial serendipity, as identified in this research, along with the strategies for designing it, provide a new perspective regarding recommendation system development. These insights can guide the creation of systems that are more aligned with user preferences, thereby enhancing the overall user experience.
- 2) Second, this research offers guidance for creating a more harmonious online ecosystem. Within the promotion of collaborative human–computer interaction, serendipity has invariably been regarded as a core topic (Jiang et al., 2021). By understanding how serendipity manifests in online interactions and what factors contribute to positive serendipitous experiences, HCI researchers can design digital environments that are more conducive to engaging and satisfying user experiences.

The contributions highlighted above suggest that the execution of this research is both necessary and highly significant. The insights gleaned by answering the research question can not only advance our understanding within specific academic fields but can also reveal the practical implications of the design of digital contexts as a whole.

1.4 Overview of the research methodology

This section provides an introductory overview of the research methodology adopted for the purposes of this research, offering a preliminary explanation of what it means to learn from online consumers (the participants in this research) and the value of this design approach. A more detailed illustration of the design for this research can be found in Chapter 3.

This research adopts a qualitative approach and employs narrative inquiry as its research strategy. Diaries and semi-structured interviews are the principal methods for data collection, and the data analysis has been conducted in collaboration between the researcher and the participants. This research design, compared to the researcher-dominated one typically used in relevant consumer behaviour and serendipity-focused studies, is more effective in faithfully capturing the voices of the participants.

In contrast to many other studies regarding consumer behaviour, this research design lends greater respect to the participants, treating them not as merely passive research subjects but as active contributors. The qualitative route allows the researcher to become fully immersed in the realities constructed by the participants (Robson & McCartan, 2016), as opposed to the typical quantitative consumer behaviour studies, in which all interpretations about the research phenomenon are within the scope of the researchers' assumptions and control (Bazerman, 2001; Robson & McCartan, 2016). This shift in the research approach enhances the authenticity of the data gathered and allows for a deeper understanding of the participants' perspectives and experiences.

Compared to serendipity-focused studies, particularly in information science, this research empowers participants with a greater voice, viewing them as the primary knowledge contributors. The adoption of narrative inquiry enables participants to express their thoughts with minimal interference from the researcher. This benefit stems from the inherently personal nature of storytelling. As a communication and sense-making technique that participants naturally possess and refine in their daily lives (Eckerdal, 2013), participants can engage in storytelling with minimal interference from the researcher (Bronstein, 2019). This high degree of expressive autonomy grants participants the agency to express themselves more freely (Eckerdal, 2013), thus curating a more intricate and nuanced portrayal of their experiences and thoughts (Bronstein, 2019; Riessman, 1993). Additionally, by conducting data analysis in collaboration with participants, the researcher ensures that the research findings resonate with the participants' perceived realities. This collaborative approach to analysis further reinforces the authenticity and relevance of the research outcomes.

Given this discussion, it can be argued that, compared to previous consumer behaviour studies and serendipity-focused studies, this research can reconstruct serendipity more faithfully from serendipitists' perspectives. This aspect of the research methodology represents another significant contribution of the study, which will be fully elaborated upon in Section 6.2.2.

1.5 Outline of the thesis

The thesis is structured into six chapters, accompanied by a bibliography and appendices. Each chapter serves a distinct purpose in the overall thesis:

Chapter 1 is the introduction. This first chapter lays the foundation for this research. It introduces the background, defines the research questions and objectives, delineates the research design and highlights the theoretical and practical contributions of this research.

Chapter 2 contains the literature review; it delves into the relevant extant literature, connecting the research question to the existing body of knowledge. The areas reviewed include consumer behaviours and serendipity-prone designs in the online marketplace, along with the scope of serendipity and its influencing factors. This comprehensive review reveals two critical gaps in the existing knowledge: (1) The first gap is found in studies of consumer behaviour. These studies have acknowledged the practical value of e-commerce serendipity and have attempted to design for curating more serendipity in online marketplaces. However, they need a solid theoretical foundation to support their practical efforts. (2) The second gap is identified in serendipity-focused studies, particularly in information science. These studies acknowledge the practical challenges faced by e-commerce practitioners, yet they are marked by doubts about the feasibility of designing for serendipity. Additionally, their limited research scope has resulted in a lack of necessary theoretical support for these practitioners. Overall, this chapter reveals a misalignment between the practical applications and the theoretical explorations of e-commerce serendipity. This research has been conducted with the aim of addressing this gap; it seeks to reconcile the practical importance of e-commerce serendipity with its theoretical development.

Chapter 3 elucidates the research methodology. This third chapter elaborates upon the design of this research. To fully understand online consumers' perceptions of serendipity, this research adopted a bottom-up abductive logic, culminating in the selection of narrative inquiry as the primary research strategy. A pilot study was conducted initially, contributing to a formal research design that enables participants to express their views freely and authentically. In the formal study of this research, participants were encouraged to share real-life serendipitous stories freely via diaries and semi-structured interviews. The collected stories were then analysed collaboratively by both the researcher and the participants, thus ensuring a faithful understanding of e-commerce serendipity from the perspective of the participants.

Chapter 4 delineates the findings; it introduces the participants' perceived e-commerce serendipity in response to the first three research objectives. Section 4.1 addresses the first research objective. It explores how participants and third parties co-created e-commerce

serendipity as a form of artificial serendipity that is characterised by its expectedness, thrillingness and varied outcomes. Section 4.2 addresses the second research objective by exploring the three core routes through which participants experience e-commerce serendipity: coincidence, unexpected discovery and encountering. These routes are differentiated by the varying interaction patterns between serendipitists and third parties. Section 4.3 tackles the third research objective by elaborating upon the factors that contribute to the diverse developmental routes of e-commerce serendipity. This section categorises these factors based on their relation to serendipitists, third parties and the conditions under which e-commerce serendipity arises. Finally, Section 4.4 summarises the chapter and the key findings.

Chapter 5 discusses the findings and evaluates them in relation to the existing literature, particularly in consumer behaviour and information science. Section 5.1 discusses the concept of serendipity by design. By asserting that serendipity can indeed be consciously designed, this section addresses and effectively resolves the debate within the field of information science regarding the designability of serendipity. Subsequently, Sections 5.2 and 5.3 delve into a comparative analysis between the designed serendipity (i.e. artificial serendipity) uncovered in this research and the natural serendipity that has been the focus of traditional serendipity-focused studies. This comparison highlights the distinctive aspects of artificial serendipity, further underscoring the contributions of this research to the broader field of serendipity-focused studies. All of these discussions are then summarised into a conceptual space for artificial serendipity, in response to the fourth research objective. This chapter concludes with Section 5.4, which re-emphasises the characteristics, development routes and influencing factors of artificial serendipity.

Chapter 6 presents the conclusion by summarising the research and identifying its distinctiveness compared to related extant studies. The chapter opens with a synopsis of the entire study, highlighting how this research is distinct from existing works in the field. Following the summary, Section 6.2 proceeds to elaborate upon the contributions of the research. These contributions are significant across three broad areas – theory, methodology and practice – within both consumer behaviour and serendipity-focused studies. Section 6.3 then delves into the implications of this research, which encompass both theoretical and practical aspects. Theoretically, this research suggests that current serendipity-focused studies should embrace the concept of serendipity by design and expand beyond the narrow definitions and research frames currently dominating the field. Practically, the research emphasises that it is pivotal for e-commerce practitioners to attentively listen to consumers' voices and for consumers to enhance their serendipitous skills. These steps are vital for curating mutually beneficial artificial serendipity in online marketplaces. The chapter concludes with Section 6.4, which delineates future potential research avenues opened by this study. These avenues are

pertinent to consumer behaviour and serendipity-focused studies, and they can be extended to HCI and other related disciplines.

1.6 Definitions

This section elaborates upon two crucial concepts that have significantly influenced the course of this research – online marketplace and serendipity.

The first central concept is the online marketplace, which serves as the primary context for this research. Within the scope of this research, an online marketplace is broadly elaborated as any online environment that facilitates the buying or selling of products and/or services (Laudon & Traver, 2020; Ryan et al., 2012). This expansive definition was chosen based on two primary considerations:

- (1) The first consideration stems from the research objectives of this research. Specifically, this research aims to understand e-commerce serendipity across the entire spectrum of online marketplaces, rather than focusing on serendipity within a specific type of e-commerce platform. As such, adopting a narrowly defined conception of an online marketplace would be inappropriate in light of the goals of this research. Therefore, a more inclusive definition of an online marketplace is more suitable for this research. By embracing a broader definition, this research can encompass various online platforms, capturing a range of experiences. Consequently, it enables a more dynamic and comprehensive understanding of e-commerce serendipity.
- (2) The second consideration is rooted in the research's background in China, a country known for its expansive variety of online marketplaces (Kwak et al., 2019). Limiting the research to a particular type of online platform could cause the researchers to potentially overlook many interesting and informative cases. By adopting a broader definition, the research can circumvent the risk of disregarded valuable insights that could be drawn from a diverse array of online marketplaces in China.

Notably, the suitability of adopting this broad definition of online marketplaces to guide the researcher in addressing the research question and the objectives was validated through the pilot study (a more in-detailed elaboration about the pilot study will be presented in Section 3.3.3).

The next concept that should be defined is serendipity, which is the core phenomenon under exploration. In this research, the definition of serendipity is primarily informed by studies in information science, a field that has significantly contributed to serendipity-related theories (Liu et al., 2022; Reviglio, 2023). In this research, serendipity is initially conceptualised as an unexpected yet valuable occurrence that stems from natural randomness and is only

recognisable by individuals with sagacity (de Melo, 2018; Foster & Ford, 2003; Makri & Blandford, 2012b; McCay-Peet & Toms, 2017).

Notably, this definition of serendipity was not used to guide the formal study directly. That is, participants were not presented with this definition throughout this research; they formed their interpretations about the concept in a manner that was entirely independent. In this research, the definition serves more as a reflective tool that helps to capture the current state of serendipity research and the researcher's own understanding of the concept. The decision to use this definition only as a reflective tool and not to guide the research was based on the following three reasons:

- 1) The first reason relates to the nature of serendipity itself. Serendipity is a complex and elusive concept that resists being constricted within a concrete definition (Makri & Blandford, 2012a, 2012b). Recognising its inherently slippery nature, this research did not restrict its scope by adhering too closely to a specific definition of serendipity; instead, this research adopted a more open attitude, welcoming all of the interpretations provided by participants. This approach allowed for a more in-depth exploration of e-commerce serendipity that accommodates its multifaceted aspects.
- 2) The second reason emerged from insights gleaned during the pilot study. It was found that participants were capable of forming their own interpretations of serendipity. Some pilot participants even suggested that to understand their views of e-commerce serendipity faithfully, it was better to not define the concept beforehand. In other words, a pre-determined conception imposed by the researcher might limit participants' thinking.
- 3) The third reason relates to the reliability and faithfulness of this research. Specifically, maintaining a personal understanding of serendipity was crucial for the researcher to keep the research focused and aligned with its intended scope. Additionally, reflecting on her own understanding of serendipity allowed the researcher to avoid inadvertently projecting her views onto the research process. This self-reflection ensured that this research captured the participants' perspectives and experiences as faithfully as possible.

1.7 Delimitations of the scope

This study was conducted with a limited scope of participants; this research only involved 32 Chinese online consumers. This limitation, while noteworthy, only partially affected the value and impact of the research.

To begin with, the participant-centric design of this research played a crucial role in ensuring the richness of the data collected. Each of the 32 participants contributed detailed stories and insights, which were instrumental in achieving interesting and innovative findings.

Moreover, the areas and issues that were not covered due to the limited number of participants offer fertile ground for further exploration, particularly for serendipity-focused studies, consumer behaviour studies and broader fields such as human–computer interaction studies.

Therefore, despite its limitations, this research can still be considered a valuable contribution to the related fields, including consumer behaviour studies, serendipity-focused studies and even HCI studies.

1.8 Summary

This chapter lays the foundation for the thesis. It introduces the research background and problem as well as the research question and objectives before elucidating the justification for conducting this PhD research. In addition, the methodology adopted to support the execution of this research and to address the research question is briefly introduced and justified. The research findings and their contributions to current knowledge, obtained through the methodological design, are then briefly described in the research outline. The limitations of this research are also presented, laying the groundwork for the development of subsequent research. Based on the issues discussed in this chapter, the thesis can proceed with a detailed description of the entire PhD research.

Chapter 2 Literature review

The review of related literature establishes the background knowledge for this study. Consumer behaviour and the serendipitous experience are the two main themes in this study, with online consumption platforms as the research context. Accordingly, the first section (Section 2.1) starts with a broad-level discussion about consumer behaviour, and then narrows down to consumers' behaviour within online marketplaces and the serendipity-prone design in the marketplaces. The second and third sections make a detailed investigation into the essence of serendipitous experience (Section 2.2) and factors influencing it (Section 2.3). The final section summarizes the literature review and aligns this research with the identified gaps (Section 2.4).

2.1 Consumer behaviour and online marketplaces

2.1.1 Theoretical background of consumer behaviour

Consumer behaviour studies have investigated how individuals acquire idealised states of satisfaction (i.e., desired state) via the acquisition, use and disposition of products and/or services (Sheth et al., 1991; Simonson et al., 2001). To better explore the secret behind the attainment of consummation states (Holbrook, 1987), researchers have investigated individuals' mental, emotional, and physical activities in the consumption process via the leverage of different modelling approaches (Bray, 2008; Simonson et al., 2001). Among the many modelling approaches with varied theoretical emphasis, three are most adopted, namely, the rational choice approach, the behaviourist approach, and the cognitive approach (Bray, 2008; Voramontri & Klieb, 2019).

2.1.1.1 Rational choice approach

In the rational choice approach, consumers are termed 'economic man', making choices to acquire the maximum utility (i.e., the sum of satisfaction) with reasonable costs (Herrnstein, 1990). Consumers are believed to be entirely rational and asocial actors (Jacoby, 2000), who can consciously control their behaviours (Fishburn, 1968). In this sense, consumers are sure of what they prefer most (i.e., a fixed preference) and are aware of where to find alternative information to satisfy their needs (Hibbard et al., 1997; Nelson, 1970). The calculation of the cost and utilitarian value for each purchasing option is, therefore, the core of consumer behaviour. The prudent processing of acquired information contributes to consumers' attainment of a perfect information state (Schumann et al., 2008), giving them full independence in making entirely self-interested consumption decisions (Tsokanta, 2019).

As most of the assumptions in the rational choice approach are drawn through laboratory experiments (Bray, 2008), this approach offers limited insights for predicting consumers'

willingness to purchase. Specifically, in real-life settings, consumers are cognitive misers operating within imperfect and complicated markets (Xia & Sudharshan, 2002), struggling to reach a less-than-optimal decision under the condition of information asymmetry and limited cognitive capabilities (Pocheptsova et al., 2009).

2.1.1.2 The behaviourist approach

The behavioural approach indicates that consumer behaviour should be studied in situ by considering the role of the consumption settings (Foxall, 1999; Medina & Sandoval, 2011). As with biological essence, human behaviours are responses triggered by environmental stimuli (Skinner, 1985).

From a behaviourist perspective, consumption stimuli span four dimensions: physical, social, regulatory, and temporal (Foxall & Yani-de-Soriano, 2005), all of which are mainly controlled by entities outside of the consumers (Nicholson & Xiao, 2011). Physical and social stimuli stem from the atmospheric designs and interpersonal interactions take place within a market (Alshurideh, 2014; Kotler, 1973). Regulations that rule market transactions (de Jonge et al., 2004) are imposed by marketers and other stakeholders involved in the business process (Jayasankaraprasad, 2011). Finally, temporal stimuli incorporate both a natural temporal dimension and artificially set time intervals and constraints (Foxall, 1999, 2001). All the stimuli are initially neutral information cues (Foxall, 1999), each signalling the potential consequences of choosing a given product to some extent (Bruwer & McCutcheon, 2017; Glazer, 1991). Consumers construct their consumptions via responding to cues that are considered as most reliable (i.e., discriminative stimuli) (Foxall et al., 2011).

Consumers' learning history facilitates them in distinguishing the discriminative stimuli (Foxall & Sigurdsson, 2013). Learning history is the accumulated experience of similar consumption that one has had prior to encountering the current market setting (Foxall et al., 2011). It is through the consequences of these experiences, whether they are benefits or aversion (Foxall et al., 2004), that consumers gain understandings of the reliability of information cues in terms of their relationship with product performances (van Osselaer & Alba, 2000). The learnt knowledge, in turn, serves as a foundation in guiding current consumptions (Bruwer & McCutcheon, 2017).

From the behavioural view, consumer behaviour resides at the intersection of one's learning history and the currently encountered marketing stimuli (Foxall, 1999). However, behavioural assumptions have failed to explain the stimuli processing and knowledge accumulation processes. Hence, this approach might only be applicable for interpreting consumptions that are of less importance and with relatively insignificant consequences (Wells, 2014). As these routine and simple tasks do not require extensive information processing, consumers'

behaviour under this context can, therefore, be simply explained via the observable consumer-stimuli responses.

2.1.1.3 The cognitive approach

From a cognitive approach, consumers are active participants imbued with *bounded rationality*, whose consumption behaviour is directed by their sequential processing of the contextual information within five steps (Bettman et al., 1998; Cleveland et al., 2003).

2.1.1.3.1 Problem recognition

Problem recognition occurs when the homeostasis between individuals' desired and actual state is interrupted (Austin & Vancouver, 1996), leading to a discrepancy that prompts them to think about consumption (Baumgartner & Pieters, 2008). Such discrepancies are divided into *needs* and *wants*.

Needs derive from a disturbance of the present satisfaction level (i.e., *actual state*) (Bruner & Pomazal, 1988), indicating an internally triggered desire to fix an unsatisfactory situation (Workman & Studak, 2006). Wants, contrarily, are caused by the alteration from an idealised state of satisfaction one wishes to obtain within a context (i.e., *desired state*) (Sachdeva, 2015), indicating individuals' demand for a higher order of satisfaction than the one they currently possess (Punj & Srinivasan, 1992). Triggers leading to wants are commonly exposed externally, through reference groups or marketing channels (Martin & Bush, 2000; Wang et al., 2018).

2.1.1.3.2 Information search

Information search constitutes the second stage, wherein consumers attempt to find product alternatives to satisfy their needs and/or wants (Lawson, 1997). Two distinct behaviours are anticipated: an *internal search* relying on memory, and an *external search* through interpersonal relationships, commercial sources and public media (Schmidt & Spreng, 1996). Of the two, the internal search most commonly occurs first, as memory is the most direct information source (Hodkinson et al., 2000). If internally acquired information is insufficient, an external search may follow in two distinct forms – ongoing and pre-purchase (Marell et al., 2004) (see Figure 2.1).

	On-going/Exploratory search	Pre-purchase search
Feature	Untargeted and open-ended	Directed and problem-driven
Motivation(s)	To learn novel information for future use	To better satisfy an immediate need/want
Determinant(s)	Individual interest Information environment	Purchasing involvement Product type Market environment
Outcome(s)	Increased product familiarity and consumption expertise Impulse/unplanned purchase decision	Better comprehension of the marketplace Better purchasing decisions with higher self-interests

Figure 2.1 Types of external search (Bloch et al., 1986; Moe, 2003; Moorthy et al., 1997)

An *ongoing search*, also termed an exploratory search (Moe, 2003), often occurs outside of the immediate purchasing needs/wants and is motivated by consumers' desires to learn novel product information (Hoyer, 1984). Consequently, consumers tend to spend more time on undirected searches (Schmidt & Spreng, 1996), browsing across various product categories (Wang et al., 2011). Sometimes, ongoing searches also unconsciously occur when consumers are exposed to advertisements (Moorthy et al., 1997). Regardless of their differences, both types of ongoing search are rarely linked to goal-directed purchases. Purchases directly triggered by an ongoing search are termed unplanned, emerging when unforeseen stimuli capture involuntary attention (Iyer, 1989).

In contrast, a *pre-purchase search* regards specific consumption problems as its starting point, with the identification of problem-solving information as its endpoint (Bloch et al., 1986; Hagerty & Aaker, 1984). Consequently, consumer behaviour becomes more targeted and systematic (Bettman et al., 1998), being influenced by two principal factors: (1) First, the importance of the required products (i.e., one's involvement with consumption) (Ozanne et al., 1992), leading to more search time being expended when higher involvement is perceived (Johnson et al., 2004). (2) Second, the types of products: experience products, whose quality can only be perceived after consumption; and search products, whose quality can be determined before use (Wang et al., 2018). Due to the potentially higher loss caused by incorrectly choosing experience products is often higher, consumers tend to engage more in searching for them (Maity & Dass, 2014).

2.1.1.3.3 Alternative evaluation

The next stage is alternative evaluation, during which consumers form beliefs about whether a product can fulfil their needs/wants is constructed based on acquired information (Kiboro & Karanja, 2015).

This phase comprises two interlocking tasks (Payne et al., 1991). First, the determination of evaluation criteria, embodied in the process of information integration and comprehension (Gilbride & Allenby, 2004). From this, consumers determine the product attribute, or attributes,

most relevant in solving the problem at hand (Capon & Davis, 1984). Factors influencing the accomplishment of this task include problem complexity and the consumers' familiarity with the problem context (Payne et al., 1991). Faced with routine or simple problems, consumers are expected to adopt the *stored rules* acquired from previous consumptions, with a relatively short deliberation duration (Wyer, 2018). Conversely, when encountering novel or complex problems, *constructive rules* should be constructed on-the-spot, leading to iterative information processing (Bettman et al., 1998).

The second task involved in the evaluation stage involves choosing alternatives, and it is conducted on the basis of the evaluation criteria (Sheth et al., 1991). Some consumers may adopt a compensatory heuristic approach, where excellence in less important attributes of a certain alternative offsets its poor performance in the focal function area, leading to the selection of a product with an average overall performance (Payne et al., 1991). Conversely, others may adopt a non-compensatory heuristic approach, selecting a product that excels on the most important problem-solving attribute but performs less well on non-focal attributes (Loewenstein, 2001).

2.1.1.3.4 Purchase

A purchase is expected after the evaluation of alternatives. Commonly, consumers will agree to pay for a specific product or service soon after the desired product is located (Payne et al., 1991). However, sometimes, elapsed time may occur before a purchase can be made (Greenleaf & Lehmann, 1995). Two main reasons cause such time intervals. One is the external backdrop, namely, the intervention of other unrelated tasks, such as an unexpected natural catastrophe (Greenleaf, 2002). The other is insufficient personal resources, such as changed financial states (Bruner & Pomazal, 1988).

2.1.1.3.5 Post-purchase evaluation

Finally, post-purchase evaluation is conducted and significantly influences subsequent consumptions (Moutinho, 2000). Specifically, this evaluation provides feedback on the consumption process, where consumers check whether the purchased product or service matches its expected performance (Schmidt & Spreng, 1996). The evaluation results can be encoded into memory, in turn, functioning as consumption expertise and aiding future consumption (Diehl & Poynor, 2010).

In summary, the cognitive approach reveals consumer behaviour as a series of interrelated information processing activities (Holbrook, 1987), influenced by one's cognitive capability and external context (Verbeke, 2000). This relatively holistic interpretation has positioned the cognitive view as mainstream in explaining consumer behaviour (Bray, 2008). However, this

view also has shortcomings. First, it appears to overestimate consumers' cognitive power and neglects the role of affective responses. Second, it tends to over-generalise and linearises behavioural processes, therefore overlooking the wide diversity of individual decision-making modes. Finally, the cognitive view does not take the increased number of irrational purchases into consideration. These unsolved questions necessitate further studies.

2.1.1.4 Summary

To conclude, consumer behaviour is mainly interpreted from three approaches: the rational choice approach; the behaviourist approach; and the cognitive approach. The comparisons between these three approaches are summarised by the researcher in Figure 2.2.

	Rational choice approach	Behaviourist approach	Cognitive approach
Consumer	Rational human being	Learner and context adaptor	Decision maker with bounded rationality
Market	Well-organised with perfect information	Made up by stimuli controlled by entities other than consumers	Dynamically changing with abundant alternatives
Consumption task	Judgemental task aimed at maximum utility	Learning and adapting a task aimed at the reasonable allocation of behavioural resources	Problem-solving task constrained by consumer-market interaction
Consumer behaviour	Rational computation of product information in maximising the net utility	A co-product contingent upon one's consumption experience and contextual stimuli	Information processing based on one's cognitive power and contextual stimuli

Figure 2.2 The interpretation of consumer behaviour

Despite the identified differences, similarities among the three approaches also exist. First, they all share the view that consumer behaviour is contingent upon the exchange of information between individuals and consumption settings. The processing of information guides consumers towards a purchasing act. Second, these approaches adopt a deductive stance, aiming to identify a universal pattern of consumer behaviour and generalise consumption into simple act driven by the need for utility provided by market offerings (Erasmus et al., 2001; Schmitt & Zarantonello, 2013). However, in practice, especially within online markets, consumers' needs are also rooted in the fantasies, joys, and emotions arising from their interactions with the elements surrounding the market offerings (Gentile et al., 2007; Schmitt, 1999). To better understand consumer behaviours, some researchers have called for consumer-centric stances (e.g., Bazerman, 2001; Holbrook & Hirschman, 1982), but have failed to produce influential models. Hence, to better interpret contemporary consumer behaviours, follow-up studies are required.

2.1.2 Consumer behaviour in online marketplaces

The advancement of information technologies has transformed online platforms into fully-fledged marketplaces (Grant et al., 2007), amalgamating features from marketing channels and information systems (IS) (Hausman & Siekpe, 2009), enabling the timely consumption via

computer-mediated information exchanges (Rose et al., 2012). Within online platforms, consumers conduct consumption activities individually by interacting with computer-based interfaces and systems (Häubl & Trifts, 2000), simultaneously functioning as both online shoppers and IS users (Chen et al., 2017). Their behaviours are, therefore, influenced by the features of the virtual channels, leading to the exhibition of unique consumer characteristics (Karimi et al., 2018).

2.1.2.1 Features of online platforms and their impacts on consumption activities

The primary feature of online platforms is their *informativeness*, namely, the availability and accessibility of increased amounts and formats of product information (Häubl & Murray, 2003; Xia & Sudharshan, 2002). Specifically, the virtually limitless internet space alleviates physical constraints, enabling the display of a vast array of product offerings with profusive details (Dennis et al., 2009). Moreover, the adoption of virtual shelf space shortens the distance between merchants and consumers, with both foreign and domestic stores equidistant to consumers (Matt, 2012). Accordingly, consumers are enabled to make easier access and comparisons of more alternatives with reduced travel costs (Grant et al., 2007).

In addition to market offerings, multimedia functions supported by computer networks allow merchants to deliver product information in both textual, visual, audio and animatic formats (Rose et al., 2012). The multisensory presentation of product information contributes to the enhanced perceivability of all the product attributes (Huang et al., 2009), reducing the disparity between search products and experience products (Wang et al., 2018). Consequently, consumers can simultaneously check and compare different types of products, leading to more heterogeneous alternative sets (Zheng, 2006).

Overall, the informativeness of online channels provides consumers with the chance to conduct consumption activities with enhanced spatial and temporal conveniences (Hsieh et al., 2014). The traditional information asymmetry between buyers and sellers can be reduced to some extent (Clark & Wright, 2005), making online consumers more informed than their offline peers (Wu et al., 2015). Online consumers can, therefore, enjoy more flexibility to select offerings in their personal interests (Wu et al., 2015). However, the informativeness of online settings may sometimes exert an adverse effect. Constrained by inherent cognitive limits (Zeng & Reinartz, 2003), the abundance of information may result in frustration, leading to so-called information overload (Kim et al., 2017). In these cases, consumers may become irritated by their online interactions (Masoudi et al., 2015), resulting in reduced behavioural satisfaction (Malkanthe, 2013).

To facilitate consumers in benefitting from enriched market offerings, supportive agents are being introduced, helping online consumers to better arrange their consumption journey

(Bourlakis et al., 2008). The adoption of intelligent agents, in turn, leads to the second major feature of online shopping channels: *interactivity* (Karimi, 2013).

Online interactivity, also termed e-interactivity (Bourlakis et al., 2008), refers to the Information and communication technologies (ICT) enabled reciprocity between consumers and the marketplaces in terms of real-time information exchange and contingent behavioural responses (Häubl & Trifts, 2000). This e-interactivity empowers consumers to customise the shopping context to their personal requests (Wu et al., 2015), effectively improving their control over the consumption process and enhancing their shopping satisfaction (Hsieh et al., 2014).

Search tools form the base for the interactivity of the online channels (Diehl & Poynor, 2010). These tools, such as search bars and site maps, organise the market information into easily navigable and comparable forms (Häubl & Murray, 2003; Kohli et al., 2004), empowering consumers to search for products according to their requests (Moon, 2004). Additionally, the merchant-brokering function of these search agents allows consumers to flexibly switch between stores (Häubl & Trifts, 2000), effortlessly locating cost-effective products.

The trace information generated through consumers' interactions with search tools may then be automatically captured by the subsumed decision support systems (DSS), like recommender systems (RSs), serving as the basis for analysing and identifying consumers' demands (Wang & Benbasat, 2009). Personalised recommendations can then be provided to consumers based on the analysis results, offering useful information they would otherwise be unaware of (Brynjolfsson et al., 2011; Sproule & Archer, 2000). In this sense, online consumers may have increased knowledge about the market offerings, enabling them to conduct consumption trips with lower physical and mental effort (Ho et al., 2011; Wolfinbarger & Gilly, 2001).

Generally, search tools and DSSs can perform a role similar to online consumers with enhanced autonomy in managing their interactions with merchants and their offerings (Wolfinbarger & Gilly, 2001). Such behavioural freedom is further magnified with the offline salespeople (Duffy & Dale, 2002), interacting with and supporting consumers in personalised manners (Kim et al., 2017). But unlike offline salespeople, these ICT-based agents do not exert any in-person pressure over the shoppers (Zheng, 2006). Consequently, the lack of commitment endowse incorporation of Web 2.0 and social media tools, introducing novel information sources and interactive mechanisms into online settings (Huang & Benyoucef, 2013).

Both the features of Web 2.0 and social media allow consumers to interact and collaborate with peers in virtual communities, supporting a more dynamic consumption process (Chen & Shen, 2015). Consumers can directly access social information shared by other shoppers, creating opportunities to encounter previously unheard but useful knowledge from more far-reaching

sources than their direct social ties (Grange et al., 2019). Meanwhile, online consumers contribute their own knowledge and information to online markets (Bourlakis et al., 2008; Malkanthie, 2013), aiding others in customising their information-seeking and consumption trajectory (Kim et al., 2017). Consequently, social media features have transformed online consumers from passive recipients of marketing stimuli into active players with enhanced bargaining power and contextual control, gradually taking away the dominance of e-commerce practitioners within the online contexts (Huang & Benyoucef, 2013).

In summary, it is clear that technological development and ICTs have altered the consumption context. Online platforms function as both enriched product transaction channels and highly interactive infotainment systems (Gao & Bai, 2014), empowering consumers to carry out broader research on market offerings and engage in expanded interpersonal communications at reduced cost (Koufaris, 2002; Molinillo et al., 2018). Through ongoing in-store visits and explorations, online consumers gain more knowledge about online offerings (Anaza & Zhao, 2013), cultivating online platforms into consumer-driven information settings. In such settings, consumers have more autonomy in managing their behavioural courses (Hodkinson et al., 2000), gradually leading to distinct characteristics of online consumption behaviour.

2.1.2.2 Characteristics of online consumer behaviours

The informativeness and interactivity offered by online markets enables consumers to experience an increased sense of satisfaction and joyfulness through enhanced interactions with the information and elements surrounding the products (Gentile et al., 2007; Izogo & Jayawardhena, 2018). The motives driving online consumer behaviour extend beyond mere solutions to immediate purchasing tasks, encompassing the enhanced experiential value associated with an intrinsically rewarding visit to online stores (Cai & Xu, 2006; Mathwick et al., 2001).

Specifically, online consumers may desire a less utilitarian and more hedonically joyful in-store experience (Bridges & Florsheim, 2008). Therefore, their behaviour appears to be more stimuli-driven and unstructured (Karimi et al., 2018), leading to increased browsing time and the consultation of a more diverse range of information sources (Sproule & Archer, 2000). During these sessions, consumers tend to focus more on novel types of information, because hedonic satisfaction derives mainly from a sense of novelty and curiosity (Moe, 2003). This transformed consumption motives and directions, in turn, results in shifted behavioural trajectories with new characteristics (Darley et al., 2010).

To explain further, online consumers tend to prefer to discover and acquire unique niche products, rather than the bestsellers that already dominate the market (Brynjolfsson et al., 2011;

Garcia-Gathright et al., 2018). Therefore, *serendipity*, known as a pleasant surprise (Grange et al., 2019; Kim et al., 2021), becomes more appreciated by the online consumers.

To experience serendipitous moments, online consumers may engage in more iterative and dynamic shopping trips, spending more time continually searching (Peterson & Merino, 2003; Wang et al., 2011) and switching between merchants (Moe, 2003; Trevinal & Stenger, 2014). This exploration might lead to the identification of information that is interesting and surprising, which, in turn, further leading to a highly intrinsic state of enjoyment, known as *flow* (Izogo & Jayawardhena, 2018). When immersed in a flow state, consumers' curiosity may be sparked (Gao & Bai, 2014), intensifying their focus on information seeking and leading to a lost sense of time (Bridges & Florsheim, 2008). As a result, purchasing decisions may be made after a relatively long period of time, but with enhanced satisfaction (Wolfenbarger & Gilly, 2001).

For those visiting online stores without a specific purchase in mind, serendipity is also being increasingly valued (Grange et al., 2019; Wang et al., 2011). For them, visiting online stores is more of a process of knowledge-building or pure entertainment (Moe, 2003). In these cases, online consumers satisfy themselves with novel information and engaging in the in-store experience, affording them the thrill of exploration (Wolfenbarger & Gilly, 2001), a sense of escapism and pleasure (Mathwick et al., 2001) and the enjoyment of socialising (Arnold & Reynolds, 2003). A satisfying hedonic trip yields higher trust in online stores, leading to increased future visits and purchases (Ha & Perks, 2005).

Sometimes, these serendipitous in-store sessions can lead to unplanned purchasing decisions for both the goal-directed shoppers and those without clear-stated purchasing desires (Chung et al., 2017; Cowart & Goldsmith, 2007). The interactivity of online platforms could provide consumers with more updated and surprising information concerning their potential needs (Häubl & Trifts, 2000). The more time spent in on-going sessions within the infotainment platforms, the better consumers' implicit/inexplicit needs can be identified, in turn, evoking an unexpected urge to make a purchase (Huang & Kuo, 2012).

Additionally, since all of the products are concentrated on limited screen space (Xia & Sudharshan, 2002), information that is interesting and surprising - also known as serendipitous information - becomes more eye-catching and has a more salient impact on triggering consumers' purchasing desires (Song et al., 2015; Xia & Sudharshan, 2002). The impulsivity of online shoppers has, therefore, been gradually exacerbated (Cowart & Goldsmith, 2007; Wu et al., 2016), resulting in a less linear behavioural trajectory (Huang & Kuo, 2012).

Overall then, as ICTs allow for enhanced access and control over contextual information (Wang & Hsiao, 2012), online consumers display more flexible and demanding information-seeking and consumption behaviours (Koufaris, 2002). Their expectations from in-store

experiences extend beyond functional utility to include a pleasant surprise, namely, serendipity (Grange et al., 2019; Kim et al., 2021). The encounter with unique and interesting information serendipitously plays a crucial role in online context, contributing to both the construction of an enjoyable flow experience (Gao & Bai, 2014), as well as the enrichment of individual product knowledge during the undirected store visits (Grange et al., 2019).

2.1.2.3 Summary

To conclude, as infotainment systems (Gao & Bai, 2014), online platforms afford consumers with enhanced autonomy, resulting in behaviour that differs from offline contexts. The experience of serendipity, i.e., the pursuit of a pleasant surprise, is increasingly valued by online consumers (Grange et al., 2019; Kim et al., 2021) and serves as a significant driver towards consumer satisfaction (Xiang et al., 2016; Yi et al., 2017). In other words, online consumers are more prepared and willing to encounter less familiar yet interesting information to pursue new rewards (Garcia-Gathright et al., 2018).

2.1.3 Design serendipity in online marketplaces

With the growing favour among online consumers for serendipity, it has emerged as a new focus in the online market (Grange et al., 2019). Major online platforms, including Amazon, Spotify, and eBay, have begun recognising the value of serendipitous experiences in their digital environments (Kim et al., 2017; Reviglio, 2019a; b). This trend has led to the conscious design of serendipity in the digital shopping experience, aiming to create more engaging and satisfying interactions for customers. Based on their objectives, designs that are prone to creating serendipity can be categorised into two types: those aiming to craft more pleasant surprises, and those aiming to elevate the noticeability and attractiveness of these crafted surprises (Björneborn, 2017; McCay-Peet & Toms, 2017).

2.1.3.1 Designs to craft pleasant surprises

Central to fostering more pleasant surprises is the optimisation of RSs (McCay-Peet & Toms, 2017; Yi et al., 2017). To refine RSs, designers strive to blend novel and unexpected elements into their traditionally relevance-focused recommendations (Kotkov et al., 2016). Specifically, novel items are unpopular in the market and distant from a consumer's profile (Kotkov et al., 2016, 2023), while unexpected items characterise those dissimilar to what consumers tend to consume (Kotkov et al., 2023). The surprisingness of novel items lies in their fresh content, whereas the surprisingness of unexpected items springs from their sudden emergence.

Two groups of strategies are employed to integrate more novelty and unexpectedness into the RSs: the improvement of existing recommendation algorithms or the creation of entirely new ones.

2.1.3.1.1 Improvement of existing recommendation algorithms

Strategies of this group aim to infuse greater novelty and unexpectedness directly into the existing relevance and accuracy-oriented recommendation algorithms. Two primary groups of tactics are often employed. The first group is re-ranking, wherein results initially prioritised based on their accuracy are re-ordered to highlight items with lower relevance but higher potential for unexpectedness and novelty. (Kefalidou and Sharples, 2016; Kotkov et al., 2016). The second group of tactics involves logic alteration (Kotkov et al., 2016), namely, modifying the underlying logic of the recommendation algorithms to generate to a broader range of possibilities. A prime example of this modification is the shift from the k-nearest neighbour algorithm to the k-furthest neighbour algorithm (Kotkov et al., 2016; Said et al., 2013).

2.1.3.1.2 Creation of new recommendation algorithms

Strategies of this group move beyond the limitations of traditional accuracy-based algorithms and introduce new serendipity-prone algorithms. These algorithms can be categorised into two main groups. The first group is imperfect match algorithms. These are specifically engineered to recommend items that are different from consumers' existing profiles (Kefalidou & Sharples, 2016; Wang et al., 2018). A prime exemplar from this category is the novel analyser presented by Maccatrozzo et al. (2017) leveraging the Linked Open Data Path to guide users towards items diverging from their past preferences. The second group is profile-agnostic algorithms, which, rather than relying solely on consumers' profiles for recommendations, harness more randomised sources (Kotkov et al., 2016; Ziarani & Ravanmehr, 2021), such as Wikipedia and real-time contextual data (e.g., de Gemmis et al., 2015). This approach allows for recommendations that transcend the conventional paradigms of personalisation, offering selections that appear more unpredictable and novel to serendipitists (Reviglio, 2017).

Regardless of their emphasis, both groups of strategies benefit greatly from advanced data mining and artificial intelligence (AI) techniques (de Melo, 2018; Fan & Niu, 2018). In particular, the progression of data mining techniques provides designers with a richer comprehension of both familiar and unfamiliar territories for serendipitists. This deepened understanding subsequently facilitates the introduction of more captivating surprises that extend beyond the serendipitists' current knowledge base (Kefalidou & Sharples, 2016; Reviglio, 2023). Additionally, incorporating AI amplifies the humanness of RS (Oh et al., 2022), ensuring that the proposed surprises resonate more naturally and are more readily welcomed by serendipitists.

2.1.3.2 Designs to propagate crafted surprise

In online marketplaces, designs facilitating consumers' effective notice and appreciation of the value of crafted surprises can be categorised into three main groups: optimisation of interfaces; provision of supportive tools; and employment of marketing strategies (Makri et al., 2014; Smets et al., 2022).

2.1.3.2.1 Optimisation of interfaces

Interfaces are the key channels through which consumers engage with online content (Jiang et al., 2019; McCay-Peet & Toms, 2017). Optimising these channels is crucial for facilitating consumers in noticing the crafted surprises (Smets et al., 2022). Strategies aiming to design more serendipity-prone interfaces can be categorised into three main groups:

(1) Boosting explorability: Strategies in this category aim to increase consumers' opportunities to discover hidden surprises by encouraging deeper and more prolonged exploration of the context (Makri et al., 2014; Taramigkou et al., 2013). Central to this strategy is the diversification of information within a single interface (Erdelez, 1995; Makri et al., 2014). An expansive and varied array of resources not only captivates consumers but also fuels their intrinsic curiosity, prompting them to delve deeper into the content (Björneborn, 2017; Makri et al., 2014).

(2) Streamlining information presentation (Niu et al., 2021; Qin et al., 2022): Strategies here are crafted to aid consumers in effortlessly navigating through a plethora of heterogeneous information, ensuring they are not overwhelmed before stumbling upon serendipitous findings (Smets et al., 2022). The proposed presentation techniques encompass the multi-listing format for data representation (Jannach et al., 2021) and attribute-based display methods (Niu et al., 2021).

(3) Highlighting surprises (Björneborn, 2017; Jiang et al., 2019): Strategies in this area endeavour to draw consumers' attention to surprising items they might otherwise overlook, especially those unheard before (Björneborn, 2017; Jiang et al., 2019). Prevalent techniques feature attention-commanding pop-ups and the integration of prominent headers or banners (Afridi & Outay, 2021; Smets et al., 2022).

2.1.3.2.2 Provision of supportive tools

To aid consumers in efficiently perceiving grasping the value of the crafted surprise they notice, two main types of supportive tools – visualisation tools and social tools – are further introduced:

(1) Visualisation tools: Aid consumers in intuitively recognising the connection between the noticed surprise and their existing knowledge and real-life situations (McCay-Peet & Toms,

2017; Reviglio, 2017). Features like detailed product images, videos, and interactive elements allow users to virtually experience the product, envisioning better applications for these findings. Advances in virtual and augmented reality (VR and AR) technologies have contributed to the design of better visualisation tools (Sung et al., 2021; Thudt et al., 2012).

(2) Social tools: Include features such as social tagging and Q&A systems (Grange et al., 2019; Taramigkou et al., 2013). These tools empower consumers to harness the collective wisdom of others in understanding and seizing the value of the noticed surprise. Advanced natural language processing (NLP) techniques have further enhanced the efficacy of these social tools (Taramigkou et al., 2013). With these advancements, these tools now facilitate more streamlined, real-time exchanges between serendipitists enabling richer interactions and collaborative understanding (Oh et al., 2022).

2.1.3.2.3 Employing marketing strategies

Finally, specific marketing strategies are implemented to enhance the attractiveness of the crafted surprises, primarily focusing on creating a perception among consumers that these surprises are specially curated for them (Kim et al., 2021). Strategies include offering limited releases, early access to specific customer groups, or highlighting unique features of surprises (Shibly & Chatterjee, 2020). Such approaches make the surprises more appealing and desirable, leveraging the consumers' desire to embrace them.

2.1.3.3 Debate on serendipity-prone designs

The serendipity-prone design strategies outlined above, while receiving substantial support and achieving numerous successes, have also faced persistent criticisms.

2.1.3.3.1 Criticism of serendipity-prone designs

Most criticisms of these design strategies originate from serendipity-focused studies, particularly information science, a field that has contributed significantly to the understanding of serendipity (Liu et al., 2022; Reviglio, 2023). The primary reason for scepticism in these studies is that many of the proposed design strategies for e-commerce serendipity (i.e. serendipity in online marketplace) lack a solid theoretical foundation.

In the field of consumer behaviour, serendipity is often simplistically defined as a pleasant surprise (Kim et al., 2021; Oh et al., 2022) and is often considered only in relation to other topics rather than being explored as a standalone phenomenon. For example, serendipity is discussed as a factor in optimising recommendation systems (RSs) (Ge et al., 2010). It is also mentioned in the context of impulse purchasing, as it is considered to have an influence on consumer impulsiveness (e.g. Akram et al., 2018). As a result, the understanding of serendipity

within consumer behaviour can be characterised as fragmented. The complexities and nuances of serendipity in the context of e-commerce remain unclear and require further elaboration.

Against this backdrop, the design attempts of e-commerce practitioners to elicit serendipity can be described as naïve or perhaps single-minded in some way bare-minded. Such single-minded designs, lacking an in-depth theoretical foundation, are likely to fall short of achieving the desired outcomes sought by e-commerce practitioners (McCay-Peet & Toms, 2017). Even more concerning, these designs could potentially become more of an obstacle to than a facilitator of serendipity in the online marketplace (Erdelez et al., 2019). There are three main reasons for the caution raised in information science regarding this issue.

First, designs without a theoretical guidance often overlook the value perceptions of consumers, who are the actual experiencers of the designed serendipity. Since a pleasant surprise is a subjective perception (Kim et al., 2021), a surprise deemed rewarding by e-commerce practitioners might not necessarily strike a chord with consumers. For serendipity design to be effective, it is crucial to weave in consumers' feedback and insights (Kotkov et al., 2023).

Second, the surprise curated without a theoretical guidance may lack the authenticity of genuine unexpectedness. Authentic surprises arise spontaneously and are unregulated random events, which are elusive, perpetually emerging, and genuinely novel (McCay-Peet & Toms, 2011; Schmidt, 2021). In contrast, consciously curated surprises are algorithmically moulded, often constrained to the consumers' digital footprints (Erdelez et al., 2019; Krotoski, 2011). While these surprises may initially appear novel, their charm may be fleeting (Erdelez et al., 2019; Farrar, 2010). With time, their patterns become predictable, diminishing the initial sense of being novel (Erdelez & Jahnke, 2018; Lutz et al., 2017). In essence, these artificial surprises offer an illusion of genuine unexpectedness (Erdelez et al., 2019), questioning whether they should be viewed as serendipitous.

The third concern is the potential for conscious designs to diminish the value derived from serendipity (Erdelez et al., 2019; Schmidt, 2021). At their core, conscious designs reflect the priorities of their creators – the e-commerce practitioners – and thus lack a true neutral stance (Reviglio, 2023; Smets, 2023). Alarming, e-commerce practitioners, motivated primarily by financial incentives, might skew these serendipity-inspired designs for maximal profit (Krotoski, 2011; Oh et al., 2022). In such a landscape, where profit drives design decisions, the authentic pleasure of serendipity for serendipitists might be overlooked (Krotoski, 2011). When profit-centric agendas dominate, these crafted serendipitous moments risk devolving into mere marketing ploys.

2.3.3.3.2 Supports for serendipity-prone designs

Despite the earlier reservations, there is considerable support for the conscious attempts of e-commerce practitioners to design for serendipity. This support is reflected in research on both information science (e.g. Makri et al., 2014) and consumer behaviour (e.g. Kim et al., 2021).

Proponents believe that conscious designs, especially in online contexts, have the potential to foster serendipitous moments (Björneborn, 2017; Reviglio, 2019b, 2023). With the aid of advanced computational technologies like AI, online marketplaces can overcome time and space limitations, enabling uninterrupted connectivity and presenting serendipitists with a plethora of choices of novel information (Makri et al., 2014). Furthermore, through the integration of refined algorithms, these platforms can amplify consumers' intuitive acumen, guiding them towards unexpected discoveries they are eager to explore (McCay-Peet & Quan-Haase, 2014; Reviglio, 2019a).

Moreover, studies that support e-commerce practitioner design often base these designs on consumer surveys or experiments, demonstrating their effectiveness. For instance, Grange et al. (2019) conducted a survey with 287 online consumers and found that incorporating social media elements into online marketplaces significantly enhances the perceived unexpectedness and interestingness of these platforms. Similarly, Oh et al. (2022) conducted experiments to test the impact of incorporating novel elements into recommendations. Their study focused on a movie website and demonstrated that adding novel elements to the recommendation system could increase the frequency of subscribers experiencing serendipity.

Given the examples above, it can be said that e-commerce practitioners' conscious design can indeed be a powerful tool for enhancing the online consumer experience through serendipity.

2.1.3.4 Summary

Given the mutual benefits of serendipity for both online consumers and e-commerce practitioners, it is understandable that practitioners are keen to design consciously for serendipity. Yet, their efforts are met with both scepticism and support within the research community. To resolve this debate, a direct approach could involve seeking the perspectives of online consumers themselves.

However, given the fragmented nature of research on serendipity within the consumer behaviour field, it is necessary to obtain insights from serendipity-focused research in information science – a field that has contributed significantly to the current understanding and theory of serendipity. By combining the insights from online consumers with the theoretical foundations provided by information science, e-commerce practitioners can develop more informed design strategies that effectively foster serendipity in online marketplaces.

2.2 The scope of serendipity

2.2.1 The interpretation of serendipity

The concept of serendipity, initially introduced by Walpole in the eighteenth century, roughly denotes an unexpected discovery triggered by chance and sagacity (Knudsen & Lemmergaard, 2014). Since then, the word remained dormant until the mid-twentieth century, when a group of historians accidentally rediscovered it and sparked research in various fields (van Anandel, 1994; Napolitano, 2013).

2.2.1.1 Characteristics of serendipity

Due to the lack of specific details and the long history of Walpole's proposal, there is no definite conceptualisation about what serendipity refers to and how it should be used (Copeland, 2019; McCay-Peet & Toms, 2017). Different interpretations about serendipity exist, and over time, serendipity has evolved into a multi-dimensional conceptual space, rather than remaining a singular, discrete concept. This conceptual space is grounded in three core characteristics of serendipity, namely: unexpectedness; valuableness; and sagacity (Busch, 2022; Maloney & Conrad, 2016; Makri & Blandford, 2012a, 2012b).

2.2.1.1.1 Unexpectedness

Unexpectedness makes up the first and core feature, indicating that serendipity often emerges without intentional pursuit (Makri et al., 2014; Reviglio, 2019a). For serendipitists – those who experience serendipity (Smets, 2023; van Anandel, 1994) – it often manifests as an accidental, yet pleasant, surprise.

Being accidental means that when serendipity stems from natural randomness (de Melo, 2018), and when it strikes, serendipitists often have little prior expectation or involvement (Erdelez, 1997; Jiang et al., 2015). Instead, their attention is often engaged in unrelated foreground activities (Makri & Buckley, 2019). These findings surprise serendipitists through the way they appear and/or the content they carry (Foster & Ford, 2003), both of which stand in contrast to what serendipitists have known before while remaining intriguing and beneficial in their eyes (Jiang et al., 2015; Reviglio, 2017). Consequently, the dual effect of these findings – simultaneously sparking curiosity about the unknown (Makri & Blandford, 2012b) and providing a hint of value – fosters a sense of luck within the serendipitists (Kim et al., 2021), compelling them to delve deeper into these newfound wonders.

2.2.1.1.2 Valuableness

For an event to be classified as serendipity, it is not enough for it to be merely unexpected. It must also result in beneficial outcomes (Makri & Blandford, 2012a, 2012b; McCay-Peet &

Toms, 2017). The benefits of serendipity can be elusive. They might be centred on the emotional spectrum, bringing about feelings of wonder or evoking cherished memories of past joys (Erdelez, 1999; McCay-Peet & Toms, 2015). Alternatively, they can manifest in more tangible ways, such as sparking cognitive innovation, pointing towards promising developmental directions, or providing swift solutions to longstanding questions (Busch, 2022; Liu et al., 2022).

Notably, these benefits are not limited to the serendipitists who experience them directly. They can resonate with a broader audience, encompassing an organisation, a community or even having a global impact (McCay-Peet & Toms, 2015, 2017). A prime example of the serendipitous value is Alexander Fleming's discovery of penicillin, which catalysed significant advancements in both medical and societal spheres. As such, serendipity is not merely a good discovery; it is often held in high regard, recognised as valuable, and even seen as a pivotal driver of societal advancement (Makri et al., 2014; McBirnie, 2008; Reviglio, 2017). Consequently, there has been an increasing interest in cultivating serendipity (Björneborn, 2017; Makri et al., 2014; Reviglio, 2017).

2.2.1.1.3 Sagacity

Converting unexpected occurrences into beneficial results largely depends on the sagacity of the serendipitists. Without their sagacity, what might be a moment of serendipity remains a mere random happenstance (McCay-Peet & Toms, 2017).

Sagacity, essential for nurturing serendipity, revolves around two core groups. The first is a mental readiness to welcome the unforeseen (Cunha et al., 2015; Heinström, 2006). The second is the intellectual preparedness to act on sudden discoveries (Copeland, 2019; Lutz et al., 2017). Without this receptive mindset, potential serendipitists may bypass moments of serendipity (Busch, 2022; Reviglio, 2017), often discarding unique findings as mere distractions (McCay-Peet & Toms, 2015). However, acknowledging the unexpected does not automatically generate value (de Rond, 2014). True value arises from diligent groundwork. This leans heavily on the serendipitists' expertise and accumulated knowledge (Makri & Blandford, 2012a, 2012b; Reviglio, 2017). Without such dedication and cognitive preparation, the latent value might remain hidden, turning a potential serendipitous moment into a lost opportunity.

By highlighting the integral role of sagacity, we gain a deeper appreciation of serendipity's multifaceted nature (Jiang et al., 2015; Reviglio, 2023). Rather than viewing it solely as a by-product of external circumstances, it becomes evident that the serendipitists' inner cognitive and emotional dynamics are equally influential. This interplay of external events and internal reflections positions serendipity as an intensely personal, subjective experience, with its core

being characterised by the element of unexpectedness (Makri & Blandford, 2012a, 2012b; Reviglio, 2023).

2.2.1.2 Distinguishing serendipity from related terms

Insights can be generated from the aforementioned conditions, elucidating specific features of serendipity and distinguishing it from mere luck.

More concretely, while serendipity originates from a coincidence from the natural randomness (de Melo, 2018), it is actively propelled forward by serendipitists that cognitively perceive the stroke of inspiration (Copeland, 2019; Cunha et al., 2015).

Contrarily, pure luck is a rare stroke of good fortune from beginning to end (de Rond, 2014; Ma, 2002). That is to say, serendipity only favours prepared minds that will act upon it (Merton & Barber, 2011; Pontis et al., 2016), while pure luck may befall those less proactive (Dew, 2009). In this sense, chance and individual wisdom are placed on an equal stance within a serendipitous experience, consequently, making serendipity a highly subjective and personal experience that favours a sagacious few (Makri & Blandford, 2012b; McBirnie & Urquhart, 2011).

To understand how the sagacious individuals captures the luckiness from natural randomness, the process of serendipity needs to be explored.

2.2.2 The process of serendipity

In the current literature, models are the most commonly employed tools for depicting serendipitous experiences due to their effectiveness in representing complex phenomena (Johnson, 2009). Some classical models are reviewed below, providing a better understanding of the serendipitous experience.

2.2.2.1 The conceptual model of serendipity facets in everyday chance encounters

Based on real-life cases collected via blog mining, Rubin et al. (2011) postulated elements that contribute to daily serendipitous experiences and how these elements interact within everyday routines (Figure 2.3). Termed as everyday chance encounters, the daily serendipitous experience is triggered by a prepared mind, the act of noticing and chance, with the discovery acting as the link leading to a sense of surprise and fortuitous outcome (Rubin et al., 2011).

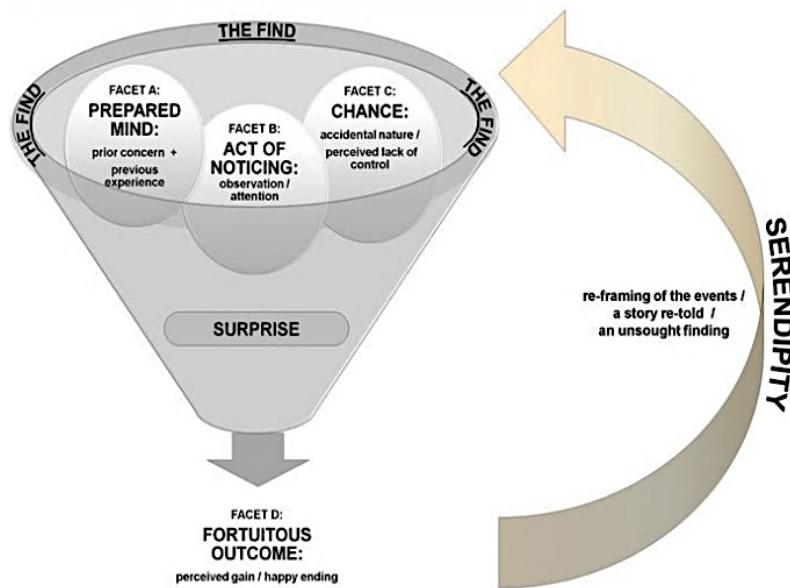


Figure 2.3 The conceptual model of serendipitous facets in everyday chance encounters (Rubin et al., 2011)

The central facet bolstering serendipity is *the find* – namely, what a serendipitist come across accidentally (Rubin et al., 2011). Types of find range from information, items and places to people, each encompassing stimulant elements with subjective value for their discoverer (Makri & Blandford, 2012a). It is these tempting elements that contribute most to the serendipitists’ reformulation of their activity pathway (Jiang et al., 2015). Aside from the contained value intimation, the find often grabs serendipitists’ attention due to its spontaneous occurrence (i.e., *chance*), which requires little or even no devotion of personal effort and control. Hence, encountering the find will endow serendipitists with a sense of fortune (Arfini et al., 2018), accordingly arousing their curiosity and the *act of noticing*.

The act of noticing, as outlined by Rubin et al. (2011), comprises two interlinking sub-reactions. One involves the active seizure of sensory clues in order to prevent loss of the opportunity. The other entails the off-hand deviation of the cognitive trajectory from foreground activity to the unexpected find (Rahman & Wilson, 2015). Serendipitists’ *prepared mind* (i.e., prior concerns and experience) determines whether a potential serendipitous find can be successfully noticed (Rubin et al., 2011). Prior concerns refer to long-suffered problems or an itch point that individuals are keen to overcome (Rubin et al., 2011). The desire to resolve these problems primes serendipitists’ sensitivity and attention towards potentially useful finds (Makri & Blandford, 2012b). Conversely, interesting but less useful finds stand out from the background chaos due to their link with the serendipitists’ experience, including domain expertise or even hobbies (Jiang et al., 2019).

Apart from elevating serendipitists’ noticing power, prepared minds also contribute to the comprehension of the find, leading to *surprise* and the *fortuitous outcomes* (Rubin et al., 2011).

Specifically, the fortuitous outcomes often appear in a layered manner. On a lower level is the perceived sense of gain through immediate positive emotions perceived when the find is noticed (Rubin et al., 2011). On top of the emotional gains are substantial values, such as the solution for an existing problem, which have far-reaching impacts but require a longer reflection time to perceive (Makri & Blandford, 2012a). It is only when serendipitists perceives these fortuitous outcomes, that the entire event can be termed serendipitous (Rubin et al., 2011).

From this model, the connotations of the proposed characterisers of serendipity are interlinked vividly, leading to the better understanding of the essence of serendipity (Makri & Blandford, 2012a). Above all, this model uncovers that serendipity is a *retrospective experience*, which can only be determined when positive results are generated. Hence, when studying serendipity, the three characteristics mentioned above need to be considered simultaneously. Moreover, as shown in a layered manner, the unanticipated value contributed by serendipitous experiences may be diverse and complex, requiring time to reflect. Accordingly, to understand the unexpected value, studying a serendipitous experience, both at the moment it happens and sometime after the luck strikes might be more beneficial.

However, this model focuses solely on the germination of serendipity but falls short in clarifying the follow-up value creation process. Also, this model only uncovers the interactions between the serendipitous elements in a static manner rather than a clearly explained activity process; hence, fails to explain in-detail the how the elements interact in triggering a serendipitous experience.

2.2.2.2 The information encountering (IE) model

To gain a more comprehensive understanding of the occurrence trajectory of serendipitous experiences, the IE model is reviewed.

This model was first proposed by Erdelez through interviews with super encounters (i.e., those who regard serendipity as a principal way of finding information) and further developed by multiple researchers in different disciplines (Erdelez, 1999). It depicts a passive but valuable adventure embedded in an active information seeking process (Panahi et al., 2016; Workman et al., 2016). This unexpected but valuable antecedent is embedded in five main stages: noticing; stopping; examining; capturing; and returning (Erdelez, 2004, 2009) (see Figure 2.4).

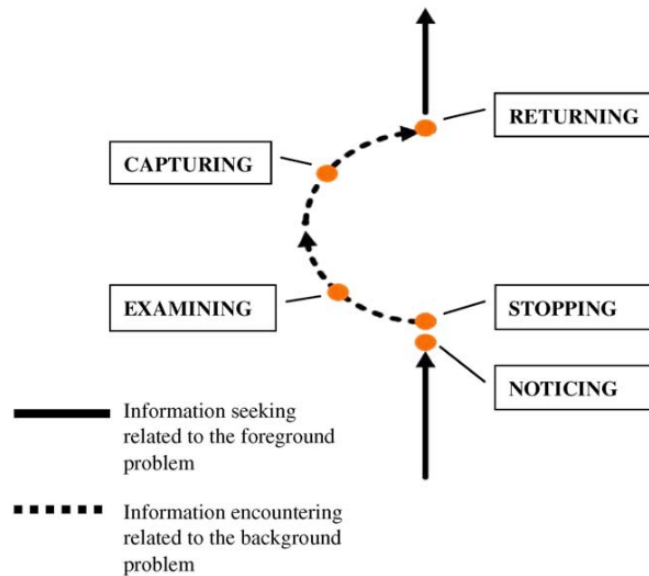


Figure 2.4 The IE model (Erdelez, 2004)

The *noticing stage* is crucial to the initiation of an IE episode (Makri & Buckley, 2019). It is where serendipitists' attention is caught by the serendipitous finding (Jiang et al., 2019). These findings contain perceptual clues that point out solutions relating to serendipitists' background problems (Erdelez, 2004, 1999), inducing serendipitists' consideration about reframing their information journey (Panahi et al., 2016; Pontis, 2016). Disturbances, however, could emerge at this stage from both external and internal contexts in the form of foreground task urgency and an uncertain cost-benefit trade-off, respectively (Dantonio et al., 2012; Makri & Buckley, 2019). Hence, serendipitists might only be willing to continue a serendipitous journey when the perceived value of IE is beyond the initial activity and can be extracted with reasonable personal resources (Jiang et al., 2018; Makri et al., 2017).

The serendipitists' consent to invest in an unexpected information journey leads to their suspension of the foreground activity, indicating the *stopping stage*, which only lasts briefly (Erdelez, 2004; Latham et al., 2019). Despite the short duration, it is also at the stopping stage that serendipitists begin to actively acquire the serendipitous finding (Jiang et al., 2019) in terms of conducting observable behaviour such as clicking on a hyperlink (Jiang et al., 2015; Makri et al., 2019).

Subsequently, the serendipitous finding is *examined* by the serendipitists (Erdelez, 2004, 2009), considering its usefulness, interestingness, and the reliability of its source (Jiang et al., 2015; Pontis et al., 2016). Commonly, such examination is through a series of high-level cognitive activities, such as reasoning, comparing and associating (Jiang et al., 2015, 2019), with two distinct results being generated. One is the serendipitists' confirmation of serendipitous finding as valuable with unexpected usage (Erdelez, 2004), prompting the continuation of the IE

trajectory. Another is the abrupt end of the IE process as an immediate stop loss, as the serendipitous finding has been judged useless (Makri & Buckley, 2019).

The *capturing stage* follows the examination stage (Erdelez, 2004, 2009), in which the serendipitous finding is converted into fortuitous outcomes by means of direct use, storing, and sharing (Jiang et al., 2015, 2018). The value generated from an IE incident can enable serendipitists to solve persistent problems (Makri & Blandford, 2012a), satisfy their needs or interests (Panahi et al., 2016), and even discover fruitful further research or a work pathway (Zhou et al., 2018). However, because of the contextual constraints, such as a dead hyperlink (Jiang et al., 2015) and some serendipitists' poor information management capability (Erdelez, 2017; Stewart & Basic, 2014), there also exist circumstances when the value extraction behaviour is conducted and where serendipitists cannot perceive the anticipated value (Makri & Buckley, 2019).

The *returning stage* comes after the capturing stage and indicates the end of the entire IE episode (Erdelez, 2004, 2009). It is at this stage that some serendipitists decide to return to the foreground information processing activity after careful reconsideration of the importance of the initial task (Jiang et al., 2018). Others, who have already been side-tracked by the serendipitous information (Dantonio et al., 2012), may conclude all tasks when a sense of satisfaction is perceived.

As reviewed above, the IE model reveals how serendipitous experiences occurs during goal-driven information activities. The detailed illustration of the happening process of serendipitous encounters makes the utility of this model not limited to the field of information behaviour. The IE model also progressively promotes research on serendipity in other areas such as journalism (e.g., Yadamsuren, 2013). Importantly, Wang et al. (2011) proposed that the IE model could be applied to explaining the consumers' unplanned purchasing activity. Although specific research results were not elaborated, their proposal proved the enlightening potential of the IE model for aiding the understanding of online consumers' serendipitous experience.

However, this model has several deficiencies. First, it places great emphasis on how a serendipitous experience comes into being, with little attention being paid to downstream activity such as information utilisation. Additionally, since it is generated from interviews with super encounters, the IE model may have an inherited biased stance in depicting a typical serendipitous experience.

2.2.2.3 The process model of serendipitous experience

To explore how value is extracted from infrequent opportunities, the process model postulated by McCay-Peet and Toms (2015) is reviewed (see Figure 2.5). Concerning serendipitists' social roles, this model uncovers the evolutionary trajectory and impacts of serendipitous discovery within academic working situations.

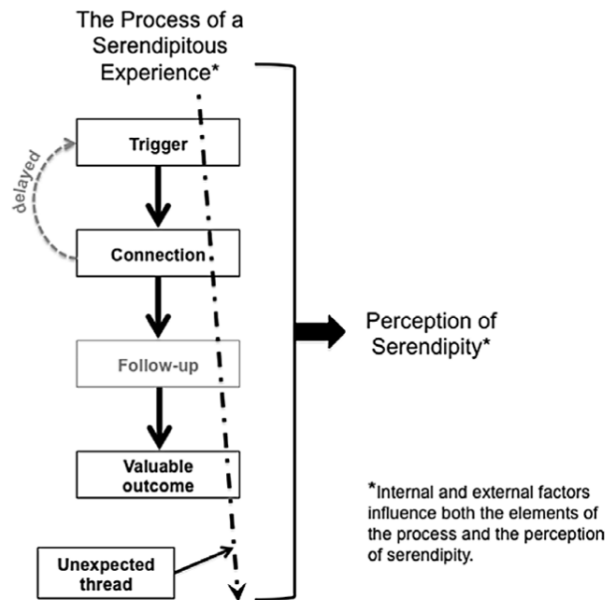


Figure 2.5 The process of a serendipitous experience (McCay-Peet & Toms, 2015)

Similar to the IE experience, work-related serendipitous discoveries are initiated by *triggers* (i.e., small sections of the serendipitous findings) scattered in the environment and root back to serendipitists' assignments and social interactions (McCay-Peet & Toms, 2015). Among these triggers, those enclosing elements intrinsically irrelevant to the serendipitists' current activity, rather than those with unheard-of content, stand out and attract the serendipitists' attention. In other words, the context and timing within which a trigger emerges matters more than content, as surprise generally results from the interruption of an existing task trajectory (McBirnle, 2008).

Encountering a trigger, however, merely strikes a sense of amazement in serendipitists (Makri et al., 2017). In order to generate a serendipitous experience, *connections* between the trigger and serendipitists' existing knowledge have to be built. It is from these mental connections that the unexpected benefits endowed within the chance encounters can be identified in leading to the serendipitists' subsequent consent to reframe their working pathway away from foreground tasks. Two types of connections exist: (1) problem connections, linking the trigger and a long-suffered problem, and (2) new direction connections, established by translating the trigger as a key for entering new territories matching the individuals' working interests (McCay-Peet &

Toms, 2015). Depending on the openness of serendipitists' mental state and the organisational rules, and the availability of both human and non-human contextual assistance (Panahi et al., 2016), connections can be established immediately or after a period of cognitive reflection (i.e., *delay*) (Kefalidou & Sharples, 2016). Also, the construction of connections may not always be successful. In some cases, serendipitists' rejection reactions may be activated by their *prepared mind*, with the adoption of the unanticipated stimulus regarded as an irrational activity that contradicts serendipitists' existing knowledge and prior understanding of the context (Allen & Erdelez, 2018; McCay-Peet & Toms, 2015).

After evaluating the unexpected adventure as potentially beneficial, serendipitists invest increased resources, including time and effort (McCay-Peet & Toms, 2015). Considering the trade-off between risk and gain (Makri et al., 2017), the investment process (i.e., *follow up*) is conducted in an iterative manner, which begins when the trigger is actively captured via low-level behavioural activities such as recording and bookmarking (McCay-Peet et al., 2015). The initially perceived value via a serendipitist-trigger connection is then reconsidered by conducting in-person information seeking or interpersonal consultation (Makri & Buckley, 2019). In turn, these activities lead to the acquisition of information, supplementing serendipitists' existing knowledge and enabling encounters to affirm and capture the value of unexpected encounters (McCay-Peet & Toms, 2017). Subsequently, *valuable outcomes* are successively produced. Since the fortuitous opportunity derives from a working environment, the beneficiary group of serendipity can range from its discoverer to the organisation to which they belong (McCay-Peet & Toms, 2015). These valuable outcomes, from positive emotions to unanticipated life-changing turnarounds, lead individuals to consider the entire event as serendipitous.

In summary, in working context, serendipity is a series of value creation incidents connected by an unexpected thread (McCay-Peet & Toms, 2015). From the above description, prominent knowledge can be learnt about serendipity. First, by pointing out the forward and backwards movements among trigger and connection, this model reveals that serendipity may not always present itself in a linear manner. Factors like serendipitists' prepared mind might exert a potential blocking effect when luck strikes. Second, considering the serendipity's embeddedness in working context, this model reveals that the contextual features can affect the frequency of serendipity, namely, serendipity can be context-sensitive. Third, considering the serendipitists' social roles, this model uncovers that unanticipated luckiness obtained by serendipitists is not only valuable to themselves but could also be beneficial to a third party associated with them. Finally, through the clarification of delay and follow up, this model unveils the tip of the serendipity-based value creation process to some extent.

Despite the insights yielded by it, this model still has defects. To begin with, although it proposes that the beneficiary range of serendipity is not limited to a specific serendipitists, this model does not specify the type of *value* that each potential beneficiary group could gain. Moreover, this model derives from a study regarding academics as its main data source, thereby, its transferability to other contexts, especially in the e-commerce context, should be carefully considered.

2.2.3 Summary

To conclude, this section has revisited the literature to gain initial understandings of serendipity. As shown above, serendipity is an unexpected and valuable experience that occurs through natural randomness and can only be captured by sagacious individuals iteratively and retrospectively.

However, these insights offer limited enlightenment for this particular research, as they do not explicitly clarify the nature of e-commerce serendipity. Thus, solely relying on these theories, we still cannot confirm the existence of e-commerce serendipity resulting from the conscious design efforts of e-commerce practitioners. The reasons for the limited insights from the literature are multifaceted.

First, existing models of serendipity primarily focus on uncovering the occurrence of serendipity, with little emphasis on the downstream value-creation activities. Without exploring the impact and value creation that follow serendipitous encounters, our understanding of serendipity remains incomplete. Thus, we cannot infer the complete nature of e-commerce serendipity from existing theories.

Second, the applicability of existing serendipity theories to the e-commerce context is questionable. In existing models, serendipity is often portrayed in a linearised manner, which might not align with the complexities found in online marketplaces. Existing models, including well-established ones like the IE model, generally describe serendipity as a sequential process. However, this linear portrayal contrasts with the often spontaneous and unpredictable behaviours of consumers in online marketplaces, raising doubts about the suitability of these models for understanding the nature of e-commerce serendipity. To gain a better understanding of e-commerce serendipity, an additional review focusing on the factors influencing serendipity should be conducted.

2.3 The factors influencing serendipity

The identification of the potential scope of serendipity leads us to search for ways in which it could be influenced. According to extant theories, serendipity is influenced by factors relating

to the serendipitists, the serendipitous finding itself, and the context via independent and collaborative efforts.

2.3.1 Serendipitists-related factors

Due to the subjective nature of serendipity, the understanding of serendipitists-related factors is critical. In the current research, the disclosed serendipitists-related factors cover both their personal characteristics and acquired insights.

2.3.1.1 Personal characteristics

Since serendipity is not exclusive to any particular age or gender group (Makri & Blandford, 2012a), research relating to intrinsic attributes mainly focusses on the perspective of personality. *Curiosity* is one of the most frequently mentioned characteristics capable of enhancing serendipitists' experiencing of serendipitous moments (Heinström, 2006). It evokes acceptance of chaos (Yadamsuren, 2013) and interest in exploration (Heinström, 2006), promoting an individual to embrace unexpected encounters. Another frequently mentioned serendipity propeller is *openness to experience* (McCay-Peet et al., 2015). Openness to experience refers to one's allowance for cognitive incompleteness and a willingness to change expectations (Copeland, 2019) and is closely related to the level of extraversion (McCay-Peet et al., 2015). It often elevates the serendipitists' inclination to select the sudden 'aha' track, rather than the initially formulated logical route when standing at the intersection of the emergency and the plan (McBirnie, 2008). Yet, there are also studies that indicate openness as an irrelevant factor to serendipity (McCay-Peet et al., 2015). Thus, the impact of openness requires cautious consideration. Additionally, *perseverant* individuals are identified to encounter serendipity more frequently. Perseverant individuals exhibit a strong sense of persistence and are more willing to devote effort to creating their own luck (McKinnon, 2014). They have a higher interest for tracing the potentially valuable clues, thereby increasing their likelihood of being in the right place when serendipity strikes (Mirvahedi & Morrish, 2017).

In contrast, *intentionality*, i.e., one's mental focus level, is considered an impediment to serendipity (Jiang et al., 2015). It is this mental pursuit of rationality that compels individuals to escape from being caught by the unforeseen and stay focussed on a predefined track (Makri & Buckley, 2019). *Indifference towards novelty* shares the same influences as intentionality but has a broader influence and more negative effects (Heinström, 2006). Specifically, highly intentional individuals block serendipity out only if they have already engaged with a foreground task (Denrell et al., 2003), whereas individuals with an indifferent attitude will deliberately ignore abrupt chances even when no predefined task has been identified.

2.3.1.2 Acquired insights

Apart from personality, serendipity can also be influenced by the serendipitists' acquired insight, or so-called prepared mind, embodying the successively learnt and accumulated domain expertise, context adaptability, and past experiences. *Domain expertise*, or an individual's accumulated knowledge about a certain area (Jiang et al., 2018), can either be a serendipity enabler or an inhibitor (McCay-Peet & Toms, 2015). Commonly, the intellectual capability can elevate the individuals' sensitivity in distinguishing value from the unexpected (de Rond, 2014), leading them to investigate an unanticipated encounter rather than simply discard it (Copeland, 2019). However, overconfidence and extreme reliance on expertise can rigidify the individuals' thinking mode via subliminal discrimination between inclusion and exclusion (Cunha et al., 2015). This, in turn, can sometimes restrain the individuals' adoption of the unheard.

Context adaptability also has a dual effect (Makri et al., 2015). It refers to personal capability to interact with different contexts efficiently and flexibly (Martin & Quan-Haase, 2016). It is reflected in one's selection of suitable human–context interaction methods (McCay-Peet & Toms, 2011) and their response to ongoing changes (Agarwal, 2015). Commonly, context-adaptable individuals experience serendipitous moments more often (Copeland, 2019), being more aware of the contextual situations where potential luck resides (Ma, 2002) and are flexible enough to embrace the 'eureka' moment (Copeland, 2019). Sometimes, excessive context adaptability leads to an active and detailed exploration of a given context, with all the contextual facts being thoroughly captured (Jiang et al., 2015). Accordingly, an individual can fully identify potential opportunities in the situation, thereby eliminating the arrival of a 'eureka' moment (Jiang et al., 2015).

Past experience, especially those relating to serendipitous discoveries, acts as a serendipity propeller (Pontis et al., 2016). Previous experience renews the individuals' understanding of opportunity (Denrell et al., 2003) and consequently, has a direct influence on their enhanced alertness and willingness to engage with unanticipated discoveries (Brown, 2005; Erdelez, 1999). Cases referring to regretful serendipity loss may also be enlightening (Cunha et al., 2015), as diagnosing and changing past cursoriness could support future serendipity much more than learning it from scratch (McBirnie, 2008). Beyond the so-called prepared mind, the individuals' *information literacy* can also play a role in serendipitous experiences. In practice, the captured serendipitous find can sometimes be brushed aside and finally lost due to limited memory and poor personal information management capability (Erdelez, 2017; Stewart & Basic, 2014). Alternatively, a higher level of information literacy can elevate the frequency of chance encounters by contributing to one's sensitivity and willingness to embrace unexpected opportunities (Erdelez, 2017).

2.3.2 Finding-related factors

Factors associated with serendipitous finding itself can also impact the evolution of the serendipitous experiences. One of the main reasons for serendipitists' investment in a serendipitous experience is the perceived value of the find (Makri et al., 2017).

2.3.2.1 The value of the finding

The value of the serendipitous finding refers to the perceived usefulness and interestingness of what has been encountered by chance (Rubin et al., 2011), determined subjectively (Martin & Quan-Haase, 2016). These two value standards can be further explained as the problem-solving and innovative potential of the find (McCay-Peet et al., 2015), and its power in relieving anxiety or satisfying interest (Panahi et al., 2016; Solomon & Bronstein, 2016). Research indicates that the more valuable the find is perceived, the more willing the serendipitist is to invest in it (Cunha et al., 2015; Napier & Quan, 2013). To determine the value of a serendipitous find, the role of the serendipitous trigger or stimuli needs to be considered.

2.3.2.2 The trigger-related factors

Serendipitous *stimuli or triggers* are a small-sized representation of the finding (Jiang et al., 2015). The interaction with stimuli can influence the individuals' perception of the potential gains of acting on the serendipitous find by shaping serendipitists' anticipation of its value before acquiring it (Napolitano, 2013). The *perceived interpretability* of trigger directly impacts serendipitists' perception of the serendipitous value (Dantonio et al., 2012). Highly interpretability triggers reduced uncertainty surrounding the understanding of the serendipitous value (Makri & Buckley, 2019), which may make serendipitists more willing to explore opportunities with an explicit value (Dantonio et al., 2012; Murayama et al., 2015). However, sometimes, comprehensive value anticipation can negatively influence serendipitists' overall evaluation of the value endowed in the find (Makri & Buckley, 2019). Due to human nature, individuals usually expect more from surprise events (Murayama et al., 2015), and the gap between serendipitists' exorbitant anticipation and reality could make serendipitists regard the serendipitous find as worthless, constraining subsequent investment (Dantonio et al., 2012; Makri & Blandford, 2012b). Beyond influencing the perceivability of the serendipitous value, triggers can also affect whether the serendipitous experience occurs, as individuals respond to outside stimuli rather than the find directly when an unexpected encounter is being perceived (Jiang et al., 2019).

The *content of triggers* is considered to be a crucial factor in influencing the occurrence of serendipity (Jiang et al., 2019). Specifically, triggers containing novel and interesting facts can be more easily noticed in evoking an unexpected encounter (Cunha et al., 2015; Waugh et al.,

2017). Novel contents point to unknown knowledge beyond one's epistemic expectations, indicating expectancy mismatching and evoking surprise (Jiang et al., 2016). Consequently, the sense of surprise can make the trigger more salient and attractive. Interestingness, on the other hand, refers to the ability to provide amusement and satisfy an individual's hedonic purpose (Waugh et al., 2017), enabling the trigger to capture their attention via the eliciting of a positive mood (Makri & Buckley, 2019).

Furthermore, the *format of triggers* plays an essential role in sparking a serendipitous moment (Makri et al., 2017). The forms of stimuli reported in recent research are visual, textual, and hybrid (i.e., the integration of visual and textual) (Jiang et al., 2019). Among them, visual triggers are more effective in inducing a serendipitous moment, for their perception leads to the lowest increase in cognitive load (Blanco et al., 2010; Reviglio, 2017). Next to visual triggers are the hybrid and textual triggers, sequentially (Jiang et al., 2019; Workman et al., 2016). Continuing along the research path of human cognitive capability, *the states of triggers* (i.e., the inclusion and exclusion of movements) have also been discussed in the literature, especially those concerning virtual serendipity (Jiang et al., 2019). It is proposed that triggers with animation are more serendipitous prone than statistic counterparts due to the enhanced stimulation of individuals' senses. However, the effect of motion in calling for personal attention and motivating serendipitous moment is noticeable only when serendipitists are provided with access to unlimited mobile data usage (Jiang et al., 2019).

2.3.3 Context-related factors

Contexts, including the natural environment and human-made contexts, also play an indispensable role in constructing the serendipitous experiences.

2.3.3.1 Natural surroundings

The natural surroundings, referring to the ambient surroundings that are difficult to manipulate by an individual, has an independent influence on serendipity (Zhou et al., 2018).

Among the diverse components of the natural context, *time* plays the most influential role (André et al., 2009; Erdelez, 1999). Studies have pointed out that different times of a day have some influence on how often serendipitists experience the serendipitous moment (Kefalidou & Sharples, 2016; Sun et al., 2011), with the afternoon being the most serendipitous time of a day (Zhou et al., 2018). As individuals' cognitive and evaluative efficiency fluctuates significantly during the day (Zhou et al., 2018); hence their alertness and sensitivity towards external stimuli might vary according to time change.

2.3.3.2 Human-made contexts

Human-made contexts, including real social context and virtual settings, can influence serendipity via their resources, design features and the subsumed social rules.

2.3.3.2.1 Contextual resources

The *type* of certain resources, either interpersonal or non-interpersonal (Grange et al., 2019), is connected to the chance of a serendipitous opportunity being perceived (Panahi et al., 2016). Generally, the rate of noticing interpersonal resources tends to be higher (McCay-Peet & Toms, 2015), as they are considered to be of higher quality and lower risk due to the personal trust of acquaintances (Cunha et al., 2015; Lutz et al., 2013).

However, with the progress of serendipity-related research, it has been discovered that type alone has a limited impact. Specifically, cases exist in which the resources encountered from friends are not considered to be serendipitous (Dantonio et al., 2012). This is because that friends understand each other's preferences well, hence, resources recommended by them can be perceived as pertinently generated for an individual rather than being introduced truly out of one's anticipation (Makri et al., 2015). This paradox leads to the recognition of the importance of the resource *quantity*. As it might be more difficult for an individual to judge whether a particular fact is specifically designed for them when the number of facts introduced simultaneously exceeds their cognitive limits (Dantonio et al., 2012). Social media serves as a vivid example (Jiang et al., 2019). Also, an increase in *quantity* could increase the noticeable probability of a non-interpersonal resource (Martin & Quan-Haase, 2016), which strongly suggested in studies conducted in information-rich environments such as libraries (Carr, 2015).

The *diversity* of resources has the same impact as quantity because it also improves the contextual novelty and unknowability (Cunha et al., 2015). A clear example of the impact of resource diversity is the frequently reported serendipitous stories in interdisciplinary research communities, where researchers and resources come from heterogenous disciplines (Darbellay et al., 2014).

2.3.3.2.2 Design features

The design features of a given context influence the serendipitous encounters. Studies have uncovered that serendipity tends to be more frequently experienced in contexts with well-designed *interfaces* (Jiang et al., 2019). Specifically, those with an abundance of heterogeneous information and information-highlighting strategies (e.g., with carefully designed signs) witness a higher rate of serendipitous experiences (Björneborn, 2017; McCay-Peet et al., 2015). As interfaces designed according to these principles may increase the information accessibility,

they also reduce the cognitive load for perceiving different stimuli (Lee et al., 2015), in turn, encouraging individuals to notice the unexpected.

The provision of *supportive tools* is another commonly discussed design feature (Jiang et al., 2018), especially in the digital context, which lacks direct interpersonal support. Two main types of tools – visualisation tools (Reviglio, 2017) and social media tools (Grange et al., 2019) – are commonly mentioned as serendipity prone. They are considered to be capable of directly increasing the perceptual salience of potential finds (Rubin et al., 2011), or indirectly by offering support from other individuals (McCay-Peet et al., 2015). However, serendipity-inhibiting tools also exist. The most highly blamed one is the overly accurate recommender systems, which eliminate serendipity through the creation of filtering bubbles (McCay-Peet & Toms, 2017). It is difficult for individuals to find the unanticipated, as they are already inside a particular enclosure where all the facts that are seemingly irrelevant to foreground tasks have been eliminated in advance (McBirnle, 2008).

Also, the *interactive principles* adopted for forming the architecture or structure of a given context may influence the occurrence of serendipity (Carr, 2015). They can, to some extent, determine the nature of a context in terms of addressing the needs of its users or designers (Dantonio et al., 2012). Individuals, as the users of a given context, are more willing to adopt the unheard within contexts that could provide them with psychological security (Cunha et al., 2015). Therefore, serendipity occurs much more commonly within user-centred contexts, such as libraries (Carr, 2015).

2.3.3.2.3 Norms of the community

The *norms of the community* of which an individual is a member serve as the most important social rule in influencing one's serendipitous experience (Brown, 2005; Foster & Ford, 2003). These norms, both explicit and tacit, determine the appropriate way in which value is expected to be generated within a particular context (Copeland, 2019). In practice, individuals may choose to stay focussed on the foreground task if chance discoveries are considered unreasonable and risky within their organisations (de Rond, 2014; Eagle, 2004). As the finder may be afraid that the valuable result generated via the serendipitous discovery will not be acknowledged, this, in turn, results in a waste of devoted resources (Napolitano, 2013). Moreover, in contrast, flexible and open community norms can foster the embrace of unexpected luckiness (Murayama et al., 2015). Also, through the ongoing welcoming and benefiting from unexpected luck, the members of the organisation can elevate their competence in better coping with future emergencies (Cunha et al., 2010). This, in turn, can lead to increased future serendipitous opportunities (Napolitano, 2013).

2.3.4 Cross-factor influence

2.3.4.1 Interactions between the context and the finding

The most obvious co-impact is between the context and the finding. The design features of any given content has an impact on the *access toward a serendipitous find* (Jiang et al., 2015). A poor contextual design may hinder the individuals' acquisition of the unexpected discovery. A clear example is where an individual is locked away from the find due to the existence of a dead link or an unstable Wi-Fi connection (Jiang et al., 2015; Kefalidou & Sharples, 2016).

2.3.4.2 Interactions between serendipitists and the context

There also exist interactions between a serendipitist and a context, which are reflected in two principal aspects, namely the shifting of a serendipitist's *needs* and the perception of *time and social pressure*.

2.3.4.2.1 The shift of needs

Needs address a person's requirements concerning the resources that they and their acquaintances ought to have (Agarwal, 2015), affecting how one might interact with a given context (Ford, 2015). Generally, individuals enter a given context according to particular *foreground needs* (Erdelez, 1999; McCay-Peet & Toms, 2017), which range from clearly determined to vaguely proposed (Buchanan & Erdelez, 2019) and have hedonic or utilitarian contents (Waugh et al., 2017). Those with a specified foreground need tend to adopt a narrower and more targeted strategy when interacting with the context (Carr, 2015). Such highly concentrated cognitive awareness and movement pathways may block potential serendipitists out from serendipitous moments (Rajala, 2019). In contrast, when individuals have loosely defined foreground needs, they are more inclined to explore a context with a much more open mind (McCay-Peet et al., 2015). Consequently, they are increasingly exposed to contextual resources and more likely to be side-tracked by the unexpected (Church et al., 2019). Moreover, the content of foreground needs can affect one's sensitivity to serendipitous triggers at the affective level (Yadamsuren & Erdelez, 2010). More specifically, individuals are more likely to be tempted by contextual stimuli when they are in a good mood during the performance of hedonic tasks (Jiang et al., 2015), whereas negative feelings, such as stress derived from working on problem-related needs, may force an individual to stay on track (Makri & Blandford, 2012b).

Apart from the foreground needs, the *background needs* also play a role, for multiple needs can reside in one's mind simultaneously (Erdelez, 1999). The background needs address desires that should be satisfied but are not one's current focus when interacting with particular contexts (Solomon & Bronstein, 2016; Williamson, 1998). These needs, also crucial for

individuals, can make an individual sensitive towards specific contextual resources (Bogers & Björneborn, 2013).

In this sense, serendipity can, to some extent, be invoked by stimulating one's cognitive awareness about these subconscious itches (Makri & Blandford, 2012b). The stimulating task can be performed via the careful development of supportive tools, especially within the digital context. Specifically, well-designed supportive agents can be used to identify one's hidden needs by analysing their historical behavioural traces, providing individuals with unanticipated need-satisfying resources (Kefalidou & Sharples, 2016). Consequently, a chance encounter may be facilitated due to the embodiment of subliminal requirements (Makri & Blandford, 2012b). This stimulus plan for serendipity works best when individuals have undergone long-term interaction with the situation under the guidance of their foreground needs (Kefalidou & Sharples, 2016), as these purposeful interactions could produce substantial behavioural traces for better speculating one's inexplicit demands.

However, sometimes abrupt contextual recommendations can inhibit serendipity from occurring (Lutz et al., 2013). Two principal reasons are behind such counter effects. One is the subjectivity of needs. The facts addressed by the supportive tools may not always meet one's hidden requirements (Ge et al., 2010). The second relates to privacy issues (Lutz et al., 2013), for, sometimes, the abrupt reminder for hidden needs can arouse individuals' concerns about the leakage of personal information. Accordingly, their willingness to approach the unexpected may be reduced (McCay-Peet & Toms, 2017).

2.3.4.2.2 The perception of time and social pressure

Time pressure refers to one's perceived priority of the foreground task in terms of its importance and urgency (Makri & Buckley, 2019). Specifically, time pressure triggers a personal perception of time deficiency (Copeland, 2019), which serves as a fun filter and amplifies one's fear of potential loss (McBirnie, 2008). When confronted with time pressure, individuals may feel afraid that paying attention to chance encounters will deprive them of the opportunity to capture the certain value endowed within the prospective tasks (Dantonio et al., 2012). Hence, in practice, time pressure can lead to one's resistance to acting on unexpected encounters (McBirnie, 2008).

The *norms of the community* and *personal intentionality* contribute to one's perception of time pressure (Jiang et al., 2015; Makri & Blandford, 2012a). Individuals within a strictly managed community might be forced to concentrate on the foreground task. Consequently, they might engage in self-censorship throughout the behavioural process (Cunha et al., 2010), in turn, enhancing the perceived level of time pressure when confronting a decision about switching behavioural courses. Also, highly intentional individuals value planning more than accidents,

hence, they often prioritise scheduled tasks and overlook the chance encounters (Jiang et al., 2015).

In the process of interacting with a given context, people may also feel different social pressures (Jiang et al., 2015). The roots of social pressure may go back to the individuals' *contextual location*, such as whether they are in public or in private, leading to a different level of perceived psychological safety (Cunha et al., 2010). The lack of psychological safety, however, may make an individual inclined to carry on with their initial tasks rather than adopt the unexpected luckiness so as to avoid potential personal loss (Cunha et al., 2010, 2015).

2.3.5 Summary

This section explored the factors influencing serendipity, providing a more in-depth understanding of the phenomenon. Serendipity is a highly subjective and contextually sensitive experience, evolving when serendipitists approach a desirable destination by acting on attractive resources that they obtained in a way that was beyond their control (Kitzie, 2019). The success of serendipitists in reaching their desired destination largely depends on the availability and adequacy of support within the specific context.

This deeper understanding of serendipity, while valuable, has limited insights for this research, as this understanding cannot help to reveal the full nature of e-commerce serendipity. This limitation arises from two main issues.

First, within information science, online marketplaces have received relatively little attention. The focus of many studies has been on business and academic contexts (Ocepek, 2018). Considering that serendipity is contextually sensitive, the current theoretical understanding within this field may not directly explain the nature of e-commerce serendipity.

Furthermore, current studies have tended to lean on somewhat outdated models of contextual design, failing to incorporate or fully consider modern techniques (e.g. AI) that are now prevalent in e-commerce environments. This limitation is significant, as it restricts the capacity of existing research to offer in-depth and relevant insights into the impact of sophisticated, well-designed online marketplaces on the nature and occurrence of serendipity.

Given these concerns, to understand what constitutes e-commerce serendipity, it is necessary to directly engage with and learn from online consumers themselves.

2.4 Summary and implications of the research

This chapter explored the extant literature relating to the research question, focusing on the theoretical issues related to online consumer behaviour and serendipity-prone design in online

marketplaces as well as the essence of serendipitous experiences and the factors influencing the experience.

As highlighted in the literature, serendipity is increasingly valued in the realm of online shopping by both consumers and e-commerce practitioners. Recognising its mutual benefits, e-commerce practitioners have been attempting to foster more serendipity through conscious design. However, these design attempts often lack a robust theoretical foundation, leading to ongoing debates within the serendipity-focused literature, particularly in information science.

Studies in information science, while raising valid concerns about the design of e-commerce serendipity, have themselves struggled to address these concerns comprehensively. Indeed, there is a debate within the field about whether serendipity can be consciously designed in online marketplaces. This debate is rooted in a fundamental lack of understanding of the nature of e-commerce serendipity within these studies. (1) First, studies in information science have not adequately focused on online marketplaces and the evolving landscape of modern technologies. (2) Second, the existing understanding of serendipity within information science tends to be somewhat one-sided. Much of the research has concentrated on elucidating how serendipity occurs, without exploring the full development process of serendipitous experiences. (3) Third, the portrayal of serendipity in information science is often idealised and linearised, which might not reflect the complexities and dynamics of the online shopping environment.

Overall, it can be said that there is a notable gap between the practical efforts and theoretical developments related to e-commerce serendipity. This gap highlights the need for a more profound exploration to understand what truly constitutes e-commerce serendipity. Bridging this gap is crucial for advancing both practical applications and theoretical knowledge in the fields of consumer behaviours and information science.

One of the most effective ways to achieve this understanding is to learn directly from online consumers. These individuals, as the direct experiencers of e-commerce serendipity, can provide valuable insights into its nature. Their first-hand experiences and perceptions can provide a wealth of information, offering a more nuanced and authentic understanding of e-commerce serendipity.

The next chapter – i.e. Chapter 3 Methodology – will detail the strategies and methods that this research employed to faithfully learn about the nature of e-commerce serendipity from online consumers.

Chapter 3 Methodology

This chapter introduces the methodological design of this research, which establishes the connection between the research question, empirical data, and research findings (Blaikie, 2010). The design of this research was mainly informed by the design guidelines proposed by Blaikie and Priest (2019), leading to the development of five interrelated methodological components.

Section 3.1 outlines the research philosophy. The research strategy and design are explained in Sections 3.2 and Section 3.3. Section 3.4 and Section 3.5 focus on ethical considerations and research quality, respectively. All these methodological considerations are summarised in Section 3.6.

3.1 Research philosophy

Research philosophy encompasses the beliefs and assumptions researchers hold when engaging in knowledge development, influencing the entire research lifecycle (Saunders et al., 2009). To ensure robust research, it is imperative to consider philosophical issues (Robson & McCartan, 2016).

3.1.1 Philosophical assumptions

In the choice of research philosophies, two prominent assumptions require pre-considerations, namely: ontology and epistemology (Blaikie & Priest, 2019).

3.1.1.1 Ontological assumptions

Ontology concentrates on the nature of social reality (Creswell & Poth, 2007), accenting two central questions: the existing state of social reality, and how it can be perceived (Blaikie & Priest, 2019). Responses to these questions led to the formation of six groups of ontological assumptions (Blaikie, 2007).

The first group is *shallow realism*, which posits that the social world is composed of concrete entities that share the same essence with natural objects (Easterby-Smith et al., 2015). These entities are regulated by predefined universal laws (Ritchie et al., 2013), forming an independent and immutable society far from human influences (Saunders et al., 2009). The existence of immutable laws also makes reality directly observable via human senses (Creswell & Poth, 2007). *Cautious realism* and *subtle realism* endorse the existence of an external objective reality but doubt the human perceivability of its essence (Blaikie, 2007). For the former, physiological imperfections constrain individuals' sensory capabilities and may result in distorted perceptions of reality (Blaikie, 2010). The latter posits that human perceptions are

all triggered by subjective purposes and can never accurately guide individuals towards access to objective reality (Blaikie, 2007).

Conceptual realism offers another assumption that claims the existence of an independent but non-material society (Blaikie, 2010). Social reality itself serves as a collective consciousness that shapes the mental structure of human beings (Blaikie, 2007). This collectiveness separates reality from individual actors, while the abstractness of ideas impedes reality from direct perceptions (Blaikie & Priest, 2019). The indirect perceivability of an independent reality is also highlighted by *depth realism*, which proposes a stratified society (Blaikie, 2007). It suggests that individuals merely perceive empirical entities that constitute a small portion of actual social events, whose existence and meanings are endowed by real structures (Saunders et al., 2009). Specifically, the perceivable phenomena are only superficial representations of a bigger picture (Easterby-Smith et al., 2015). Reality is composed of deep mechanisms and structures that power the generation of experienceable social events (Saunders et al., 2009). The immutability of social structures, however, is relative and less enduring than natural laws, which may be progressively reshaped by the events that they support (Blaikie, 2010).

The final ontological assumption is *idealism* (Blaikie & Priest, 2019), which posits that the social world is created by human actors (Ritchie et al., 2013). Individuals with high autonomy, rather than physical objects, are at the centre of social reality (Creswell & Poth, 2007). Social reality, in this sense, is composed of the interpretations that social actors produce and reproduce as they go about their everyday lives through various interactions (Blaikie & Priest, 2019; Bryman, 2016). In other words, the idealist social reality tends to remain in a constant state of revision (Bryman, 2016). At the same time, because each social actor has different life experiences and characteristics (Saunders et al., 2009), their interpretations about the social world are not only unstable but sometimes even contradictory (Blaikie, 2007). Accordingly, seen from the idealist stance, one shared social reality does not exist (Blaikie & Priest, 2019); rather, reality is manifested in multiple and occasionally contradictory interpretations (Bryman, 2016).

This research aims to understand what constitutes online consumers' serendipitous experiences through an investigation of fortuitous encounters that could only be perceived by its experiencers (Rubin et al., 2011). Hence, the individual initiative of online consumers needed to be respected. Considering the aforementioned concerns, *idealism* was considered the most appropriate ontological stance.

3.1.1.2 Epistemological assumptions

Epistemological assumptions deal with issues about knowledge (Saunders et al., 2009), addressing concerns about components of legitimate knowledge and the valid process of

gaining such knowledge (Bryman, 2016). According to Blaikie (2007), there exist six groups of epistemological assumptions.

The first is *empiricism*, related to shallow realism, forms the first group (Blaikie, 2007). It states that knowledge refers to the truthful representation of facts and causality (Blaikie, 2010), with observable social phenomena as its sole information source (Saunders et al., 2009). Valid knowledge can be generated if a value-free and objective stance of observation is maintained (Ritchie et al., 2013). These statements, however, are doubted by the second groups of epistemological assumptions – i.e. *falsificationism*, associated with cautious realism. For falsificationists, knowledge about reality must be sought through trial and error, as the sensory frailties of human beings result in them seeking truths indefinitely (Blaikie, 2010). The empiricists' assumption is also questioned by the third group of epistemological assumption i.e. *conventionalism*, related to subtle realism, which indicates that can knowledge can only consist of theoretical tools that cater to the knowledge generators' subjective desires rather than truths (Blaikie, 2007).

The fourth group of epistemological assumption is *rationalism*, linked to conceptual realism (Blaikie, 2007). Knowledge is, therefore, thought to be derived from the understanding of the structure of human thoughts (Blaikie, 2010). Logical inferences are adopted as the principal mechanisms of knowing, given the indirect observability of ideas (Blaikie, 2007). Another epistemological assumption (group 5) that leverages logic inferences for knowledge building is *neo-realism*. This highlights that knowledge resides in the explanation of the underpinning social structures (Blaikie, 2010). Since social structures are historically situated and time sensitive (Saunders et al., 2009), the changing trajectories of social lives are considered the primary knowledge sources (Blaikie, 2010).

The sixth group of epistemological assumption is *constructionism*, which is supported by idealism (Blaikie, 2007; 2010). For constructionists, knowledge is the pure product of individual cognitive systems that can only be learnt when individuals mention, write, or argue about it (Blaikie, 2007). Instead of being filtered through experts' concepts or theories, social reality can only be accessed through social actors' spontaneous language (Blaikie & Priest, 2019). Accordingly, researchers are encouraged to be involved with what is being studied (Creswell & Poth, 2007). This distance-less learning approach may bring researchers' values into the generated findings (Easterby-Smith et al., 2015), making the absolute truth hard to pursue for the constructionist (Blaikie, 2010).

In linking these epistemological commitments to the study of e-commerce serendipity, it is essential to acknowledge that serendipity is a highly subjective and context-sensitive phenomenon that varies across individuals and contexts. The interpretation of e-commerce

serendipity may only be contributed by its experiencer within a particular time and context. Accordingly, understanding e-commerce serendipity requires learning from the experiences of individual consumers through intimate interactions. In addition, to better understand developmental trajectories underpinning e-commerce serendipity, multiple sense-making routes applied by online consumers should be pursued equally. Therefore, this research aligned with *constructionism*.

3.1.2 Logics of inquiry

Different choices in philosophical assumptions lead to considerations about the logic used in answering research questions and generating knowledge. In social studies, four inquiry approaches are highlighted, namely, induction, deduction, retroduction, and abduction (Blaikie & Priest, 2019).

3.1.2.1 Inductive logic

Inductive logic forms a linear pathway towards *descriptions* about characteristics and patterns of social events (Blaikie, 2007; Bryman, 2016). Inductive studies commonly begin with the observation of social phenomena in situ (Robson & McCartan, 2016), with data generated that implies the context and actors involved (Creswell & Poth, 2007). Subsequently, a researcher-dominated analysis of the acquired data is performed (Robson & McCartan, 2016), leading to descriptions of particular social phenomena (Vasilachis, 2009).

Inductive reasoning can be applied for two theoretical purposes. The first is the *naive induction* that embodies *shallow realism* and *empiricism* and focuses on producing theories that can be generalised across time and space (Blaikie, 2007). To capture the independent and knowable reality, preconceptions should be completely eliminated (Blaikie, 2010). Theories are, therefore, only the product of data and not its producer (Creswell & Poth, 2007). The unrestricted generalisability of inductive theories, however, has been questioned due to the limited scale of observations (Blaikie, 2007). In addition, there are doubts regarding theory-neutral stances (Blaikie, 2007), as the process of investigation, especially data analysis (Robson & McCartan, 2016), inevitably involves researchers' subjective interpretations based on preconceived notions (Holton, 2018).

Revised induction is, therefore, proposed as an alternative (Blaikie, 2007), with the adoption of *subtle realism* and *conventionalism*. Revised induction acknowledges that researchers are influenced by their theoretical backgrounds, and generalisability moves beyond the prominent research focus (Bryman, 2016). Accordingly, theories constructed from the research are acknowledged as researcher-interpreted descriptions rather than absolute truth. They serve for a specific time and space and may be constructed based on existing knowledge (Blaikie, 2010).

As discussed in the literature review, serendipitous experiences emerge unexpectedly. Consequently, it is challenging to observe serendipity directly in the moment that it occurs. This research also sought to understand e-commerce serendipity from the consumers' perspectives, therefore, a researcher-dominated inductive inquiry would have been unsuitable for the central objectives of this study.

3.1.2.2 Deductive logic

Deductive logic has found application in social studies aimed at developing theories providing possible *explanations* about causalities within and among social phenomena (Blaikie, 2010). In deductive research, theoretical assumptions are proposed in advance of data collection (Bryman, 2016). These assumptions often begin with proposed hypothetical answers about causal relations among questionable phenomena, borrowing useful concepts from existing knowledge (Saunders et al., 2009). The formally defined concepts contained in these tentative answers are subsequently translated into measurable variables, serving as operational criteria in directing data collection (Buchanan & Bryman, 2009). The analysis of the collected criteria-compliant data thus informs the confirmation or rejection of the initial propositions, leading to an update of existing theoretical systems (Bryman, 2016).

Deductive logic is positioned within *cautious* or *subtle realism*, with *falsificationism* or *conventionalism* as its epistemological stance (Blaikie, 2010). This philosophical stance endows most deductive studies with three key features. First, the emerging explanations formed are commonly targeted towards making existing disclosures of truth more reliable rather than providing entirely new ones (Orlikowski & Baroudi, 1991). Therefore, it is suggested that researchers follow highly linear and systematic research trajectories underpinned by established theoretical laws (Robson & McCartan, 2016) – the second characteristic of deductive studies. The third feature, which also emerges from the research process, is an inclination towards numerical and measurable data (Saunders et al., 2009), as this can guarantee the confirmability of the generated theories.

For this research, deducing valuable hypotheses using established knowledge would have been difficult, due to the scarcity of existing theories. Moreover, the excessive application of deductive reasoning in consumer studies has faced criticism for potentially distorting consumers' needs (Erasmus et al., 2001). Hence, the deductive route was deemed unsuitable for this study.

3.1.2.3 Retroductive logic

Retroductive logic, positioned within *depth realism* and *neo-realism*, provides access to social structures responsible for producing causal relationships among observable social phenomena

(Blaikie, 2007), with models used as the key carriers of *explanatory* findings (Blaikie, 2010). Retroductive investigations generally start with detailed descriptions of the phenomena in question, as traces for deep structures are typically embodied within individuals' behavioural patterns (Saunders et al., 2009). While inductive observations are applied, they are just one source of descriptive data (Robson & McCartan, 2016). Complementary researcher-guided investigations are conducted, as social actors may be unaware of existing but unperceivable structural details, given their lack of scientific training (Blaikie, 2010). The resulting descriptions can prompt researchers to consider possible causal mechanisms and their actionable conditions (Blaikie, 2007), leading to a hypothetical model. During model construction, mechanisms are usually leveraged from existing theoretical systems and researchers' creative thoughts (Blaikie, 2010). Empirical data are then used to test these tentative models (Blaikie, 2007). The inspections mentioned above must be conducted before an acceptable model is produced concerning the stratification of social reality (Blaikie, 2007).

To conclude, retroduction offers an alternative reasoning trajectory to those proposed by inductivists and deductivists, as it moves between data and existing theory (Blaikie, 2007). Researchers still dominate the retroductive research process, as they do in inductive and deductive studies. However, retroductive logic has faced criticism, mainly concerning the discovery of latent explanatory mechanisms (Blaikie, 2010), as it requires a high level of scientific capability, making it difficult for novices to apply (Blaikie, 2007, 2010). For this study, the retroductive strategy was too challenging due to the participant-centric stance and scarcity of related theory.

3.1.2.4 Abductive logic

The final enquiry logic is abduction, incorporating philosophical concerns from *idealism* and *constructionism* (Blaikie, 2010). Theories rooted in social actors' interpretations of everyday lives are constructed (Easterby-Smith et al., 2015), leading to in-depth *understandings* about the tacit reasons behind social behaviours and events (Blaikie, 2010). Specifically, abductive reasoning is grounded in the lay concepts and meanings that individuals adopt in their routines (Gephart, 2018). Bottom-up logics run through abductive studies, distinguishing them from studies formed using the other three top-down strategies that mainly reflect the voices of researchers (Blaikie, 2010).

To access reality constructed by social actors (Blaikie, 2007), behavioural accounts contributed by individuals in their everyday language are adopted as the dominant data source (Piekkari & Welch, 2018). From this, first-order concepts and subtle principles are revealed from insiders' perspectives (Gephart, 2018), accounting for the secrets behind courses of daily episodes. However, acquiring these tacit meanings and rules is not simple, as many concepts have already

been internalised in daily routines (Piekkari & Welch, 2018). It would be difficult to directly ask individuals to describe in detail what they have already taken for granted (Blaikie, 2010). Therefore, researchers must provide adequate guidance to promote individuals' reflections (Blaikie, 2010). Existing theories can be used as guidance, further distinguishing abduction from induction, which emphasises acquiring 'pure' data (Blaikie & Priest, 2019).

The stage following the discovery of lay concepts is the formation of technical concepts and theories (Blaikie, 2010). During this stage, the fragmented descriptions provided by social actors are pieced together and then abstracted to form second-order concepts that can be communicated via scientific language (Gephart, 2018). Member checking should be conducted during this phase to ensure the integrity of first- and second-order concepts; this often requires researchers to move between raw data and the terms that they represent (Blaikie, 2007). As such, theory generation and theory testing are closely linked (Piekkari & Welch, 2018). Superficially, the checking process appears similar to retroductive logic. However, while abductive checking is designed to ensure that the theory fits the social actors' worldview, retroductive logic serves as a tool for assessing how reality meets researchers' expectations (Blaikie, 2007).

The abstracting process ends when each social actor can identify themselves from the generated theories and technical concepts (Blaikie, 2010). For some studies and researchers, the emergent second-order concepts and theories can be further refined via the acquisition of additional behavioural accounts from alternative individuals or via deductive trials (Saunders et al., 2009).

The abductive strategy was considered most suitable for this research. It was determined that the adoption of an insider's stance would aid in capturing the slippery nature of serendipitous experiences. Additionally, the cyclic reasoning style and active involvement of social actors (i.e., the online consumers in this research) guarantees that all daily interpretations are faithfully captured without additional connotations constructed by researchers (Blaikie, 2010). These enquiry techniques are highly useful in safeguarding the internal reliability of exploratory studies, particularly this study, which targeted an under-researched phenomenon. Furthermore, abductive strategies are committed to the idealist ontology and constructionist epistemology, consistent with the philosophical stance of this research. The discussion above indicates that an abductive strategy was most appropriate for this research.

3.1.3 Research approaches

Determining the philosophical stance leads to a consideration of research approaches, which determine the types of required data and affect the subsequent choice of research strategies and methods (Blaikie & Priest, 2019). For this study, the choice needs to be made between quantitative and qualitative routes, the two prominent types of research approaches for existing

social research (Blaikie, 2010). The most apparent difference between quantitative and qualitative approaches lies in the use of different forms of data (Ritchie et al., 2013). Quantitative studies follow the numerical pathway (Lune & Berg, 2017), while qualitative studies adopt non-numerical data (Robson & McCartan, 2016). This distinction criterion, however, is relatively narrow. In reality, numbers are often employed by studies labelled as qualitative to indicate their representativeness. For instance, percentages are often used to identify demographic attributes (Kothari, 2004). To distinguish between quantitative and qualitative approaches, their underlying logics of inquiry and styles of data collection and analysis must be thoroughly considered (Saunders et al., 2009).

3.1.3.1 Quantitative approaches

Quantitative approaches stem from the traditions of the natural sciences (Robson & McCartan, 2016), which address the objectivity and replicability of data gathering and analysis procedures (Bryman, 2016). Detached relationships among researchers and their subjects are often required throughout quantitative studies (Blaikie & Priest, 2019). This influences the procedures and instruments for data collection and analysis (Easterby-Smith et al., 2015), which make quantitative studies highly structured (Saunders et al., 2009). More specifically, data analysis always follows data collection (Blaikie, 2010).

When using these highly standardised methods, researchers can maximise control over the research process and decrease the level of uncertainty (Robson & McCartan, 2016). Consequently, quantitative approaches are most frequently used with *deductive* approaches (Bryman, 2016), ensuring rigour and reliable measurements of the (causal) relationships among variables (Creswell & Poth, 2007). Moreover, the pre-specification of research stages allows the deductive findings to be easily retested (Kothari, 2004), indicating the association between quantitative studies and falsificationism epistemology. Another critical feature of quantitative studies is decontextualisation (Robson & McCartan, 2016), the elimination of contextual details by reducing information gained into objective numbers (Blaikie, 2010). This feature elevates the generalisability of research findings (Lune & Berg, 2017) and leads to the adoption of quantitative approaches in certain *inductive* and *retroductive* studies (Blaikie, 2010).

3.1.3.2 Qualitative approaches

In contrast to the quantitative paradigm, qualitative approaches are characterised as flexible and open (Creswell & Poth, 2007). They embrace the uncertainty that emerges during the research process (Gephart, 2018). Intimate interactions with research participants are required (Bryman, 2016), with messy, unarticulated ideas and meanings collected in a relatively unpredictable manner (Saunders et al., 2009).

Researchers collect qualitative data naively (Blaikie, 2010), maintaining high receptiveness and immersing themselves in the realities constructed by research participants' everyday concepts (Robson & McCartan, 2016). Contextual content is highlighted in the data gathering process (Bryman, 2016), serving as the foundation for socially constructed realities to emerge (Blaikie, 2007). Many diverse forms of qualitative data are gathered (Beech & Broad, 2018), requiring multiple data collection techniques (Ritchie et al., 2013). To better handle the acquired information, data analysis can be merged with the data collection process in certain situations (Creswell & Poth, 2007), transforming the research into an iterative and opportunity-rich learning process (Blaikie, 2010).

As a result, qualitative studies are intensive and time consuming (Ritchie et al., 2013), limiting their scale in terms of the number of social actors contacted and the amount of data collected (Robson & McCartan, 2016). Consequently, the generalisability and reliability of qualitative approaches are subject to substantial doubt (Bryman, 2016), requiring researchers to produce substantive research descriptions to prove authenticity (Blaikie, 2010). Despite these deficiencies, qualitative approaches still play an essential role in social research, dominating *abductive* studies (Blaikie, 2010), as abductivists regard the context and actors involved therein as the core of their research (Saunders et al., 2009). Access to specific intricate ideas makes qualitative methods popular among *inductivists* and *retroductivists* (Blaikie, 2010), as they provide the opportunity to discover patterns and mechanisms that are otherwise difficult to observe.

In this research, a *qualitative approach* was used for several reasons. First, qualitative approaches are closely associated with abduction, the adoption of which would guarantee the methodological consistency of this study. Second, the limited number of related theories made it challenging to set fully-formed data collection and analysis criteria in advance. Most secrets behind the development of serendipitous experiences in online marketplaces are only known to the consumers themselves. Flexibility and openness are, therefore, required to allow the lay concepts to evolve. Finally, in consumer studies, some researchers (e.g., Erasmus et al., 2001) call for the introduction of qualitative approaches to better understand the motivations and processes of consumer behaviour.

To conclude, there is no optimal philosophical stance that should be followed universally (Saunders et al., 2009). The selection of a philosophical stance should align with the proposed research question and purpose. Given the exploratory purpose of this research and the aim of understanding online consumers' serendipitous experiences, a combination of *idealism* and *constructionism* was adopted to direct enquiries. As the understanding of a highly subjective phenomenon requires fidelity to social actors' perceptions, online consumers and their views were positioned at the centre of this research. The adoption of idealist and constructionist

assumptions led to the use of abductive logic and qualitative data to answer the research questions.

3.2 Research strategy

The research strategy is a comprehensive action plan that outlines the systematic process of answering the research question on schedule (Saunders et al., 2016). It serves as the link between philosophical concerns and the subsequent choice of research methods (Denzin & Lincoln, 2011). In more details, a research approach describes the empirical processes and materials necessary for researchers to undertake and obtain to accomplish the desired goals (Dinnen, 2014). Given the research topic and the abductive logic employed, the researcher adopted *narrative inquiry* as the strategy to guide the execution of the research. This section provides a detailed clarification of narrative inquiry and the rationale for this strategic choice, following a brief overview of the commonly adopted social research strategies.

3.2.1 An overview of research strategies

In practice, there are various ways of classifying social research strategies. However, this research followed the classification system of Saunders et al. (2016), as it includes all the possible strategies for guiding a faithful exploration of consumers' perception and experience of e-commerce serendipity. Specifically, according to Saunders et al. (2016), eight research strategies¹ are potentially applicable for this research: experiment, survey, archival research, ethnography, action research, case study, grounded theory, and narrative inquiry.

3.2.1.1 Experiment and survey

Often used in quantitative studies (Saunders et al., 2016), both experiments and surveys regard numbers as the window to social reality and target an objective understanding of social truth (Riessman & Quinney, 2005). Studies designed as experiments or surveys are commonly initiated with hypotheses designed according to current rules and principles, seeking to exhaust the meanings hidden within individuals' daily lives (Rosiek & Synder, 2020).

Although experiment and survey designs are widely used in social studies, they were not suitable for this research. The e-commerce serendipity that this research aimed to explore is an unexpected experience that individuals encounter within a particular context. To investigate e-commerce serendipity, a faithful understanding of its experiencer and the triggering context needed to be gained. However, individual and contextual information could not be fully

¹ Please note that the first two research strategies (experiment and survey) are placed in the same category below.

accessed via numerical evidence, and there are no widely accepted e-commerce serendipity-related theories for guiding the collection of numerical data.

The remaining six approaches are mainly considered as qualitative. These six strategies differ in their focus on social lives, and where they share a similar focus, the underpinning research logic may vary.

3.2.1.2 Archival research

Archival research, also called documentary research (Saunders et al., 2016), seeks to investigate and reconstruct past events that occurred in specific social settings (Easterby-Smith et al., 2015). Ready-made documents kept at the time of the events serve as gateways to the investigation of historical occurrences (Saunders et al., 2016). They are regarded as durable repositories of previous events (Lee, 2012), and a rich collection of these textual documents may lead to a comprehensive revelation of critical events of the past (Saunders et al., 2016). When integrated and compared, these textual accounts of events can offer relatively reliable explanations of the secrets behind the events, serving as puzzle pieces that can be used to fully reconstruct a past situation (Berg & Lune, 2007).

Although ready-made records about online consumers' serendipitous experiences may exist, the archival approach was not considered suitable to employ in this research. Faithfully accessing an individual's perceived e-commerce serendipity requires genuine interaction between the individual. Furthermore, identifying and contacting the original recorder of the ready-made textual documents are often challenging (Jones, 2010). Even if file creators can be contacted in some cases, the information they provide may not be sufficient to gain an understanding of e-commerce serendipity, as the central focus of their recording might not be on the phenomenon in which the researcher was interested (Saunders et al., 2016). Given these deficiencies, archival research did not seem an ideal strategy for guiding this study.

3.2.1.3 Ethnography

Ethnography, also referred to as the ethnographic field method, has a long history of use in social studies, especially in studies that focus on social-cultural issues (Berg & Lune, 2017). Ethnographers are encouraged to conduct immersive field studies to collect insiders' secrets in tracing their experienced realities (Bryman, 2016). It is crucial for them to remain vigilant and avoid being assimilated with their participants (Easterby-Smith et al., 2015), and strive to combine the view of an outsider with that of an insider in a social context. In this way, the tacit and fragmented internal ideas could be gradually translated into scientific knowledge that outsiders can understand and accept (Berg & Lune, 2017), presenting another way of life from the native point of view (Pickard, 2013).

However, ethnography was deemed inappropriate for this research, since the goal was to capture participants' authentic interpretation of e-commerce serendipity, contrary to the goal of ethnographical research, which seeks to generate a deeper explanation of a phenomenon than the view of its experiencers (Pickard, 2013). This is mainly due to the fact that this research aimed to faithfully understand participants' perceptions of e-commerce serendipity, and the primary research focused on listening and assimilating participants' voices rather than describing the participants' experiences from the researcher's perspective. Consequently, a researcher-dominated ethnographical study would have been unsuitable for guiding the execution of this research.

3.2.1.4 Action research

The primary focus of action research is the configuration of solutions to real organisational problems (Saunders et al., 2009). Researchers and participants are expected to cooperate on social-political or economic projects (Scaratti et al., 2018). The collaborations, at either the organisational or individual level, immerse researchers in the actual changing process of organisational life (Easterby-Smith et al., 2015). Through these processes, data indicating social changes are gathered and analysed, revealing the secrets behind organisational and social development (Scaratti et al., 2018).

Nonetheless, action research was not suitable for this research due to the highly subjective nature of serendipity, which can only be experienced independently. It would have been impossible for the researcher to have direct involvement in the participants' lived serendipitous experiences. In addition, this research focused on faithfully exploring consumers' interpretations of e-commerce serendipity rather than changing their interpretations. There were no changes involved in the research process, and therefore action research was not considered appropriate.

3.2.1.5 Case study

As a research approach, case studies concentrate on investigating the dynamics around an issue or event within a bounded context (Blaikie & Priest, 2019), leading to detailed analysis of the interactions between a phenomenon and its context that may illuminate theoretical issues beyond the case (Cassell & Symon, 2004; Creswell & Poth, 2007). In this sense, selecting one or multiple valuable cases for study is the key to executing a high-quality case study (Saunders et al., 2016). The cases adopted in case study-based research consist of five distinct types (Bryman, 2016;). The first is the *critical case*, often chosen based on well-developed theories (Bryman, 2016). Investigation of a critical case is intended to provide answers to general problems (Flyvbjerg, 2006). Sometimes, *unique or extreme cases* can serve as the focus of case studies, which provide insights into problems with strategic importance (Bryman, 2016).

Moreover, many case studies focus on *representative cases*. The term ‘representative’ implies that cases chosen are exemplars of a social phenomenon, and the purpose of focusing on them is to enable findings to be applied to a wider population (Flyvbjerg, 2006). *Revelatory cases*, which investigate previously under-researched phenomena, are also adopted (Yin, 2009). Finally, *longitudinal cases* investigate phenomena at multiple temporal junctures (Yin, 2009).

Theoretically, spending considerable time with individuals from the same group and listening to their serendipitous experiences in detail could have contributed to an in-depth understanding of e-commerce serendipity. Nonetheless, practically, designing this research entirely as a case study was not possible. The reason for this is that a case study always has a defined boundary, either a particular organisation or a given community. However, due to the limited information indicating their proneness to serendipity, it would be reasonable to select one or several specific e-commerce applications or shops as case contexts for this research, in turn, preventing the application of a case study in this research.

3.2.1.6 Grounded theory

Grounded theory is commonly used to guide the development of novel theories or concepts to explain social interactions and processes within various contexts (Matavire & Brown, 2013; Saunders et al., 2016). To embrace these new explanations, theory development is not built on the premise of current theoretical foundations but rather is grounded in individuals’ lives (Creswell & Poth, 2007). To do so, grounded theorists often initiate the research without theoretical presuppositions, although they may already be familiar with previous theoretical findings within the discipline (Easterby-Smith et al., 2015). Theoretical ideas emerge from data provided by participants through a combination of inductive coding and constant comparison (Saunders et al., 2009). Through coding, commonalities among participants’ data are identified and abstracted into theoretical categories (Bryman, 2016), contributing to new theories rooted in participants’ experiences (Creswell & Poth, 2007). Constant movement between the data collection and analysis occurs during the process of grounded theory studies to guarantee the substantiveness of the generated theory (Bryman, 2016).

A grounded theory approach may have been applicable for this research, as discarding theoretical prejudices may have aided the researcher to vicariously understand e-commerce serendipity from the participants’ perspectives. However, in essence, grounded theory was not the ideal choice. Most importantly, the data collection and analysis process of grounded theory studies is commonly organised in an inductive manner (Bryman, 2016), dominated by researchers’ reinterpretations. This reasoning logic contradicts the logic of abduction, which prevented the usage of grounded theory in this research. Moreover, if the commonality of participants’ serendipitous experience were considered in isolation, the subjectivity and

contextual sensitivity of serendipity would have been ignored. To authentically embrace serendipity in online consumers' shopping experiences, a research approach that highly privileged the participants' voices was required.

3.2.1.7 Narrative inquiry

Finally, there are the *narrative inquiries*, which strive to portray social realities by learning from stories told by participants (Bates, 2004; Saunders et al., 2009).

Under the narrative stream, social reality is not pre-existing nor separable from its knower (Blumenfeld-Jones, 1995); participants are the experts based on their own experience (Ocepek, 2018; Polkinghorne, 1995). As such, to grasp the social reality, researchers should try to obtain genuine reflections from participants about their experiences. In this context, storytelling emerges as a powerful tool, often leading to a richer and more authentic representation of participants' minds than other strategies (Pace, 2008; Riessman, 2002). The effectiveness of storytelling lies in its deeply personal nature (Jovchelovitch & Bauer, 2000). Being a communication and sense-making technique that participants naturally possess and refine in their daily lives (Clandinin, 2006; Riessman, 2002), storytelling can be conducted by participants with minimal interference from researchers (Bronstein, 2019). This high degree of expression autonomy grants participants the agency to express themselves more freely (Eckerdal, 2013), fostering a more intricate and nuanced portrayal of participants' minds and the reality they perceived (Jovchelovitch & Bauer, 2000; Riessman, 2002).

For this research, a narrative strategy was deemed the most suitable for structuring data collection and analysis. The primary aim of this study is to gain a deep understanding of participants' real views on e-commerce serendipity, making it essential to prioritise their voices. Storytelling, as a data collection strategy that respects the freedom of participants to express themselves, is undoubtedly the best way to achieve this core objective. Also, for philosophical concerns, the notion that reality is rooted in individuals' personally constructed interpretations aligns with the principles of idealism and constructivism; thus, the adoption of a narrative strategy guarantees the methodological consistency of this study. Finally, on a practical level, the narrative inquiry technique has already been successfully applied in the exploration of information behaviour (e.g., Bates, 2004; Bronstein, 2019) and consumer studies (Pace, 2008; Szmigin et al., 2000), the two disciplines most relevant to this study. Therefore, there is a certain practical guarantee in ensuring that this is a narrative study while ensuring its qualitative rigour.

Given the above reasons, it was considered most appropriate to collect and analyse data using a narrative approach. A detailed illustration of the implementation of narrative inquiry in this study will be provided in the following section.

3.2.2 The implementation of narrative inquiry

This section expands on how narrative inquiry was implemented in this research, focusing on how the data collection and analysis strategies proposed by narrative inquiry were integrated in this research.

3.2.2.1 The collection of stories

In an ideal narrative inquiry process, participants are considered the privileged experts on a given phenomenon, bringing what they believe is relevant to the phenomenon of interest (Lal et al., 2012). Conversely, the researchers act as active listeners, attentively hearing out and encouraging participants to enrich their stories (Gabriel, 2018).

Through this ideal narrative inquiry approach, researchers can gather stories that are clear in structure and rich in detail. Structures of the stories, including the chronological structure and the consequential structure (i.e., the plot) (Polkinghorne, 1995), shed light on participants' perceptions of the phenomenon and the process through which these perceptions are formed (Connelly & Clandinin, 1990; Jovchelovitch & Bauer, 2000). Moreover, detailed contents of the stories enable researchers to understand the factors that contribute to individuals' meaning-making of a phenomenon (Bates, 2004). In summary, these coherent and detailed stories provide researchers with a gateway to comprehending the participants' perceived reality, offering a more profound, multi-layered understanding of their experiences and perspectives (Clandinin, 2006; Riessman, 2002).

To achieve the ideal state of narrative inquiry, establishing a collaborative relationship between researchers and participants is essential (Connelly & Clandinin, 1990; Martin, 1998). For this, researchers should move from the traditional question-answer format to a more open, less structured data collection design (Bates, 2004; Riessman, 2002). An open design gives participants sufficient autonomy to choose the information they share and retain the ultimate interpretative right over their narratives (Riessman & Quinney, 2005). This way, participants are empowered as knowledge contributors rather than silenced as mere research subjects (Martin, 1998).

While an open design in data collection is crucial, it does not mean that researchers should remain entirely silent during the process. Instead, researchers still play an essential guiding role, which is critical for two reasons. First, participants may inadvertently omit details they see as commonplace while telling the stories (Josselson, 2004; Jovchelovitch & Bauer, 2000). These nuances are reported only when participants are gently prompted or reminded (Kim, 2016). Second, the researcher's intervention is necessary to ensure that the narratives shared by participants align with the research questions and adequately cover the research objectives.

In aligning the data collection strategies with the objectives of this research, several key ideas have been formulated for the design of data collection. First, the research participants are selected from a Chinese context. This choice is made to ensure effective communication between researcher and participants, facilitating a clear mutual understanding (Bates, 2004). Such an environment is conducive to building rapport (Pavlenko, 2002) and aids in the subsequent collection, interpretation and analysis of narratives.

Second, when selecting data collection methods, self-reported ones (e.g., interviews, diaries, questionnaires) are given priority. These methods allow participants greater freedom to express themselves and decide the level of detail in their narratives, thereby reducing the risk of excessive researcher intervention (Paulhus & Vazire, 2007).

Third, a pilot study is needed before the formal data collection. This preliminary phase is crucial for designing comprehensible research documents for the participants, clearly conveying the research aims, and not overly restricting their narrative freedom. The design of suitable research documents ensures the overall reliability and fidelity of this research.

3.2.2.2 The analysis and interpretation of stories

Given that stories do not express their meanings independently (Polkinghorne, 1995; Riessman, 2002), the collected stories still need to be analysed to uncover what participants are conveying. Unlike other qualitative strategies, such as grounded theory, narrative inquiry does not impose specific constraints on the ways to analyse stories (Clandinin, 2006; Riessman, 2002). Instead, it is possible to analyse stories in various ways (Bates, 2004). For instance, the linguistic-focused approach examines participants' word choice (Gimenez, 2010), while the relationship-focused way also explores the relationship between participants and their social context (e.g., Bartis & Mitev, 2008). The choice of analysis method should be determined by researchers based on their research objectives and their understanding of the collected stories (Clandinin, 2006).

Although various methods can be used for analysing stories, there is a fundamental principle that all researchers must heed – the analysis must respect the structure created by the participants in their storytelling (Blumenfeld-Jones, 1995; Riessman, 2002). This respect is vital because the structure of the stories mirrors the participants' cognitive perception of their experiences (Bates, 2004; Riessman, 2002). If these narratives are hastily dissected or fragmented, there is a risk of losing the essence of the participants' perceived reality. Preserving the integrity of how participants choose to convey their stories is essential for a genuine understanding of their perspectives and experiences.

The following issues have been proposed to align the aforementioned data analysis concerns with this research. First, no formal theoretical frameworks would be adopted during the data analysis. This choice maximised preserving the integrity of participants' stories, and allows for an authentic understanding of their viewpoints about e-commerce serendipity (Bates, 2004). This aligns with the core objective of the study, which is to understand participants' genuine interpretation of e-commerce serendipity. Also, this method was chosen because e-commerce serendipity is a relatively unfocused phenomenon; thus, there is a lack of a directly applicable theoretical framework.

Second, the data analysis will actively involve the participants. Since serendipity is a highly subjective phenomenon, the only truth about it might be learnt from the participants (Makri & Blandford, 2012a). Thus, respecting the participants' rights to interpret their experiences is essential. As such, member-checking will be conducted during the data analysis (Pavlenko, 2002; Riessman, 2002). Adjustments will be made if participants identify any discrepancies between their narratives and the researcher's analysis. This participatory approach in data analysis can ensure that the research remains faithful to the participants' lived experiences.

Third, data analysis will be conducted concurrently with data collection. Conducting data analysis alongside data collection serves a dual purpose: it allows the researcher to promptly rectify any analytical errors and more effectively informs them on better-collecting data from participants. This method ensures that the researcher gains a more authentic understanding of the participants' perceptions of e-commerce serendipity and facilitates the collection of richer and more comprehensive data. This integrated approach, therefore, enhances the overall depth and quality of the research findings.

In summary, for this research, the participants and the researcher collaborated in-depth to uncover how e-commerce serendipity occurs and evolves. Accordingly, data analysis was mostly conducted alongside data collection in a coherent way, and even when a so-called separate data analysis stage started, further discussion with participants was still required. More detailed elaborations about the research design are presented in the following section.

3.3 Research design

This section outlines the design of this research, detailing action plans for gathering the required data and producing findings from them (Blaikie & Priest, 2019). The discussion of the research design is divided into four parts: the reflection on theoretical backgrounds, the preliminary design, the pilot study, and the main study.

3.3.1 Reflection on theoretical backgrounds

As narrative inquiry aims to genuinely understand how participants perceive reality (Clandinin & Caine, 2008), researchers must maintain an open mind throughout the research process (Fraser, 2004). To cultivate this open-mindedness, researchers must recognise and reflect upon their preconceived theoretical backgrounds regarding the phenomenon under study (Clandinin & Caine, 2008). This reflection is crucial for acknowledging potential cognitive prejudices, enhancing awareness of these biases enables researchers to avoid consciously introducing them into the research process, ensuring that the research faithfully captures and remains true to the participants' perspectives and experiences (Blumenfeld-Jones, 1995; Kramp, 2003).

Nevertheless, reflecting on the theoretical background does not mean completely discarding these understandings. Instead, this reflection is more about envisioning more flexible applications of existing theories (Bryda, 2020; Kim, 2016). Consulting existing theories can guide researchers in creating thought-provoking materials (Mahler, 2008; Polkinghorne, 2005), which in turn can assist participants in generating stories with richer details. Given the above concerns, a reflective inquiry was conducted into the researcher's understanding of e-commerce serendipity before embarking on the research design. To support this, a comprehensive literature review was undertaken. This review (see Chapter 2) covered diverse knowledge areas, including consumer behaviour and studies related to serendipity. A thorough examination of the existing literature led to a summary that encapsulates the researcher's comprehension of e-commerce serendipity, as illustrated in Figure 3.1.

From the researcher's perspective, e-commerce serendipity has three main characteristics: unexpected findings, serendipitists' sagacity, and valuable outcomes. Specifically, e-commerce serendipity often begins when *unexpected findings* arouse one's curiosity and are noticed by *sagacious serendipitists* with a prepared mind (Erdelez & Makri, 2020). Two potential decisions can then be expected: abandoning an unexpected disturbance, or capturing the unintended opportunity (Kari, 1998). The latter decision produces *valuable outcome(s)* with perceivable benefits for the serendipitists (Rubin et al., 2011). In turn, the gained benefit convinces serendipitists that the unexpected finding is serendipitous and strengthens their sensitivity/sagacity regarding serendipitous opportunities, indicating the end of the e-commerce serendipity.

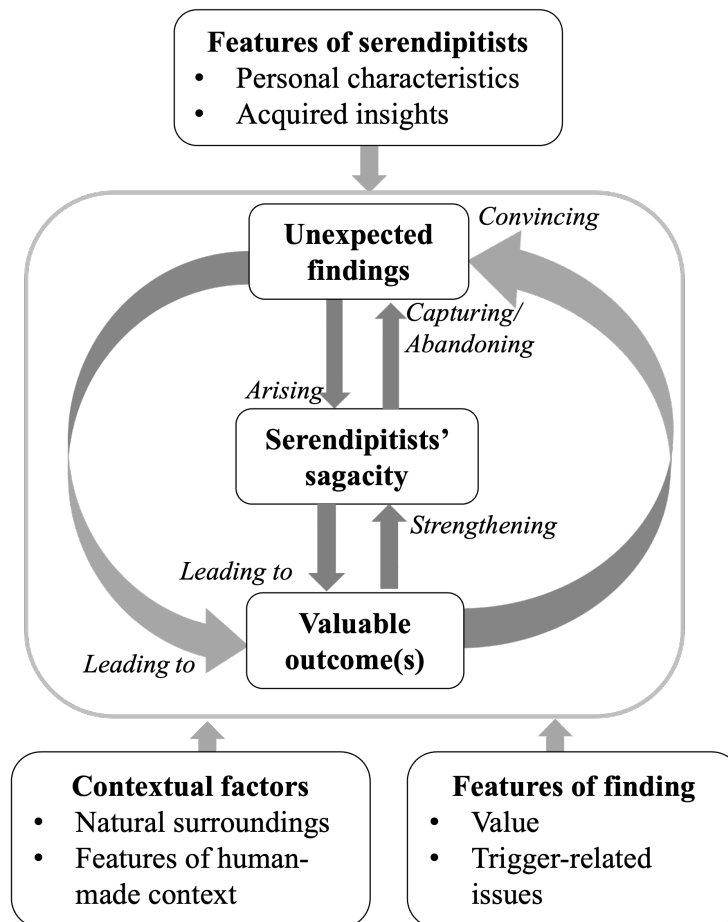


Figure 3.1 The researcher's understanding about e-commerce serendipity

The aforementioned process of experiencing e-commerce serendipity is directly influenced by three groups of factors, namely: the serendipitists-related factors (i.e. their real-time need status and emotional state), the features of a specific serendipitous finding (i.e. their contents and the ways of appearance), and the contextual factors (i.e. the prevailing natural conditions and the real-time social surroundings). Notably, these five factors may be varied across different serendipitous experiences.

This research primarily applies the aforementioned theoretical backgrounds in the initial step of designing a preliminary storytelling template. As shown in Section 3.2.2.2.1, this template was intended to assist participants in recalling and recording more details of their e-commerce serendipitous experiences. Nevertheless, notably, this tentative recording template was mainly used during the pilot study phase and was modified based on the suggestions of the pilot study participants. Additionally, in the formal study phase, the refined template did not serve as a rigid framework for storytelling. Instead, it acted as an enlightening tool. Participants were encouraged to diverge from the template if their real-life experiences differed, focusing instead on recording events as they indeed occurred. This approach ensures that participants

understand the research scope yet are not constrained by the researcher's ideas in their narrative expression. Striking this balance allows for authentic and unrestricted data collection, integral to the narrative inquiry process.

3.3.2 Preliminary design

This section provides detailed explanations regarding the preliminary design of this research. Issues being discussed include: the ways to recruit participants, the design of data collection sessions, and the design of data analysis methods.

3.3.2.1 Participant recruitment

3.3.2.1.1 Scope and number of participants

In this research, participants were recruited from *Chinese online consumers aged 18 to 34*, driven by two main reasons.

First, participants within this age group could provide detail-rich stories about e-commerce serendipity. Notably, individuals aged between 18 and 34 are the primary demographic for online consumption in China, representing over 50% of the online consumer population (Accenture, 2018; Statista, 2020). Therefore, those in this age group are likely to possess extensive online shopping experiences, potentially offering diverse insights about e-commerce serendipity. Additionally, based on the researcher's prior experience in this field, consumers in this age bracket tend to display more interest in contributing to academic research. This heightened willingness to participate often translates into more detailed accounts of their personal experiences.

Second, recruiting participants from the suggested age range can also help the researcher gain an authentic and in-depth understanding of e-commerce serendipity within real-life contexts. Sharing a cultural background with the participants can be particularly beneficial for the researcher in comprehending their language's subtleties (Kramp, 2004; Pace, 2008). This understanding is instrumental in effectively interpreting the meanings and contexts that underlie the participants' narratives (Josselson, 2004). Moreover, being in the same age group as the participants may suggest commonalities in shopping habits between the researcher and the participants (Applebaum, 1951). Such similarities can enhance the researcher's ability to empathise with the participants' experiences, adding depth and authenticity to the research findings (Kim, 2016).

To provide clarity on the age distribution of the participants while safeguarding their personal information, the recruited participants would be invited to choose the age group to which they belong. These groups align with the age brackets specified by the population census standards

in China (National Bureau of Statistics of China, 2010), namely 18-19, 20-24, 25-29, and 30-34. Grouping participants in this manner can aid in analysing potential age-related variations in their experiences and perceptions, which could be relevant for understanding different aspects of e-commerce serendipity.

Regarding the number of participants, 15 to 30 is considered reasonable. This decision was guided by the principle that, in narrative studies, the quantity of participants does not directly correlate with the quality of the findings (Josselson, 2004; Lal et al., 2012). On the contrary, increasing the number of participants could potentially impede the development of rapport and the ability to collect detailed stories about their experiences (Josselson, 2004). With the aim to achieving an in-depth understanding of e-commerce serendipity, which requires detail-rich stories, it was decided to invite a smaller group of participants (i.e., fewer than 50).

This decision on the number of participants was consistent with most existing studies focused on gaining a profound understanding of serendipity (e.g., Makri & Buckley, 2019; Zhou et al., 2018). Also, by drawing lessons from these serendipity-related studies, a group size of 15 to 30 participants was considered an optimal range for this research. This number provides a balance, allowing for the in-depth exploration of individual narratives while ensuring a wide enough range of perspectives to enrich the research's findings.

3.3.2.1.2 Recruitment techniques and incentives

In guarantee the recruitment of enough participants for this potentially labour-intensive and lengthy narrative study (Creswell & Poth, 2007), the snowball recruitment technique was employed. The initially recruited participants were encouraged to invite others to join the research (Blaikie, 2010). With the assistance of these participants, a sufficient number of interested individuals can be attracted to the study.

Next, a participation fee was offered as a further incentive to maintain participants' continued interest and contribution after joining the study, akin to practices in other early diary studies (e.g., Bolger, 2003; Zimmerman, 1977). With the approval of the school and university, this fee was set at £20 per person and was disbursed upon the completion of the research.

3.3.2.2 Preliminary designs for data collection and analysis

As suggested in Section 3.2.2.2, in this research, data collection and analysis would be conducted simultaneously, where insights from data analysis can immediately inform and refine ongoing data collection (see Figure 3.2). This continuous interplay between collection and analysis enriches the understanding of the participants' perspectives and ensures that their genuine experiences are accurately captured and reflected in the research findings.

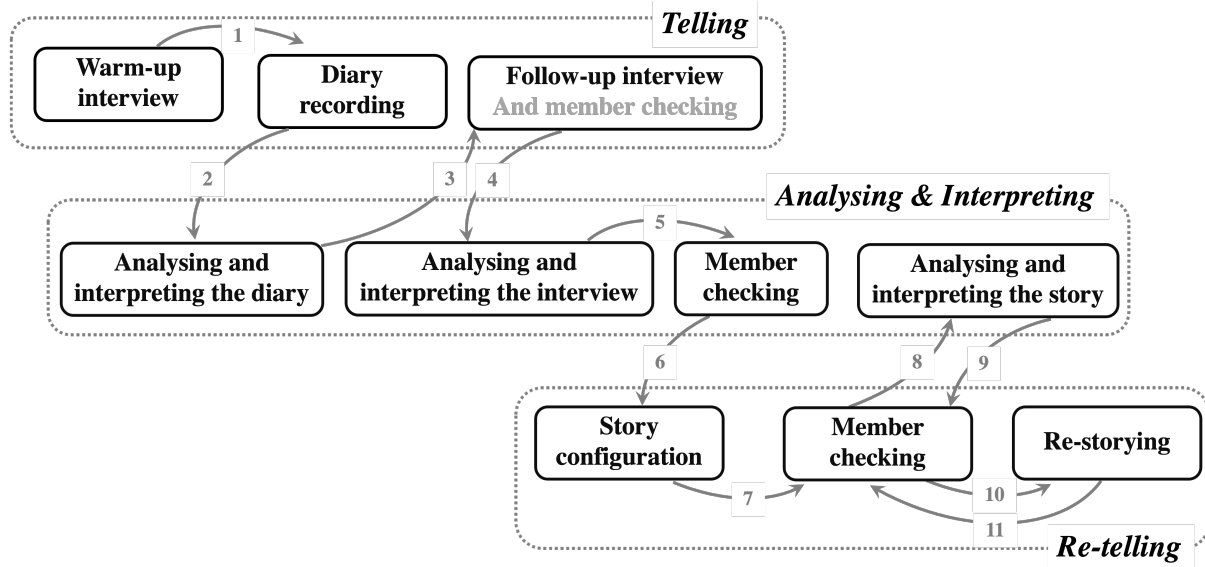


Figure 3.2 Preliminary plans for data collection and analysis

The arrows and numerical symbols in the diagram indicate the sequence of each phase in the research process. A more detailed illustration of the design of each phase and how it was conducted is presented in the following sections.

3.3.2.2.1 Preliminary design of data collection

As depicted in the *Telling* section of Figure 3.2, this research’s primary data collection methods were diary and interviews. The interview were further subdivided into two distinct types: (1) warm-up interview, designed to familiarise participants with this research; and (2) follow-up interview, designed to gather more detailed information about the participants’ experiences and to check the fidelity of the researcher’s interpretations of the participants’ experiences.

The choice to use diaries and interviews as the data collection methods in this research is grounded in two key reasons: First, diaries, written by participants immediately after serendipity happens, can offset the fallibility of memory and bring forward more extensive contextual details of their experience (Ritchie et al., 2013). Several serendipity-focused studies have already underscored the efficacy of diaries in capturing details of such experiences (e.g., Jiang et al., 2019; Sun et al., 2011; Zhou et al., 2018). Additionally, diary writing allows participants to reflect on their experiences and minds with limited interference from researchers (Bryman, 2016), fostering a more genuine depiction of participants’ feelings and viewpoints about e-commerce serendipity (Eckerdal, 2013).

Interviews, serving as more intimate, in-person conversations (Foster & Ford, 2003), enable a deep exploration of experiential nuances that might be elusive in written form, such as emotions (Bryman, 2016). By uncovering these intricate and subjective facets, the researcher

can better understand participants' views on e-commerce serendipity. Moreover, several studies have already demonstrated the value of combining interviews with diaries to obtain more compelling details of a lived experience (e.g., Radcliffe, 2018). Detailed design for the diary session and each interview sessions are proposed in the following sections:

(1) Preliminary design for the warm-up interviews

The aim of the warm-up interview was to acquaint participants with the study. To achieve this goal, four interlinked issues needed to be addressed, namely: the interview format, the introduction of serendipity, the scope of the e-commerce context to be explored, and the methods for executing the interview.

➤ *The interview format*

For the interview format, a semi-structured approach was chosen. This involved incorporating a pre-structured list of open-ended questions to ensure that the interview remained focused on research-related issues, allowing the researcher to comprehensively convey the intended content to participants. Also, the semi-structured interview should provide sufficient space for free discussion (Bryman, 2016). This flexibility ensured that participants did not feel constrained by strict rules, encouraging them to express their thoughts and experiences willingly and freely in the subsequent phases of the research.

The open-ended questions designed to guide the warm-up interview are listed in Table 3.1. The questions were formulated to gradually inform participants that the research was centred on issues related to e-commerce serendipity. Also, every question was tailored to highlight a different aspect of the research objective.

Table 3.1 Question list for warm-up interview

<i>Interview question</i>	<i>Research objective addressed</i>
Q1: How would you interpret serendipity in your visits to online marketplaces?	To explore and understand online consumers' interpretation of serendipity
Q2: Would you recount some memorable serendipitous experience that happened to you during your visits to the online marketplaces?	To identify the stages that make up a serendipitous experience within the online marketplace
	To explain factors influencing online consumers' serendipitous experience
Q3: Would you recount some memorable non-serendipitous experience that happened to you during your visits to the online marketplaces?	To explain factors influencing online consumers' serendipitous experience

To ensure that these questions effectively served their guiding purpose and help participants clearly understand the phenomenon being studied, it was essential to establish beforehand how

serendipity would be introduced to the participants and the specific scope of the e-commerce context that would be explored.

➤ *The introduction of serendipity*

Two issues needed be addressed for the introduction of serendipity: the translation and definition of serendipity.

Given that the word serendipity originates in Western culture, determining the appropriate translation for the Chinese context was essential. Two different translation schemes were considered, informed by serendipity-related studies conducted in Chinese settings.

One proposed translation is ‘巧合’ (i.e., coincidence) (e.g., Akram et al., 2018; Bao & Yang, 2022), which focuses on serendipity as the surprising identification of relevant items. The other translation is ‘偶遇’ (i.e., encountering) (e.g., Jiang et al., 2015; 2019), which emphasises serendipity as the unexpected finding of useful or interesting information (Erdelez, 1999, 2004).

The researcher intended to incorporate both translations in this research, as introducing a broader range of translations may stimulate participants’ thinking, leading to more profound interpretations of e-commerce serendipity. However, there was a concern that employing both translations could lead to confusion among participants, possibly diluting the clarity and focus of the research. To address this issue, a definitive decision on whether to use both translations or select just one was not one to be made hastily. Instead, the choice would be informed by the outcomes and feedback from the pilot study.

Another issue that needed consideration was whether definitions of serendipity should be provided at the outset of this research. On the one hand, because serendipity seems to be a novel term for the Chinese (Zhou et al., 2018), clear definitions of this phenomenon needed to be offered before inviting participants to discuss their serendipitous experience, as it might be impossible to collect adequate narratives when participants do not understand what is being researched (Creswell & Poth, 2007). On the other hand, pre-defining the research phenomenon may sometimes unduly influence the participants (Makri & Blandford, 2012a, 2012b), in turn inhibiting them from expressing their authentic thoughts about e-commerce serendipity.

For this dilemma, two different solutions were identified in the extant studies on serendipity. As proposed by researchers such as Makri et al. (2017) and Foster and Ford (2003), the first solution was to have confidence in participants’ interpretative capability. In other words, no pre-structured definitions of serendipity were provided by the researcher. Instead, the participants were invited to configure their interpretations about e-commerce serendipity. Conversely, based on the second solution offered by researchers like Jiang et al. (2019) and Zhou et al. (2018), participants were informed about the definition of serendipity at the

beginning of the research. Often, researchers adopt definitions from influential serendipity-related studies within the field. Subsequently, participants were encouraged to map the pre-structured definition of serendipity to their daily lives and form their personal understandings of serendipity.

Although both solutions have contributed to successful serendipity-related studies, they have yet to be applied in the Chinese e-commerce context. Consequently, a decision about which to follow was determined after the pilot study.

➤ ***The scope of online marketplaces***

Regarding whether the research should focus only on specific types of online platforms, the preliminary answer was no. This research aimed to encompass all online contexts that facilitated the buying or selling of products and/or services (Laudon & Traver, 2020). This decision was based on two primary considerations:

- 1) First, there are a vast variety of online marketplaces in China (Kwak et al., 2019). By restricting the research scope to a particular type of platform, there was a risk of missing out on many interesting cases that could provide valuable insights.
- 2) Second, this research intended not to explore e-commerce serendipity within a specific type of platform but to understand the phenomenon of e-commerce serendipity as a whole. Consequently, choosing a narrowly focused area would not be appropriate for the objectives of this study. Nevertheless, the appropriateness of this approach was checked through the pilot study.

➤ ***The methods for executing the interview***

Finally, there was a concern about how to execute the interview. Given the influence of COVID-19, the interviews for this research – both the warm-up and all follow-up interviews – were supposed to be conducted online. The platform of choice for these online interviews was WeChat, China's leading social networking platform. This choice was made due to the platform's widespread adoption and familiarity among participants, thereby avoiding the need for participants to learn new software and reducing their participation burden. The video chat function of WeChat was the preferred mode for interviews, as it facilitated a more personal and engaging interaction akin to in-person interviews. With the participants' agreement, all interviews were recorded to capture any emerging themes comprehensively.

However, the above execution plans for interviews were only tentative. Some participants may be hesitant to engage in video calls with strangers, and others may have faced an unstable network condition. Thus, in the pilot, participants' comfort levels with video chat and the

stability of this execution method was checked. This evaluation was essential to ensure that all participants can engage in the interviews easily and without technical difficulties, allowing for smooth and effective communication throughout the research process.

(2) Preliminary design for the diary session

Diary session aimed at collecting raw stories about participants' e-commerce serendipitous experiences. To effectively execute this session, several key issues needed to be addressed, namely: the style of recording, the format and content of recording, the form and device of recording, and the length and quota of recording.

➤ *The style of recording*

In practice, diaries can be recorded in a time-based or event-contingent style (Crosbie, 2006; Gunthert & Wenzel, 2012). Time-based diary studies span a prolonged period, sometimes extending over several years (Bolger et al., 2003). During this period, participants are asked to report their experiences either at a pre-determined and regular time or in response to a prompted signal (Bolger et al., 2003). This method ensures a consistent and longitudinal collection of data, providing insights into patterns and changes over time.

The event-contingent diaries, conversely, are kept over a short duration and are particularly effective for capturing irregular or rare events (Bolger et al., 2003; Merrilees et al., 2008). During the recording period, participants can initiate diaries independently once the phenomenon of research concern occurs (Bolger et al., 2003; Lischetzke & Könen, 2020). This approach allows participants to focus more on the details of their experience rather than on the timing of their recordings (Fisher & To, 2012). As a result, it can yield more detailed and event-specific data, providing rich insights into specific occurrences or experiences (Gunthert & Wenzel, 2012; Lischetzke & Könen, 2020).

Among the two diary methods, the event-contingent one was the most suitable for this research for three main reasons:

- 1) First, given the unexpected nature of e-commerce serendipity, the pre-determination of a fixed reporting time tends to be impossible. The event-contingent recording style, which allows participants to document their experiences as they occur, aligns well with the sporadic nature of serendipity.
- 2) Also, in recent years, the effectiveness of event-contingent diary styles has been verified in serendipity-related studies (Jiang et al., 2019; Sun et al., 2011).
- 3) Finally, an additional advantage of adopting the event-contingent diary method is that the researcher has already used this method successfully in her master's research about online

consumers' utilisation of encountered information. Accordingly, these accumulated research experiences further ensure the smooth progress of this research.

➤ ***The format and content of recording***

Regarding the recording format for the diaries, various options exist, including structured, unstructured, and semi-structured formats (Kenten, 2010; Palen & Salzman, 2002).

Structured diaries are like open-ended questionnaires, with predefined categories for participants to fill in, ensuring that specific data points are consistently collected across all entries (Crosbie, 2006; Kenten, 2010). Unstructured diaries, on the contrary, provide participants with the utmost freedom to choose what to report (Palen & Salzman, 2002). This format allows participants to express their thoughts freely and in their own words, leading to a rich and varied dataset (Toms & Duff, 2002). Semi-structured diaries strike a balance between structured and unstructured diaries. It provides a loosely designed framework with specified key recording aspects while offering participants the freedom to elaborate on what they consider essential (Crosbie, 2006; Toms & Duff, 2002). This approach ensures that certain vital information is captured while allowing for personal expression and detail.

Among these three choices for recording format, the semi-structured format was the most fitting recording format for this research due to its balanced approach. It fostered an open environment that imposes minimal restrictions on diary recording, essential for capturing authentic experiences and thoughts from the participants. Also, the structured elements within the semi-structured format provide crucial recording guidance for participants unfamiliar with serendipity. By relying on the guidance, participants were able to better reflect upon their serendipitous experiences within the e-commerce context, ensuring relevant and insightful narratives.

The choice of a semi-structured diary format leads to the need to propose some loosely defined recording guidance. Given the aim was to acquire detail-rich serendipitous stories, two distinct groups of recording instructions were provided based on the researcher's understanding of serendipity (see Section 3.3.1).

First, participants were encouraged to contemplate three crucial temporal stages of their serendipitous experience:

- The moment they encounter the serendipitous findings.
- The process of evaluating the value of these findings, using their sagacity.
- The recognition of the valuable outcome that emerges from engaging with the finding.

Reflections about these key temporal stages can assist participants in structuring their narratives, providing a clear beginning, middle, and end to their stories of serendipity.

Second, to enrich diaries with contextual and emotional depth, participants were encouraged to include the following issues in their diary recordings.

- Their emotions and need status while experiencing serendipity.
- The natural conditions and social surroundings prevalent during the serendipitous experience.
- The characteristics of the serendipitous findings they identified.

Based upon aforementioned two groups of recording instructions, a diary template was proposed to enlighten participants' diary recording (see Table 3.2).

Table 3.2 The preliminary diary template

Date of recording		Participant number	
<p>Thank you for agreeing to help us with our study. Before starting to write your own diaries, here are some points you might need to bear in mind.</p> <ol style="list-style-type: none"> 1) When serendipity occurs to you at any time while on any e-commerce apps, please make a record of it by answering the questions in the list below as soon as possible. 2) Remember, it is your diary. We are interested in finding out as much as possible about your own serendipitous experiences. So please feel free to tell us as much as you can about the serendipity you have experienced. If you are unsure whether to tell us about something that has not been mentioned in the question list, please include it because we would rather have too much information than too little. 3) Please do not worry about grammar or any writing style-related issues. You are encouraged to include pictures, videos and any other multimedia elements within your diary as long as they help you clearly state your ideas and perceptions. 4) Try to answer each question. You do not need to answer them in the order listed below; however, do remember to cover all the questions in as much detail as possible. Please try to write 1–3 sentences to answer each question. If you cannot answer a particular question or find that the diary writing burdens you too much, please send a message to the researcher directly. 			
Question list			
<p>Pre-encountering the trigger</p> <ol style="list-style-type: none"> 1. About behaviour: What was the original activity in which you were involved? 2. About the behavioural intention: Why did you engage in the original activity? 3. About emotions: How was your emotional state when dealing with the original activity? 4. About other human actors: Were you participating in this activity alone or with others? 5. About the surroundings: When did it happen? Where were you at that moment? If you were using an e-commerce app at this moment, please tell us which app you were using. <p>Trigger encountering</p> <ol style="list-style-type: none"> 1. About other human actors and the surroundings: Who/What triggered you to divert from the original activity? Please describe the type and content of the trigger in-details. 2. About the surroundings: <ol style="list-style-type: none"> 1) When did it happen, and where were you at that moment? 2) Also, on which webpage did you identify the trigger? Please take a screenshot of the webpage where you encountered the trigger. 3. About the emotion: How did you feel when encountering the trigger? 4. About the behaviour: How did you react to the trigger? 5. About the behavioural intention: <ol style="list-style-type: none"> 1) Why was your attention caught by the trigger? 2) Why did you react to it later as you did? 			

Post-encountering

1. About other human actors and the surroundings: What did you find after reacting to the trigger? Please describe the content of the findings in detail or take a screenshot of the find.
2. About the emotion:
 - 1) Did you feel that this find was unexpected luck?
 - 2) If it was, please specify the reason. If it was not, please specify the reason.
3. About the behaviour: How did you deal with the find?
4. About the surroundings: When did you deal with the find, and where were you at that moment?
5. About the behavioural intention: Why did you react to the find as you did?

Unexpected fortune

1. About the behaviour:
 - 1) What kind of result did you gain via this experience?
 - 2) How long did you take to create the gain?
 - 3) Did you suffer from any external obstacles during this process? If the answer is yes, please describe the obstacle in detail and elaborate about how you overcame it.
2. About the surroundings and other human actors: When did you perceive the gain, and under what circumstances?
3. About the emotion and the behavioural intention:
 - 1) How did you feel after the result had been achieved?
 - 2) Did you think that this result is valuable? If the answer is yes, why would you consider this result as a valuable one?

This template listed several open-ended questions to guide participants in their diary recording. Along with the questions, some reminders were also given, highlighting the template's role of guidance rather than a standard. That is, as long as they could offer meaning-laden records, participants were allowed to structure their diaries as they wished without forcing themselves to follow the presented question list. It was hoped this emphasis on recording autonomy would lead to more authentic records with richer details. Also, to avoid comprehension difficulty, the provided template was designed in Chinese (see Appendix 1).

Nevertheless, the template was only preliminary needed to be tested empirically before being applied to guide formal data collection. The issues that needed to be tested and confirmed included the comprehensibility of questions, the redundancy across the questions, and the openness of the entire template structure.

➤ ***The form and device of recording***

In this research, diaries were recorded in an electronic form due to several key advantages driving this choice. First, electronic diaries facilitate more in-depth and comprehensive entries than their paper-and-pencil counterparts. This greater level of detail is attributed to electronic diaries being less labour-intensive, enabling participants to document their experiences more frequently and comprehensively (Bolger et al., 2003). Furthermore, electronic diaries, supported by computer-based multimedia tools, offer various ways of recording the experience, such as video and audio. This versatility, in turn, enables participants to choose their preferred ways of storytelling, enabling them to record the nuances of their experiences more effectively. Moreover, multimedia elements tend to be more informative than written text (Carter &

Mankoff, 2005); thus, including them in diaries can offer a more vivid and engaging portrayal of the participants' experiences.

The social software WeChat was adopted as the recording device to facilitate participants in recording their electronic diaries. This choice was grounded in three key considerations. First, WeChat offers a wide range of multimedia recording options, including text messages, images, audio, and short videos. This diversity in recording formats allowed participants to document their experiences comprehensively. Second, the familiarity with WeChat among Chinese users eliminated the need for additional training among participants, facilitating a comfortable and straightforward diary recording experience. Third, WeChat's effectiveness in collecting serendipitous stories has been demonstrated in the previous study (e.g. Zhou et al., 2018).

➤ *The length and quota of recording*

A four-week recording period was preliminarily set to gather detailed diary entries from participants. The reasoning behind this tentative decision was twofold. First, evidence from a variety of diary studies, including those focused on serendipity, suggests that a four-week timeframe is optimal for collecting substantial diary data without causing undue fatigue for the participants (e.g., Fisher & To, 2012; Makri et al., 2017; Zhou et al., 2018). Also, research shows that almost all Chinese consumers (96%) engage with online marketplaces at least monthly (PwC, 2017). Therefore, a four-week recording period was in sync with these consumer habits, enhancing the probability that participants will experience and document instances of e-commerce serendipity.

Establishing a recording quota is considered crucial to encourage consistent diary recording over this period (Bolger et al., 2003). For this research, a reasonable quota would be submitting four diary entries throughout the entire period, averaging one per week. This approach mirrors the standards used in previous studies by Jiang et al. (2018, 2019, 2020) and supported by the efficacy of other electronic diary studies (Walker et al., 2004). Setting this quota aimed to foster regular engagement with the recording task, ensuring steady data collection throughout the four weeks.

However, considering that there are currently no diary studies specifically related to e-commerce serendipity, the applicability of the aforementioned recording length and quota still required validation through the pilot study.

(3) Preliminary design for the follow-up interviews

The follow-up interview's aim was twofold: to supplement the details of the stories recorded in the diaries and to verify the fidelity of the researcher's interpretation of these diary entries.

To achieve these aims, the follow-up interviews were semi-structured, allowing for a flexible yet focused dialogue. The following two groups of questions were supposed to be asked.

The first set of questions was dedicated to clarifying ambiguities. This focus was crucial because, during storytelling, participants may inadvertently omit details they consider routine or mundane (Feldman et al., 2004). However, these seemingly insignificant details can often hold substantial importance in fully understanding their serendipitous experiences. The absence of these details can lead to challenges in comprehending the full scope and nature of the participants' perceived serendipity. As a result, it becomes essential to delve into these overlooked aspects during the follow-up interviews.

The second set of questions in the follow-up interviews were centred around member-checking. The researcher presented her interpretations of the participants' experiences as gathered from the diary entries. The participants then assessed whether the researcher's interpretations aligned with their actual experiences. This process facilitated a mutual understanding between the researcher and the participants, bridging any gaps between the participants' intended meanings and the researcher's interpretations.

Since diaries were collected, a more detailed design of question lists for the follow-up interviews was proposed following the pilot interview.

3.3.2.2.2 Preliminary designs of data analysis

As outlined in Section 3.2.2.2, data analysis in this research was run in parallel with data collection. More concretely, data analysis was divided into two phases, as shown in the *Analysing & Interpreting* and *Re-telling* section of Figure 3.2. The *Analysing & Interpreting* focused on faithfully exploring the participants' interpretations of e-commerce serendipity and the factors shaping these interpretations. The *Re-telling* phase, on the other hand, aimed to translate the identified interpretations into more accessible language, making participants' perceived serendipity comprehensible to a broader public.

To ensure an authentic interpretation and faithful communication of findings, the research did not employ a pre-defined theoretical framework for analysis. Instead, the specific analysis methods were developed organically through interactions with participants, adapting to the data as it was gathered. While this section outlines the basic principles of data analysis, a more comprehensive and detailed data analysis strategy was formulated following the insights gained from the pilot study.

(1) Preliminary designs for the Analysing & Interpreting phase

In this phrase, three types of datasets were analysed and interpreted: the submitted diaries, the transcribed interviews, and the complete stories constructed around both. In analysing and interpreting all these datasets, participants' original narrative structures, which captured their perceived reality, were preserved (Polkinghorne, 1995; Riessman, 2003). Also, to ensure the credibility of the interpretation, member-checkings were conducted after each interpretative outcome was generated (Riessman, 2003). Engaging participants in this way helped refine the researcher's grasp of e-commerce serendipity from their perspective.

While following a similar analytical and interpretative principle, the analysis and interpretation of the three datasets had distinct focal points. The interpretation of diaries primarily focused on uncovering ambiguities and neglections in participants' narratives. This goal was typically achieved by scrutinising the chronological structure of each story. Since diaries typically follow the progression of time, tracing this chronological thread helps researchers comprehensively review participants' entries, ensuring that no experiential detail goes unnoticed (Polkinghorne, 1995). Graphic notes were taken at this stage. Also, the researchers' understanding of Chinese culture was essential in tracing the temporal clues.

The interpretation of interviews primarily focused on gaining a deeper understanding of the details and the factors shaping participants' experiences. Transcription played a crucial role in this process, as the nuances of transcription can affect the richness of the details being represented (Eckerdal, 2013). To ensure that as many details as possible were retained, the transcription was manually carried out word-by-word by the researcher. After transcription, utilising personal familiarity with Chinese grammar and referencing the diaries, the researcher systematically categorised the scenes that made up participants' experiences (Riessman, 2002).

The interpretation of complete stories primarily aimed to understand the consequential relationships (i.e., plot) between the elements that made up each experience, thereby elucidating how participants' experience of e-commerce serendipity was constructed. Examining these consequential relationships often began with the denouement of the stories, as the full implications and lessons of human actions and events might only become apparent when the outcomes manifest (Kim, 2016; Polkinghorne, 1995).

(2) Preliminary design for the Re-telling phase

The re-telling phase aimed to translate the participants' perceived e-commerce serendipity into more explicitly understandable forms (Fraser, 2004). Two core tasks in this stage were story configuration and re-storying.

Story configuration aimed to configure comprehensive stories with rich details, which was achieved by synthesising the interview and the corresponding diaries. Clarifications for ambiguities present in the diaries would be directly inserted at the relevant points. Novel ideas from the interviews were first compiled into a distinct document by researchers. Next, participants chose relevant content from this document to incorporate into their diaries. Any content not integrated was placed in a background file, offering researchers insights into participants' personalities and shopping habits.

For re-storying, each story was initially summarised based on its identified plot (Riessman, 2002). Subsequently, these summaries underwent a cross-story comparison to pinpoint common serendipitous patterns among participants. Drawing from these recurrent patterns, prevalent actions, emotions, scenes, and agencies were re-linked to provide a renewed context for the e-commerce serendipity experienced by participants.

3.3.2.3 Summary

Given the research objectives and the adoption of the narrative inquiry as the research strategy, this research was executed under the collaboration of the participants and the researcher. Specifically, through writing diaries and participating in the interviews, participants unveiled their serendipitous experiences in a storied form. These stories and the participants' timely help in the analysis process enabled the researcher to perceive e-commerce serendipity through the participants' eyes.

However, because this preliminary design was proposed according to the insights provided by studies targeting contexts other than the online marketplaces, its practical applicability in the e-commerce context still needs to be tested. Table 3.3 outlines the design-related issues that needed to be examined and potentially revised during the pilot study.

Table 3.3 Issues need to be addressed in the pilot study

<i>Research stage</i>	<i>Issues to be addressed</i>
Warm-up interview	<ul style="list-style-type: none"> • The Chinese translation of serendipity • The ways to introduce serendipity
Diary recording	<ul style="list-style-type: none"> • The understandability and insightfulness of the recording template • The length and quota for recording
Follow-up interview	<ul style="list-style-type: none"> • The ways for conducting the interview • The design of the interview questions
Analysing and interpreting the diary	<ul style="list-style-type: none"> • The reasonability for analysing the diaries via the exploration of chronological structure • The ways to explore the diaries' chronological structure
Analysing and interpreting the interview	<ul style="list-style-type: none"> • The ways for transcribing the interview • The ways for distinguishing the diary-related issues with the non-related issues

Story configuration	The ways for integrating the diary with corresponding interview data
Analysing and interpreting the story	The ways for tracing the plot of each story
Re-storying	The ways for faithfully translating the stories into academic terms

3.3.3 The pilot study

This section reports on the pilot study, which was conducted from January 25, 2021, to April 17, 2021. Eight participants contributed to this pilot study; their participation assisted the researcher refine the preliminary design and formulate the formal design for this research. Four main stages made up the pilot study (see Table 3.4), namely: the recruitment and warm-up stage, the preliminary story collection stage, the refined story collection stage, and the retelling and concluding stage.

Table 3.4 Overview of the pilot study

<i>Stage</i>	<i>Issues addressed</i>
Recruitment and warm-up	<ul style="list-style-type: none"> • The ways to propagate this research and recruit participants • The design of the warm-up interview
Preliminary story collection	<ul style="list-style-type: none"> • The design and usage of the diary template • The ways for conducting follow-up interview
Refined story collection	<ul style="list-style-type: none"> • The focus for analysing the diaries • The effectiveness for analysing the interview • The ways for configuring detail-rich and coherent stories
Retelling and concluding	<ul style="list-style-type: none"> • The duration and quota for diary recording • The ways for analysing the stories and re-told them

The following sections provide detailed elaborations of the pilot study and the design-related suggestions gained from it.

3.3.3.1 Recruitment and warm-up stage

The recruitment and warm-up stage took place from January 25, 2021, to January 31, 2021. This stage focused on assessing the feasibility and effectiveness of the initial strategies for participant recruitment, as well as the design and content of the warm-up interviews.

3.3.3.1.1 Process of the stage

The recruitment and warm-up stage comprised two phases: the pilot participants recruitment phase (from January 25 to January 27), and the warm-up interview and feedback phase (from January 27 to January 31).

(1) The recruitment of pilot participants

The recruitment of pilot participants in this study mirrored the approach used by Makri et al. (2017), where the recruitment message (see Appendix 2) was disseminated via the researcher's social network service platform. This recruitment method was chosen based on two key

considerations. First, leveraging social ties encouraged recruiting participants who were more willing to contribute. As acquaintances of the researcher, participants may have perceived that they were actually assisting the researcher in doing their job and may, therefore, have been more motivated to help (Zimmerman & Wieder, 1977). Accordingly, more insightful and timely feedback could be gained, contributing to an effective refinement of the preliminary design. Second, by leveraging existing social connections, participants could be accessed relatively quickly (Easterby-Smith et al., 2015), saving research time to some extent.

Relying on the aforementioned recruitment method, a total of eight pilot participants were enlisted (as detailed in Table 3.5). This number aligns with the pilot participant count in other diary-based serendipity-related studies (e.g., Jiang et al., 2020; Zhou et al., 2018).

Table 3.5 The pilot participants

	<i>Occupation</i>	<i>Gender</i>	<i>Age Group</i>
PP1 ¹	Librarian in academic library	Female	25–29
PP2	Advertising practitioner	Female	25–29
PP3	Business consultant	Female	20–24
PP4	Teacher at English training institution	Female	20–24
PP5	PhD in information behaviour	Female	25–29
PP6	PhD in informetrics	Female	25–29
PP7	Master graduate seeking employment	Female	20–24
PP8 (Withdrew)	Financial analyst	Male	25–29

Out of the eight participants, seven contributed throughout the entire pilot study. PP8 withdrew halfway through due to an urgent work commitment. His sudden withdrawal highlighted the challenges for involving non-student groups in research, as these participants often have more demanding schedules and work commitments. To address this challenge, it was beneficial to implement *a flexible withdrawal mechanism* to accommodate the varying work conditions of participants, allowing those interested in the research but with demanding schedules to participate with greater ease and confidence.

(2) The warm-up interview and feedback

The warm-up interview and feedback phase commenced after obtaining the pilot participants' signed ethical approvals (the ethical approval of this research is shown in Appendix 3). This phase was further divided into the following three sub-phases:

- 1) First sub-phase (January 27-29, 2021): This sub-phase was conducted in line with the design outlines in Section 3.3.2.2.1, aiming to acquaint the pilot participants with the preliminary design of the warm-up interview. Each interview during this stage lasted between 45 minutes to 1.5 hours:

¹ In this context, 'PP1' refers to Pilot Participant Number 1. The designation 'No.1' is assigned based on the chronological order of participation in the pilot study, meaning that PP1 was the first participant who agreed to engage in the pilot study.

- 2) Second sub-phase (January 30, 2021): In this sub-phase, each pilot participant was asked to provide feedback and suggestions regarding refining the design of the warm-up interview that they had participated in. These interviews were semi-structured and varied in duration, ranging from 20 minutes to an hour.
- 3) Third sub-phase (January 31, 2021): The final sub-phase involved each pilot participant evaluating the reasonableness of the feedback and revision advice the others offered. These evaluations were conducted through semi-structured interviews, each lasting 30 to 35 minutes. This stage was crucial for cross-validating the feedback and ensuring that the proposed revisions were collectively agreed upon and applicable.

3.3.3.1.2 Feedback about the preliminary design and refinement suggestions

Based on the feedback received, the initial design of the warm-up interview was found to be largely effective. Notably, the pilot participants indicated that not having academic definitions of serendipity did not impede their understanding of the concept. On the contrary, they valued the opportunity to interpret serendipity based on their perspectives. In response to this feedback, the researcher decided to continue this approach in the formal study. That is, rather than providing academic definitions, the researcher concentrated on encouraging formal participants to form their interpretations of serendipity.

To better encourage formal participants to interpret e-commerce serendipity independently, the following suggestion made by the pilot participants were incorporated into the new design for the warm-up interview:

- 1) The interview format was adjusted to be more exploratory and thought-provoking. Rather than directly inquiring about e-commerce serendipity, the revised warm-up interview started by delving into participants' interpretation of serendipity in everyday life contexts. This method aimed to anchor the participants' understanding of serendipity in familiar and relatable scenarios. By doing so, it was anticipated that participants would be able to offer more nuanced and in-depth insights when the conversation shifted to the specific topic of serendipity in online marketplaces.
- 2) The existing two Chinese translations of serendipity, namely '巧合' (coincidence) and '偶遇' (encountering), were retained. Additionally, a new translation – '意外发现' (unexpected discovery) – was introduced. The decision to keep the existing translations was unanimously agreed upon by the eight pilot participants. They believed that each translation represented a different aspect of the phenomenon while maintaining both was essential for the comprehensiveness of the study. Furthermore, comparing these translations helped deepen participants' understanding of each distinct phenomenon. The

introduction of the new translation ‘unexpected discovery’ was suggested by two pilot participants with research experience in serendipity (i.e., PP5 and PP6), as this was the translation they used in their own studies. When this suggestion was shared with the other participants, it also received their agreement. They recognised that ‘unexpected discovery’ offers a different nuance than ‘encountering’ and ‘coincidence’, and its inclusion could further expand the depth of the research by encompassing a broader range of serendipitous experiences.

- 3) If formal participants found difficulties in independently interpreting serendipity, the researcher would provide real-life examples to elucidate it. This approach was suggested by the pilot participants, who advocated that real-life examples are more vivid than academic definitions and, thus, more effective in conveying the essence of serendipity. Also, pilot participants noted that real-life examples are less constricting than academic definitions; thus, offering them can allow formal participants greater freedom in interpreting the concept on their own terms. The pilot participants were able to contribute real-life examples that might be used as illustrative examples.

The revised warm-up interview, which had been redesigned based on the feedback and suggestions from the pilot participants, is detailed in Section 3.3.4.2.1.

3.3.3.2 Preliminary story collection stage

The preliminary story collection stage occurred from February 01, 2021, to February 17, 2021. This stage focused on assessing the feasibility and effectiveness of the preliminary data collection strategies, as well as developing a plan for analysing the diaries and interview data in configuring coherent serendipitous stories.

3.3.3.2.1 Process of this stage

Three sub-phases comprised the preliminary story collection stage, including: diary collection, analysis and follow-up interview, interview analysis and story configuration, and feedback.

(1) Diary collection, analysis and follow-up interview (February 01 to February 06)

During this phase, pilot participants were invited to record at least one serendipitous experience following the diary template provided in Table 3.2. As the diary entries were received via WeChat, the researcher commenced the analysis of these submissions. The core of this analysis was identifying any ambiguities within the diary entries. Based on these identified ambiguities, the researcher formulated follow-up interview questions. These questions were designed to aid the pilot participants in enhancing the details of their experiences, thereby enabling them to narrate more coherent and detail-rich serendipitous stories.

As detailed in Section 3.3.2.2.2, the recording ambiguities was identified by tracing the chronological structure within the diary entries. Through the analysis of the temporal clues mentioned above, three common types of recording ambiguities were identified in the pilot participants' diary entries:

- 1) Selective recording of significant moments. When recording serendipitous experiences that spanned a considerable duration, pilot participants tended to record only the moments that had the most significant impact on them. These typically included the instant when e-commerce serendipity occurred and when it concluded. However, the descriptions of other phases within the experience were often unclear. This ambiguity made it challenging to understand how their serendipitous experience evolved.
- 2) Omission of emotional triggers. The pilot participants sometimes forget to explain the reasons behind their emotional changes, leading to some of their behavioural changes appearing abrupt or unexplained. This ambiguity made it difficult to comprehend what shaped their e-commerce serendipitous experiences.
- 3) Unexplained use of Internet Slang. Sometimes, the pilot participants' use of internet slang was not clarified, making it challenging to discern whether the slang was employed to express emotions or opinions about something or was merely used as a habitual expression. This ambiguity could lead to misunderstandings regarding the participants' perspectives on e-commerce serendipity.

All these identified ambiguities were then discussed in the follow-up interviews. Specifically, all these interviews were video chats via WeChat, with each session averaging around one hour. All interviews were recorded to ensure accurate and comprehensive documentation. After each session, the recordings were promptly transcribed into Word documents, allowing for a thorough and precise analysis of the participants' insights and clarifications regarding their diarised experiences.

(2) Interview analysis and story configuration (February 02 to February 13)

This phase aimed to find a method for constructing detail-rich and structurally coherent serendipitous stories based on the diaries and interview data. Since the timing of diary submissions and interview participation varied among the pilot participants, this phase overlapped somewhat with the diary recording and follow-up interview phase.

During this phase, the transcribed interviews were initially sent to the pilot participants for confirmation. This step ensured the transcribed content faithfully reflected the pilot participants' experiences and insights. Once the transcriptions were confirmed, the researcher embarked on a detailed analysis of these transcripts, with the aim of identifying behavioural details relevant

to the diarised experiences. This was intended to supplement and enrich the information already contained within the diaries. To do so, the researcher thoroughly reviewed the transcribed interviews. Through several rounds of line-by-line reading, interview data related to the initially identified diarised ambiguities were extracted.

Next, the extracted interview data were integrated with the original diary to form a coherent serendipitous story and sent to pilot participants for member-checking. While the pilot participants checked the initial stories, the researcher took the additional step of creating personal profiles. These profiles were constructed using interview data that was not directly related to the diarised experiences. Often, these less-relevant data included information about the pilot participants' shopping preferences, lifestyle details, and other relevant personal information. This approach aimed to provide a richer context to each participant's story, enhancing the depth and authenticity of the narrative. Once these personal profiles were configured or updated, they were sent to the pilot participants for another round of member-checking.

Only after confirmation from the pilot participants that the stories and the profiles were faithful representations of their experiences and thoughts was the story configuration stage deemed complete.

(3) Feedback (February 14 to February 17)

During this phase, the pilot participants were invited to participate in a video discussion session centred around their perspectives on the preliminary research design. When a design issue was identified during these discussions, the conversation naturally evolved into brainstorming potential solutions. This collaborative approach allowed for a thorough exploration of each problem, considering various angles and suggestions from the participants. Furthermore, participants were also encouraged to comment on the significance of the design issues raised by their peers and the practicality of the proposed solutions. This peer review component of the discussion added a layer of scrutiny and refinement to the process, ensuring the feedback was well-rounded and comprehensive. Each video discussion session was substantial in duration, averaging around 1.5 hours.

3.3.3.2 Feedback about the preliminary design and refinement suggestions

The refinement suggestions for the preliminary research design gained from this stage were categorised into three main areas: the design and usage of diary template, the ways to conduct the follow-up interviews, and the effectiveness of data analysis methods.

(1) Design and usage of diary template

This category encompassed four refinement suggestions related to the content and application of the preliminary diary template (see Table 3.2).

The first suggestion pertained to the language used in the diary template. It was observed that academic terms were overly used in the diary template, which hindered the pilot participants' comprehension of its content. To make the template more user-friendly and accessible, it was suggested that the academic jargon should be replaced with everyday language, including terms like context (情境), triggers (触发要素), and value (价值).

The second suggestion focused on the presentation style of the diary template. Feedback indicated that the current template, with its question-centric presentation style, resembled more of an 'exam paper' (PP6). This format led to a tendency among pilot participants to provide a series of disconnected answers rather than telling a cohesive, systematic story. To remedy this, it was suggested that the diary template should be restructured to a statement-centred style.

The third suggestion pertained to the overall length and content of the diary template. It was observed that the diary template contained redundant content, making it lengthy and tedious. Specifically, pilot participants noted that the introductions to each question section were often overly extensive and sometimes even repeated the content of the following questions. This duplication added unnecessary length and could lead to confusion for the participants. To enhance the usability and effectiveness of the diary template, it was recommended that these introductions be significantly condensed or even deleted.

The fourth suggestion concerned the necessity of using the diary template during the recording process. It was identified that the diary template is not always a necessary tool for recording diary entries. Since serendipity is a subjective and context-sensitive phenomenon, not all pilot participants' experiences of e-commerce serendipity would necessarily align with the scenarios outlined in the template. Insisting on using the template for diary recording could, in fact, restrict pilot participants' thinking and compromise the authenticity of their diary accounts. As such, some pilot participants suggested that a recording template should only be provided when they ask for it. The only instruction the researcher should give at the outset of the diary session is to emphasise the importance of documenting the serendipity experience in chronological order and include as many details as possible. By allowing participants the flexibility to record their experiences without adhering to a predefined template, more genuine and varied accounts of e-commerce serendipity could be captured.

(2) Ways to conduct the follow-up interviews

Based on the feedback, pilot participants found the questions posed in the follow-up interviews, which mainly targeted ambiguities in the diaries, to be reasonable and enlightening. However, they expressed concerns regarding the method of conducting these interviews. Specifically, pilot participants indicated that video chats, though similar to face-to-face communication, can be burdensome to arrange. These scheduling challenges can subsequently impact the quality of the interviews. That is, by the time an interview is eventually scheduled, a participant might have forgotten significant details of their experience. This issue was notably exemplified by PP8, who struggled to recall specific aspects of his recorded experience during the interview, which had been rescheduled four times.

To address this issue, the pilot participants suggested using voice chats or text chats as more efficient alternatives, as these are easier to arrange and allow for greater flexibility in timing, enabling participants to engage in the interview process at a time when their memories of the experiences were still fresh and vivid.

(3) About data analysis

Regarding the data analysis process, which includes both an analysis of diary entries and interview data, as well as the story configuration, the pilot participants provided three key refinement suggestions discussed below.

First, pilot participants recommended that the analysis of diary entries should not be restricted to just the text. They highlighted the importance of also considering the figures (such as images or graphical elements) included in the diary entries. The rationale was that these figures often contain rich and detailed information that can add depth to the understanding of the participants' experiences. Furthermore, visual elements tend to be more engaging and vivid compared to plain text, thus, discussing them could more effectively stimulate participants to recall and articulate specific details of their experiences. This approach aligns with the broader objective of capturing a comprehensive and authentic account of each participant's serendipitous experiences.

The second refinement suggestion from the pilot participants concerned the process of member-checking interview transcriptions. They suggested that it was unnecessary to involve them in the member-checking of these transcriptions. Their rationale was based on two main considerations. Primarily, the pilot participants noted that the interview transcriptions were often lengthy, thus, reviewing them would require a significant amount of their time. This extensive checking process could potentially dampen their enthusiasm and willingness to participate further in the research. Also, pilot participants observed that much of the

information contained within the interview transcriptions would already be reflected in the configured stories and personal profiles developed from these interviews. Consequently, having the pilot participants check the interview transcriptions seemed redundant and unnecessarily repetitive.

The third refinement suggestion pertained to improving the effectiveness of member-checking for the configured stories. Pilot participants recommended that it would be beneficial to annotate each part of the story with its source. That is, to clearly indicate whether a particular sentence or section in the configured story originated directly from the diary entries or was introduced from the interview data. By having a clear reference to the origin of each part of the story, participants could efficiently confirm the authenticity of the configured stories, thereby streamlining the member-checking process and enhancing the overall reliability of the research findings.

In consideration of the reliability of this research, the refinement suggestions mentioned above were not immediately adopted as part of the formal research design. Instead, they were checked for the feasibility of this research before adoption, which was done in the refined story collection stage.

3.3.3.3 Refined story collection stage

The refined story collection stage, spanning from February 18, 2021, to March 11, 2021, had two primary objectives: (1) it aimed to further assess whether the refinement suggestions obtained from the previous phase were indeed beneficial and pertinent to the research's objectives; and (2) this stage was also dedicated to exploring any further shortcomings within the preliminary design.

Notably, due to work commitments, PP8 was unable to fully participate this stage; his involvement was limited the evaluation of the refined diary template.

3.3.3.3.1 Process of the stage

Four sub-phases comprised the preliminary story collection stage, including: an independent diary recording and follow-up interview phase, a template-based diary recording phase and follow-up interview phase, the refined story configuration phase, and feedback phase.

(1) An independent diary recording and follow-up interview (February 18 to February 25)

During this phase, pilot participants were encouraged to record at least one diary entry entirely in their personal writing style, without the constraints of a predefined template. This approach aimed to capture their authentic experiences and perspectives more freely. At the same time,

the researcher focused on revising the preliminary diary template. These revisions were informed by the refinement suggestions from the earlier pilot stage, intending to make the template more user-friendly and less restrictive.

In parallel with these template revisions, the researcher analysed the independently recorded diary entries from the pilot participants. The analysis method largely followed the guidelines outlined in Section 3.3.2.2.2. However, a notable enhancement in this phase was the researcher's increased attention to elements beyond just the text in the diary entries. This expanded focus aimed to provide a richer and more nuanced understanding of the participants' experiences.

In this phase, follow-up interviews were conducted with all seven participating pilot participants. These interviews continued to focus on discussing recording ambiguities identified in pilot participants' diary entries. However, these discussions were enriched and conducted more flexibly compared to the previous pilot stage. Specifically, the content of the discussions was diversified by incorporating more discussions around the figures in the diaries. Also, these figure-focused discussions were initiated at the beginning of each interview, aiming to draw the pilot participants' attention back to their diarised experiences more effectively and stimulate them to recount more details.

Additionally, in line with the pilot participants' suggestions, the interview format was more flexible. In this phase, the pilot participants could choose between voice and text chats based on their preferences and schedules. This choice catered to the diverse needs and circumstances of the participants, with five opting for voice chat and two (PP4 and PP6) choosing text chat due to their tight schedules.

(2) A template-based diary recording and follow-up interview (February 22 to March 03)

During this phase, pilot participants were invited to record at least one diary entry according to the refined diary template, which was distributed to the pilot participants on February 21. This exercise aimed to assess the effectiveness of the refined template and how it influenced the participants' diary recording. Given the different frequencies at which the pilot participants experienced e-commerce serendipity, there was an overlap in time between this phase and the previous one.

Follow-up interviews conducted in this phase could also be chosen from a voice chat-based one and a text chat-based one. Three pilot participants (PP3, PP5, PP7) opted for text chat due to their scheduling constraints, while the remaining four chose voice chat.

(3) Refined story configuration (February 23 to March 07)

Due to the varying frequencies at which the pilot participants experienced e-commerce serendipity, the refined story configuration phase overlapped with the diary recording and follow-up interview phases.

In this phase of the research, while the main steps and methods for story configuration remained consistent with those previously outlined in Section 3.3.3.2.1, two notable modifications were introduced to enhance the process. First, pilot participants were not required to check the interview transcriptions. By reducing the burden of reviewing lengthy transcriptions, participants could dedicate their attention exclusively on reviewing the configured stories and personal profiles. Second, in the configured stories, any content that was not originally part of the diary entries was highlighted in a different colour. This visual differentiation was implemented to help pilot participants more easily identify the analysis and adjustments made by the researcher, allowing for a more efficient and effective member-checking.

(4) Feedback (March 08 to March 11)

During this phase, the pilot participants were invited to participate in a voice discussion session to evaluate the refined research design. The session revolved around four primary areas of focus as set out below.

- 1) Pilot participants were invited to share their experiences of recording diary entries with and without a pre-defined template. This discussion aimed to evaluate the effectiveness of the refined diary template and consider its necessity in guiding the diary recording process.
- 2) Pilot participants were invited to assess whether the refined methods for analysing the diaries were more effective than the initial methods. This involved comparing the depth and breadth of questions posed in the current follow-up interview against those in the previous interview.
- 3) Pilot participants were invited to choose between voice and text for follow-up interviews. This part of the discussion sought to determine the most preferred and effective communication method for conducting these interviews.
- 4) Pilot participants were also invited to evaluate the refined story configuration process, focusing on whether member-checking for interview transcriptions was necessary.

Besides these central themes, the session provided free discussion on other aspects of the refined research design. Also, pilot participants were encouraged to peer review and provide feedback on design-related issues raised by their colleagues. Each discussion lasted approximately 1.5 hours.

3.3.3.3.2 Feedback about the preliminary design and refinement suggestions

Based on the feedback gathered during this stage, two key sets of refinement suggestions were identified to enhance the overall research design, particularly focusing on diary recording and follow-up sessions:

(1) Refinement suggestions for the diary sessions

In the design of the diary recording session, the refined diary template (see Appendix 4) was considered clear and concise; however, all eight pilot participants viewed it as non-essential for aiding their diary recordings.

On one hand, the pilot participants pointed out that the follow-up interviews could effectively replace some of the diary template's functions. These interviews allowed participants to elaborate further and clarify details of their experiences, initially overlooked in their diaries. Consequently, the necessity of the diary template was questioned. On the other hand, it was found that diaries recorded as per participants' personal preferences, though less structured, were often richer in detail than those structured by the refined template. This indicated that while the template brought uniformity, it may also potentially constrain the participants' narrative autonomy.

In response to these refinement suggestions, a revised diary recording plan was generated. Section 3.3.4.2.2 offers a detailed illustration of this revised plan, which guided the formal study of this research.

(2) Refinement suggestions for the follow-up interviews

Regarding the design of the follow-up interviews, the pilot participants identified two primary areas for refinement: the issues to be discussed and ways to conduct the follow-up interviews.

As suggested by the pilot participants, the issues discussed in the follow-up interviews were extended slightly beyond the diarised experiences to include participants' interpretations of serendipity. This expansion was expected to yield three main benefits. A diverse range of discussion topics was expected to enhance participant engagement, fostering more dynamic and involved interactions. Additionally, inviting participants to contemplate serendipity more deeply would help them refine their perspectives, providing clarity to create more coherent and focused follow-up diary entries. Lastly, discussions delving into the participants' perceived serendipity would equip the researcher with a deeper, more nuanced comprehension of participants' experiences. This comprehensive perspective is vital for authentic, in-depth data analysis and effective story retelling, thereby improving the overall quality and richness of the research findings.

Also, the pilot participants endorsed voice chat as the preferred method for conducting follow-up interviews. They suggested that the conversational ease of voice chat, as opposed to typing, could foster a more willing contribution from participants – a method proven to elicit more detailed information. However, this preference for voice chat does not render text chat obsolete. They recognised text chat’s flexibility and convenience, especially when participants have tight schedules; in this case, pilot participants suggested the adoption of text chat as the secondary method for conducting follow-up interviews. Nevertheless, it was suggested that details obtained via text chats could be elaborated upon in subsequent voice chat sessions, ensuring a comprehensive understanding of the participants’ experiences. Section 3.3.4.2.3 illustrates the formal design of the follow-up interviews, structured based on the above refinement suggestions.

3.3.3.4 Re-telling and concluding stage

The re-telling and concluding stage, spanning from March 11, 2021, to April 17, 2021, was guided by two core objectives: (1) to identify and establish appropriate methods for retelling the serendipitous stories shared by participants; and (2) to evaluate the entire research process, ensuring it would not overburden the participants. Seven pilot participants contributed to this stage.

3.3.3.4.1 Process of this stage

Three sub-phases comprised the re-telling and concluding stage, including: the last diary recording and follow-up interview phase, the re-telling phase, and the feedback phase.

(1) Last diary recording and follow-up interview (March 11 to March 16)

During this phase, the pilot participants were invited to document at least one diary entry entirely in their personal writing style. Next, the researcher analysed the diary entries and conducted a follow-up interview with the pilot participants. This time, all pilot participants opted for voice chats for their interviews. In these concluding follow-up interviews, the discussion topics expanded to the participants’ broader understanding of e-commerce serendipity. This expansion of discussing topics led to a significant increase in the length of the interviews. Whereas previous voice chats averaged around 30 minutes, these comprehensive interviews were about 60 minutes each.

By the conclusion of the final diary recording and follow-up interview phase, the pilot study had successfully gathered a total of 29 diary entries. This collection comprised four recorded stories from each pilot participant, except PP8, who withdrew partway through the study.

(2) Story analysis and re-storying (March 17 to April 15)

This phase aimed at faithfully revealing the characteristics of e-commerce serendipity as perceived by the participants, their experiences of these serendipitous events, and the factors influencing these experiences. This process comprised two key sub-phases: story analysis and re-storying.

The story analysis phase sought to understand the process and reasons behind pilot participants' narrated serendipitous experiences. As outlined in Section 3.3.2.2.2, this analysis involved tracing the plot of each story, as the plot serves as the organiser of the scenes and the main conveyor of the storied meaningfulness (Connelly & Clandinin, 1990). To delineate the plot of each story, it was essential to distinctly identify the beginning, middle, and end of each story. This task was achieved by tracking causal and temporal conjunctions in the stories. Graphic notes were taken alongside this tracking process as an assistance. After the analysis, member-checking was conducted, ensuring that the researcher's analysis still faithfully reflected the pilot participants' real-life experiences.

Re-storying aimed at identifying the shared and distinct aspects of e-commerce serendipity experiences among different pilot participants. In this way, the essence of e-commerce serendipity perceived by the participants could be better captured. Central to re-storying, as outlined in Section 3.3.2.2.2, is the comparison of various stories. This involved closely examining their plots to understand the narrative flow and significant moments unique to each experience. Following the plot comparison, the research moved into the summarisation phase. Here, the essential characteristics, developmental patterns, and influencing factors of different types of e-commerce serendipity were distilled into a coherent summary. This summary was then shared with the pilot participants for review, ensuring that participants could see their own experiences reflected in the summary.

(3) Feedback (April 15 to April 17)

In this final feedback session of the pilot study, the pilot participants were invited to participate in a voice chat to discuss any aspects of the overall research design they deemed unreasonable. Each discussion lasted approximately two hours. Compared to previous feedback discussions, this session focused more on the following issues:

- 1) The first concern was the duration of data collection. Pilot participants discussed whether a four-week data collection session was sufficient or too burdensome and whether it was necessary to extend it for a more comprehensive data collection.

- 2) The second issue discussed was the quota of diary recording. Pilot participants were invited to evaluate the reasonableness of submitting four diary entries within the four weeks. Moreover, if this recording quota was not feasible, what an ideal quota might be.
- 3) The third concern was the effectiveness and reasonability of the retelling methods.
- 4) The final issue discussed was the extent of participants' involvement in the data analysis process. Pilot participants evaluated whether their engagement in the analysis was overly demanding or reasonable.

3.3.3.4.2 Feedback about the preliminary design and refinement suggestions

Based on the feedback from the final phase of the pilot study, all pilot participants agreed that the adoption of a broader scope of online marketplace was reasonable. Besides this confirmation, two main sets of refinement suggestions emerged: (1) refinement suggestions for the duration and quota of data collection; and (2) refinement suggestions for the story analysis and re-storying. These suggestions were centred around the duration and quota of data collection, as well as enhancing the effectiveness of the story analysis and re-storying:

(1) Refinement suggestions for the duration and quota of data collection

In terms of the duration of data collection, all seven pilot participants suggested extending the period to one month. This recommendation was based on two primary considerations. First, pilot participants believed a month-long data collection session would be feasible and not excessively demanding. They found the current four-week period to be comfortable and believed that extending it by an extra 2-3 days would not be overly burdensome, with PP1 going as far as to express that a longer data collection timeframe could actually relieve pressure, as it would permit more time to complete the research without rushing.

Second, pilot participants emphasised the importance of aligning the research design with the actual behaviour patterns of Chinese online consumers. They pointed out that such an alignment is crucial for ensuring this research can collect the desired data. As per marketing reports, Chinese consumers visit online marketplaces at least once a month; thus, the pilot participants suggested that the recording period should mirror this monthly frequency.

To make this one-month data collection period more acceptable to potential participants, the pilot participants recommended implementing a flexible withdrawal mechanism. By assuring participants that they could opt-out at any point should they find the process burdensome, this mechanism aimed to reduce potential participants' perception of the research as "an onerous commitment" (PP7) and encourage participation.

In terms of the data collection quota, all seven pilot participants suggested moving away from a mandatory quota towards more flexible recording guidelines. While they all agreed that submitting four diary entries within a month was achievable, they expressed concerns that a strict quota might diminish their sense of control and dampen their enthusiasm for the project. Additionally, participants PP5 and PP6, who had prior experience in serendipity research, highlighted the unpredictable nature of serendipitous events, arguing that a pre-set quota could be unreasonable and might even lead to fabricated stories. Responding to the aforementioned suggestions, a more refined and effective formal data collection plan was proposed, as detailed in Section 3.3.4.2.

(2) Refinement suggestions for the story analysis and re-storying

Regarding the story analysis and re-storying process, the pilot participants affirmed the overall effectiveness of the analysis method. However, they suggested that the current story analysis and re-storying process could be more effective by engaging participants more actively in retelling.

For the story analysis, the pilot participants suggested delegating the task of stage clarification to the participants. As the individuals who directly experienced these events, participants deeply understood their own experiences. They were, therefore, in a better position to quickly and faithfully distinguish how their experience began, evolved and ended. By allowing participants to define the structure of their stories, the researcher was able to capture a more authentic and nuanced representation of participants' serendipitous experiences.

For re-storying, the pilot participants also suggested that participants could be more actively involved in comparing different types of serendipitous stories they submitted. They highlighted that specific narrative details, which the researcher might overlook, could be significant in understanding the full scope of their involvement. Involving participants early in the process and allowing them to point out these nuances could enable the researcher to empathise more effectively with their experiences.

3.3.3.5 Summary

The pilot study led to a range of refinement suggestions for the preliminary design of the research. These suggestions are summarised in Table 3.6 according to the various stages of the research process.

Table 3.6 Refinement suggestions for the preliminary research design

<i>Research stage</i>	<i>Refinement suggestions</i>
Participants recruitment	Including a clause for free withdrawal in the recruiting message

Warm-up interview	<ul style="list-style-type: none"> • Translating serendipity into coincidence, encountering, and unexpected discovery • Avoid providing definitions of serendipity unless participants requested • Adopting a progressive questioning style
Diary recording	<ul style="list-style-type: none"> • Extending the recording length to one month time • Setting only recording guidelines instead of mandatory quotas • Encouraging participants to record in their personal-style rather than following a well-structured template
Follow-up interview	<ul style="list-style-type: none"> • Conducting mainly as voice chats, resorting to text chats only when participants have tight schedule • Including discussions about participants' interpretations of e-commerce serendipity, expanding the depth and breadth of the interview content
Analysing and interpreting the diary	Focusing on both the chronological structure of the diaries and the figures included, ensuring a comprehensive understanding of participants' experiences
Analysing and interpreting the interview	Eliminating the requirement for participants to check interview transcriptions unless they express a desire to do so
Story configuration	Clearly marking the sources of data within the story to enable a more efficient and effective member-checking
Analysing and interpreting the story	Involving participants to distinguish the beginning, middle, and end of their experiences, leveraging their first-hand knowledge for more efficient and authentic segmentation
Re-storying	Inviting participants to engage in cross-story comparisons, leveraging their diverse perspectives to enrich the analysis

Section 3.3.4 detailing the formal design of the research revised based on the refinement suggestions listed in Table 3.6.

3.3.4 The formal study

This section details the formal study, which was designed based on the suggestions gleaned from the pilot study. Figure 3.3 summaries the formal research process.

Compared to the preliminary design, the formal study's design revised some member-checking sessions that were optional. This adjustment was made to create a research process that actively incorporated the voices and perspectives of the participants, while not placing undue demands on their time or commitment.

The data collection phase of the formal study was conducted between April 20, 2021, and October 30, 2021, with 123 serendipitous stories that had been gathered. The analysis of these stories continued until May 2022, leading to a comprehensive understanding of the under-focused phenomenon of e-commerce serendipity. To facilitate clear communication and ensure that participants could comfortably express their thoughts, all documents and communications throughout the research process were conducted in Chinese. Also, due to constraints caused by the COVID-19 pandemic, all the communications (including all interviews) were conducted

online via WeChat, whose applicability had already been tested in the pilot study. The following sections elaborate in detail on the execution of the formal study.

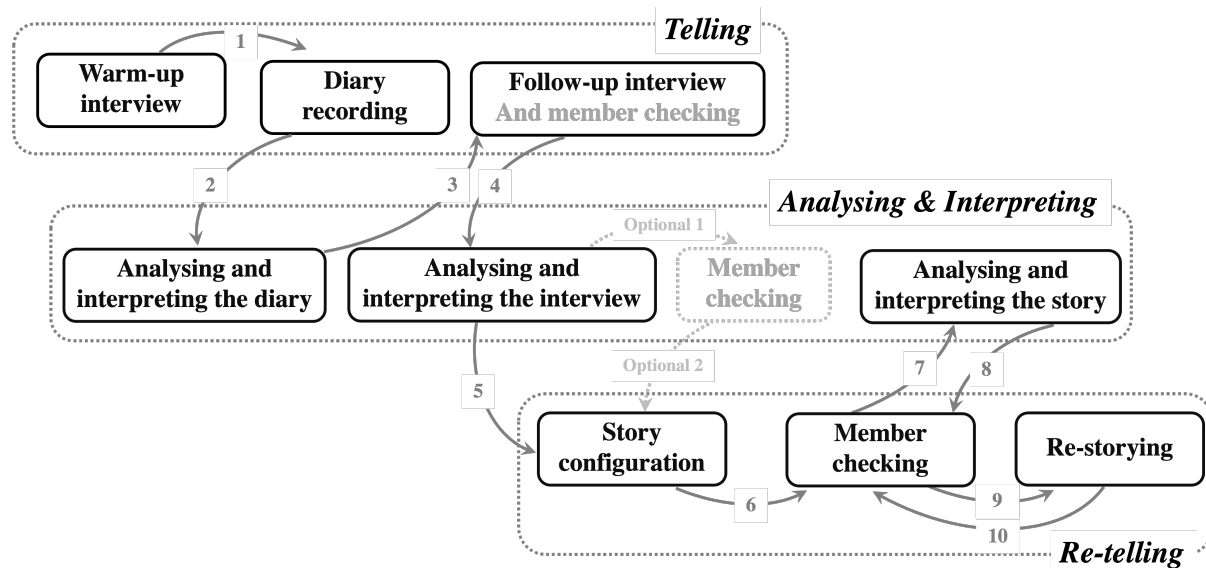


Figure 3.3 Formal research process

3.3.4.1 Participants recruitment

In the formal study, the recruitment of participants took place from April 20, 2021 to April 27, 2021. The criteria for participant selection remained consistent with those mentioned in Section 3.3.2.1 and applied in the pilot study. Specifically, the study aimed to involve Chinese consumers aged between 18 and 34 who had experience visiting online marketplaces. The target was to recruit between 15 to 30 participants for the formal study.

To effectively reach potential participants, the formal study leveraged the assistance of pilot study participants and employed a snowball sampling technique. A recruitment message, which emphasised the voluntary nature of participation and the option for participants to withdraw at any time (see Appendix 5), was disseminated. This message was shared not only on the researcher’s social networking service (SNS) platform but also on the SNS platforms of pilot participants and some of the formal participants. It is important to note that all assistance provided by these individuals was voluntary.

The aforementioned recruitment method proved to be successful. Within just one week, the researcher successfully invited 32 participants. A breakdown of these 32 participants, as detailed in Table 3.7, shows a diverse group in terms of gender, occupation, and age.

Of the 32 participants, 25 were females, and 7 were males. While it shows a slight gender imbalance, subsequent data analysis indicated that gender had a minimal impact on the research’s findings. Additionally, the participants were a mix of students and non-students (11

students and 21 non-students). They were evenly spread across various age groups, ensuring this research covered a broad spectrum of experiences and viewpoints.

Table 3.7 Participants in this research

<i>Participant Group</i>	<i>Occupation</i>	<i>Gender</i>	
18–19	P1-1	Undergraduate student in tourism	Female
	P1-2	Undergraduate student in economic & finance	Female
	P1-3	Undergraduate student in social works	Male
	P1-4	Undergraduate student in economic & finance	Female
	P1-5	Undergraduate student in civil engineering	Female
20–24	P2-1	Master’s student in psychology	Female
	P2-2	Master’s graduate looking for a job	Female
	P2-3	Master’s student in computer science	Female
	P2-4	Undergraduate student in tourism	Female
	P2-5	IT consultant	Female
	P2-6	Bank intern	Female
	P2-7	Master’s graduate looking for a job	Male
	P2-8	Financial practitioner	Female
	P2-9	IT practitioner	Male
	P2-10	Research assistant in university	Female
25–29	P3-1	Teacher in educational institutions	Female
	P3-2	Master’s student in psychology	Female
	P3-3	Journalist	Female
	P3-4	Public servant	Female
	P3-5	Master’s student in Chinese literacy	Female
	P3-6	Librarian in academic library	Female
	P3-7	Journalist	Female
	P3-8	Sales practitioner	Male
	P3-9	PhD student in journalism	Female
	P3-10	University teacher	Female
30–34	P4-1	Engineer	Female
	P4-2	Designer	Female
	P4-3	Engineer who just resigned and is looking for a new job	Male
	P4-4	University teacher	Female
	P4-5	IT practitioner	Female
	P4-6	Sales practitioner	Male
	P4-7	Financial practitioner	Male

3.3.4.2 Data collection

In the formal study, the data collection was structured into six distinct stages according to the availability of the participants and the researcher’s capacity to manage the study effectively (see Table 3.8).

Table 3.8 The data collection process

2021.04 – 2021.05	5 participants
2021.05 – 2021.06	5 participants
2021.06 – 2021.07	5 participants
2021.07 – 2021.08	6 participants
2021.08 – 2021.09	6 participants
2021.09 – 2021.10	5 participants

The data collection methods in each stage were basically aligned with those outlined in Section 3.3.2.2.1. Nevertheless, specific operational details were adjusted based on insights learned from the pilot study. Three steps made up the formal data collection process: the warm-up interview, the diary recording, and the follow-up interview.

3.3.4.2.1 The warm-up interview

The warm-up interview, initiated immediately after participant recruitment, served two main objectives: (1) The primary objective was to encourage participants to start forming their own interpretations of serendipity and e-commerce serendipity. This foundational understanding was crucial for ensuring that participants' contributions were relevant and meaningful to this research; and (2) The second objective was cultivating a collaborative, participant-driven atmosphere within the research process. This was intended to make participants feel valued and integral to the study, motivating them to engage actively and contribute meaningfully.

Each warm-up interview began with an introduction to the research aims and methods, where the participants' narrative autonomy and their expert status were highlighted. That way, the participants' desire and confidence for self-revelation could be elevated. This introductory session also served as an icebreaker and built the initial rapport between the participants and the researcher.

Subsequently, some time was allowed for participants to reflect on their personal interpretations of coincidence, encountering, and unexpected discovery in their everyday lives, the three appropriate Chinese translations of serendipity learnt from the pilot study¹. This phase was guided by three core questions:

- How would you interpret serendipity in your everyday lives?
- What are some memorable serendipitous events that have happened to you in your everyday lives?
- Would you recount some non-serendipitous events that were close to serendipitous happenings in your everyday lives?

¹ In order to save text space and make reading easier, in this section the word 'serendipity' will be used by itself to refer to all three Chinese translations (i.e. coincidence, encountering, and unexpected findings).

No academic jargon, including definitions of serendipity, was introduced. Participants led this stage themselves by sharing personal experiences, mentioning anything they considered relevant and providing subjective understandings of the phenomenon in question (i.e., serendipity). The researcher, meanwhile, engaged in their telling as an active listener and recorded potentially interesting or ambiguous points in research notes.

Probing questions were raised only when the participants' narration came to a natural end, which was usually marked by a long silence in the interview. Two types of probing questions were proposed. The first type was internal narrative questions that sought to expand on certain elements of participants' serendipitous experiences by asking for augmentation of details or clarification of contradictions (Bronstein, 2019). These can be divided into questions focusing on ambiguity clarification and interesting points elaboration:

- Internal-narrative questions (ambiguities clarification):
Quoted from P4-3-II: What happened between encountering the friend and the initial waiting for the high-speed train?
- Internal-narrative questions (interesting points elaboration):
Quoted from P3-6-II: What did you mean by Baba Farm? Would you please explain it further?

The second type was external narrative questions, which attempted to encourage participants to generate more clarified interpretations about daily serendipity (Bronstein, 2019).

- External-narrative questions:
Why would you call this example a coincidence/an encountering?

This initial narration-discussion loop stopped when participants provided some meaningful examples about serendipity in their everyday lives.

Next, participants were invited to think about serendipitous experiences that happened within the context of shopping and during their visits to online marketplaces. The core questions guiding this stage were similar to those adopted in the previous stage; that is, participants were encouraged to illustrate their personal interpretations of shopping serendipity and e-commerce serendipity with relevant examples from their lives. The researcher again held all internal and external narrative queries until the end of the participants' discourse so the participants could decide what to recount, and in their own way. Discussions at this stage ended when participants believed they had exhausted all the relevant examples and ideas that they wanted to share.

The two narration-discussion loops enabled the participants to set the benchmarks about their personal understanding of serendipity in general and serendipity in online marketplaces. Based

upon these basic personal interpretative frames, participants were further invited to express their ideas with two questions:

- How did your serendipitous experiences while shopping online differ from serendipity on other occasions?
- How did your serendipitous experiences while shopping online differ from their non-serendipitous counterparts?

Participants were encouraged to make a contrastive reflection so they might probe the mysteries surrounding e-commerce serendipity in detail. This, in turn, might have enabled them to better understand this research and facilitated them to better structure their subsequent diaries.

The entire pre-recording session ended when participants provided sufficiently complete narrations of e-commerce serendipity and their initial interpretations of this phenomenon. As the pace of the interviews was set by the participants themselves, the duration of each session varied, spanning from 45 minutes to over two hours. All the interviews were conducted as voice chat via WeChat and recorded with the participants' permission.

After each pre-recording interview, the audio recording of the interview was immediately transcribed into text, serving as a reference guide to help the researcher better understand participants' diary recordings.

3.3.4.2.2 The diary recording

After the pre-recording interview, participants were invited to write diaries on the occurrence of serendipity during visit to online marketplaces. Building upon the insights from the pilot study, online marketplace refers to any platform that facilitates participants' purchasing of goods and services.

To facilitate comprehensive and authentic diary entries from participants, several recording guidelines were provided before the start of the diary-recording process (see Table 3.9).

If participants considered the provided guidelines insufficiently detailed and sought a more structured approach, a refined recording template (see Appendix 4) was offered. Upon providing this template, the researcher would inform participants that it was intended as a guiding tool rather than a strict framework to be rigidly followed. This approach ensured that participants understood the flexibility and autonomy they had in documenting their experiences. Fortunately, none of the 32 participants felt the need to request the refined template in this study, and were able to independently produce diaries that were rich in detail, reflecting their experiences effectively.

Table 3.9 Guidelines for diary recording

Please write the diaries in a style and language you are most comfortable with. <ul style="list-style-type: none">• There is no requirement for using academic jargon, please do use your usual style of expression.• But do remember to offer a brief explanation regarding the meaning of slang terms you use.
Please identify the type of experience you are recording – whether it is a coincidence, an encountering or an unexpected discovery <ul style="list-style-type: none">• Please also briefly explain why you consider this experience to be of that particular type.
Please delineate the beginning, middle, and end of your recorded experience <ul style="list-style-type: none">• Please try your best to detail your actions and thoughts at different stages of the experience.• Please try your best to explain why your actions and thoughts might have changed at different stages.• Please pay attention to the surroundings during the experience.
If possible, please insert relevant screenshots to the diaries. <ul style="list-style-type: none">• This is not compulsory.• You can omit screenshots if you think it burdensome or are concerned about leaking personal information.

The diary recording lasted one month, and the researcher sent a recording reminder via WeChat once a week during the recording period. All participants were informed that submitting four diaries throughout the recording phase was ideal. Nevertheless, considering participants' shopping habits and the unpredictability of serendipity, the above quota was more of a motivation to record rather than a strict standard.

At the end of the research period, the submission patterns among participants varied: nine submitted fewer than four diaries, one participant (P3-3) submitted a notably higher number of 16 diaries, and the remaining 22 submitted four diaries. Notably, all participants confirmed the authenticity of their diary entries, assuring that the experiences recorded were actual occurrences during the research period and not fabricated for the research.

3.3.4.2.3 The follow-up interview

Upon submission of their diaries, participants' entries underwent analysis (see Section 3.3.4.3.1), followed by the prompt scheduling of follow-up interviews. This timeliness was vital to ensure interviews occurred while the participants still had a clear memory of their recorded experiences. In this research, all follow-up interviews were carried out within four days of diary submission.

As some participants submitted multiple diary entries simultaneously, specific follow-up interviews were combined to discuss content from several diaries in a single session. Consequently, a total of 97 interviews were conducted. The majority (81 out of 97) were conducted via WeChat-based voice chat, with an average duration of 98.3 minutes. The remaining 16 follow-up interviews were initially conducted as text chats, allowing participants the flexibility to respond using either text or voice messages. This approach provided participants with a comfortable and convenient way to engage in the interview process.

However, to ensure a more comprehensive understanding of the participants' experiences, all text chat-based interviews were subsequently supplemented with voice chats.

Regardless of whether follow-up interviews were conducted via voice or text chat, they served two primary objectives: (1) to enrich the details recorded in the diaries, a crucial step for gaining a more comprehensive understanding of the participants' experiences with e-commerce serendipity and guide them on how to record subsequent diary entries effectively; and (2) to explore the participants' personal interpretation of e-commerce serendipity experiences, which was vital for grasping the essence of e-commerce serendipity and guiding the researcher's analysis of the collected serendipitous stories.

To achieve these objectives, the follow-up interviews were designed to be comprehensive and dynamic, encompassing several key stages. Initially, participants were encouraged to recount their diarised experiences, aiding them revisit the context and details of those moments, recalling more behavioural details during the interview, and share any new thoughts or reflections since initially documenting the event. Understanding these evolving thoughts was crucial for understanding how e-commerce serendipity developed and impacted participants.

As participants shared their recollections, the researcher carefully took notes and compared these newly acquired accounts with the original diary entries. Any inconsistencies noticed during the recounting were meticulously marked by the researcher. After the participants finished sharing their experiences, these marked points were discussed in-depth, aiming to explore the reasons behind these discrepancies and offer a deeper understanding of the participants' serendipitous experiences.

Concurrent with discussing discrepancies, the researcher strategically brought up ambiguities initially identified in the original diary entries. These ambiguities were classified into four distinct categories:

- Reasons behind behavioural and/or emotional changes;
- Impacts of a given behaviour and/or an emotional change;
- Meaning of Internet slangs and oral expressions;
- Meaning and details in images.

In addition to clarifying ambiguities in diaries, participants were also invited to discuss their interpretations of e-commerce serendipity in the follow-up interviews. This discussion was guided by a progressive questioning method, unfolding as follows:

- 1) First, participants were asked why they classified the experience recorded in their recent diary entries as a particular type of e-commerce serendipity (i.e., coincidence,

encountering and unexpected discovery). Often, given the recentness of their diarised experiences, participants were able to respond to this question promptly. This step was crucial in shifting participants' mindset towards a thoughtful consideration of what serendipity means to them, setting the stage for more in-depth discussions.

- 2) After participants had been oriented towards reflecting on the meaning of e-commerce serendipity, they were prompted to discuss the defining characteristics of the type of serendipity they had recorded in their recent diary entries. To facilitate this process, characteristics of the same type of serendipity mentioned by participants in earlier research stages were revisited.
- 3) The third step involved asking participants to compare the serendipitous experience they had just recorded with other types of e-commerce serendipity they had experienced. This comparative analysis helped understand the nuanced ways in which participants differentiate and relate various serendipitous occurrences based on their perspectives and experiences.
- 4) Finally, participants were invited to reflect on whether their interpretations of e-commerce serendipity had changed during the research, and, if so, to explain why. This inquiry served two critical purposes: to encourage a more profound, introspective revelation of participants' understanding of e-commerce serendipity; and to ensure that no unreasonable intervention from the researcher had been exerted and that the reported data were authentic reflections of participants' voices.

Beyond these pre-defined questions, the follow-up interviews also welcomed participants to share other information they considered to be relevant, leaving room for unanticipated discoveries to come out during the discussions. To this end, the entire follow-up interview was arranged in a relatively flexible way. The researcher-proposed interview questions served only as an invitation to discuss, and the actual trend of the interview was primarily determined by the participants' real-time responses.

Through these flexible and open-ended mutual discussions, trust was gradually established between the participants and the researcher, leading participants to discuss more of their personal information. This personal information encompassed aspects such as shopping habits, social relationships, and personality traits, playing a crucial role in providing the researcher with a comprehensive understanding of the participants' subjective thinking and perspectives.

3.3.4.3 Data analysis

Because a narrative study is "always interpretative at every stage" (Josselson, 2006, p. 6), data analysis in this research was mostly conducted alongside data collection.

The analysis of diaries and interviews was conducted concurrently with data collection, with results from these analyses directly influencing subsequent data collection. Analysing the diaries helped identify ambiguities in participants' storytelling. Informing participants of these ambiguities encouraged them to avoid such issues, thus enhancing the richness and coherence of their records. Simultaneously, analysing interviews yielded insights into participants' backgrounds and views on e-commerce serendipity. This comprehensive understanding was vital for establishing rapport and encouraging participants to reflect more on their interpretation about e-commerce serendipity.

Although not concurrent with data collection, story configuration, analysis, and re-storying were equally crucial. These stages translated participants' perceived e-commerce serendipity into more comprehensible terms, aiding in understanding the essence of serendipity as experienced by the serendipitists. Crucially, to ensure the translations faithfully reflected participants' experiences, the original words of the participants were preserved as much as possible.

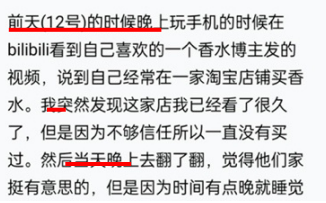
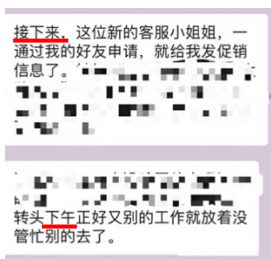
The following sections elaborate on all the aforementioned data analysis stages in detail.

3.3.4.3.1 The analysis and interpretation of the diaries

The aim of analysing the diaries was to identify the ambiguities hidden within the collected entries, thus raising more targeted follow-up interview questions to gain a more holistic understanding of participants' experiences. To achieve this, the *chronological coherence* of each diary was checked. Chronological continuity was deemed essential, given that time is integral to storytelling, serving as the core for conveying meaning endowed in a particular narrative (Coulter & Smith, 2009; Jovchelovitch & Bauer, 2000). Also, as demonstrated by the pilot study, checking temporal coherences could indeed contribute to the proposal of illuminating interview questions.

Ensuring the integrity of the diaries and the fidelity of the analysis, chronological structures was detected by following time-related clues provided by the participants, which clustered around three groups. The first and most explicit one was the *chronological indicators* that conform to the Chinese grammar conventions (see Table 3.10), including series of interlinked conjunctions (e.g., later on, after, suddenly) and time-related nouns (e.g., tonight, this afternoon, this moment).

Table 3.10 Examples of explicit chronological indicators

	<u>Quoted from P1-1 S3</u>	<u>Quoted from P3-3 S3</u>
<p><u>Quoted from P4-3 S3</u></p> <p>Diary sent as a Word document</p> <p>那个时候我一个人躺在床上刷抖音 (...) 然后看到卫龙旗舰店直播间直播 (...) 然后我就点进去了, 随后点开了购物栏 (...)</p> <p>I was browsing the TikTok alone <i>at that moment</i> ... Then I found the livestreaming show of the Weilong . . . Then I clicked into the livestreaming show and opened the purchasing corner <i>later on</i> . . .</p>	<p>Diary sent as screen shots of the mobile notepad</p>  <p>前天(12号)的时候晚上玩手机的时候在bilibili看到自己喜欢的一个香水博主发的视频, 说自己经常在一家淘宝店铺买香水。我突然发现这家店我已经看了很久了, 但是因为不够信任所以一直没有买过。然后当天晚上去翻了翻, 觉得他们家挺有意思的, 但是因为时间有点晚就睡觉</p> <p>When I was using my mobile to kill time <i>the night before (night of the 12th)</i>, I found a perfume blogger I liked had posted a video on Bilibili. In this video, she mentioned a Taobao shop where she often buys perfume. <i>Suddenly</i>, I found that I have been following this shop for a long time but have not brought anything from it due to the lack of trust. <i>Then</i>, I revisited the shop <i>that night</i> and found it pretty interesting, but it was too late, so I went to sleep...</p>	<p>Diary sent as WeChat messages¹</p>  <p>(Note: To safeguard the personal information of the participants and pilot participants, any information on WeChat not directly related to the current discussion focus was hidden)</p> <p><i>And then</i>, this new salesperson approved my friend application and sent the promotional messages to me directly . . .</p> <p>. . . Since I had work to do <i>in the afternoon</i>, I paid no attention to these messages . . .</p>

Second, the expressions about *one's thought process* was also focused, as changes in thoughts also indicate the changes in time (Carroll, 2007). Specifically, participants were inclined to express their thoughts either directly via phrases such as 'I thought', 'I changed my mind', or indirectly via the use of some internet slang. The quotations below (see Table 3.11) are examples of the thought-related expressions identified among the diaries.

Table 3.11 Examples of thought-related expressions

	<u>Quoted from P1-2 S3</u>
<p><u>Quoted from P3-1 S2</u></p> <p>Diary sent as a Word document</p> <p>在家和朋友商量聚餐地点(...) <i>本来是想起</i> XXX²路有家排名靠前东北烤肉(...)搜索过程中<i>想法改变了</i>(...)</p> <p>I was discussing where to have dinner with my friend at home . . . <i>Initially, I thought about</i> a top-ranked Dongbei BBQ on XXX Road . . . In the searching process, <i>my ideas changed</i> . . .</p>	<p>Diary sent as a Word document</p> <p>(...) 说实话, <i>我的内心毫无波澜</i>, 就<i>只是想</i>随便听听。到他说了下单可以送 XXX 的明信片, 我一下子<i>就上头了</i>, 就认真看这个直播了 (...)</p> <p>Honestly speaking, <i>my heart was quite at peace</i>³ and <i>I just thought</i> to listen to it casually (i.e., the live commerce show that G1-2 was watching). When the anchor said that everyone who placed an order could get a free postcard of XXX, (this live show) <i>went straight to my mind</i>⁴ and I watched this live show seriously . . .</p>

Finally, the temporal sequence of the diarised events may also be inferred from the order in which participants recorded them to some extent, as at the outset of the research participants

¹ To safeguard the personal information of the participants and pilot participants, all their avatars and nicknames on WeChat were anonymised. Further, any information on WeChat not directly related to the current discussion focus was hidden.

² According to the requirement of P3-1, the name of the road was anonymised.

³ The phrase 'my heart is quite at peace (我的内心毫无波澜)' is a commonly used oral expression among Chinese youth that is often used to indicate that something does not deserve one's attention or someone does not care about something.

⁴ The phrase 'something goes straight to someone's mind (上头)' is a popular Chinese internet slang expression that is often used to indicate that someone is fascinated by something.

were invited to structure their diaries in a way that clearly delineate its beginning, middle and end.

To uncover all the clues scattered within the diaries and generate a comprehensive understanding of the evolving trajectory of the participants' experiences, a continuous read-and-reread of the diaries was needed. Also, graphic notes were taken during this process. The use of notes assisted the researcher in better reflecting on the analysis process; furthermore, noting down the analytical considerations contributed to a more direct perception of the events that made up the diarised incident and the exploration of temporal relations among them. Figure 3.4 shows an example of a graphic note.

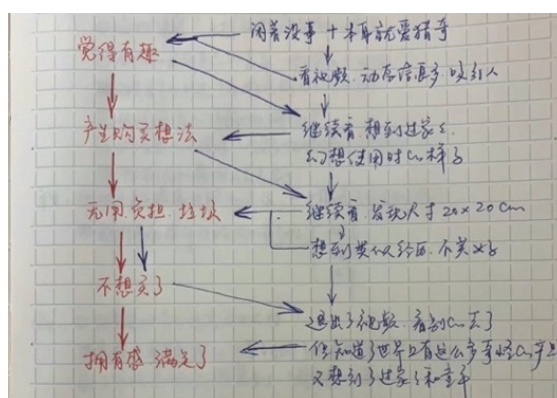


Figure 3.4 Example of graphic notes

With the graphic notes, chronological incoherence hidden within the diaries were sought. Also, the researcher's understanding of Chinese grammar and past online shopping experience played an essential role in the analysis.

As a chronological structure runs throughout the diaries, closely examining this aspect also allowed the researcher to notice another two interesting sources for follow-up interview: the figures included and specific phrases or words whose meanings might not have been immediately apparent. These two elements were also noted for further discussion during the follow-up interviews.

3.3.4.3.2 The analysis and interpretation of interviews

The aim of analysing and interpreting the interviews was to extract content directly related to the diarised experiences to supplement the initial diary entries and configure comprehensive stories. Before the analysis, the researcher manually transcribed all interview recordings without using transcription software. Two primary considerations drove this decision. First, manually transcription ensured that the nuances of each participant's speech, including those with distinct accents, were faithfully captured. This meticulous approach was vital for

preserving the integrity and authenticity of the data. Second, manual transcription can also better safeguard participants' personal information.

After the transcription was completed, participants were notified. If participants wished to check the faithfulness of the transcription, it was made available to them. In this research, only three participants, P2-10, P3-3 and P4-2, reviewed the transcription once. After checking the transcriptions once, they expressed their trust in the quality of the researcher's transcription work. Thus, they did not see the need for further member-checking of subsequent interview transcriptions. For the other participants, the member-checking of the interview transcriptions was effectively achieved through their review of the stories configured later in the research.

Next, the interview data were divided into experience-near and experience-distant data in terms of their relevance to the diarised experience (Burman, 2003). The following quotations illustrate the distinctions between the experience-near and experience-distant data:

Quoted from P1-5 I3

Q. 10: [Regarding reasons for an emotional change]: "Given that you have previously stated that you had 'already decided to pay for a strawberry cake,' why did you suddenly 'fall in love with' this cheesecake?"

A. 10: [*Experience-near*]: "Well, the most important reason was that this cheesecake appeared to be far more delicious than the strawberry one! And, as the saying goes, 'if it looks good, it tastes good'. I am the type of person who pays close attention to the appearance of food. Even though I did not buy it, the strawberry cake was adorable, and I spent two to three hours searching for it. Also, my mum stated that she would pay for the cake, so I could purchase an expensive cake without regard for my financial constraints. Oh, the last reason was the most important reason was that this cheesecake was the same version shown in the TV serial XXX."¹

[*Experience-distant*]: "Oh my god! This TV programme was fantastic. I am not sure if you have heard of it, but I highly recommend you have a look at it; you will undoubtedly be fascinated by the actor, XXX. He is precisely my type: sexy and attractive. I highly recommended that you watch it. Also, the actor has played a role in another TV serial named XXX. You should also try that TV serial (...)"

In the upcoming story configuration stage, experience-near data were synthesised with the diaries to configure detailed and coherent serendipitous stories. On the contrary, experience-distant data were separately compiled into personal profiles. These profiles documented pertinent personal information about the participants. By correlating these personal profiles

¹ According to P1-5's requirement, the name of the TV serial and the actor were anonymised.

with the serendipitous stories, the researcher could better understand why participants may have acted or thought in specific ways during their serendipitous experiences.

The line-by-line reading of the interview transcriptions played a crucial role in differentiating between experience-near and experience-distant data. During this meticulous review process, three key elements deserved special attention:

- 1) The pre-defined interview questions. These directly indicated the upcoming discussion's relevance to the diarised experience. Responses to these questions were aligned closely with the participants' recorded experiences, making them a primary source of experience-near data.
- 2) Words or phrases that indicate recollection, such as 'I remembered (我记得)' (P3-2 I2), 'I thought it maybe (我想应该是)' (P1-1 I4), 'at that moment (在那个时候)' (P2-9 I1), 'in that case (在那个情况下)' (P4-1 I1). The use of these terms indicated that participants were recounting their diarised experiences. Thus, the dialogue surrounding these terms would likely provide first-hand insights and reflections on the recorded experiences.
- 3) Words or phrases that indicate information supplement, such as 'I need to explain that (我需要补充说明一下)' (P2-10 I2), or 'there is another point that I should add (有一点还要加上)' (P3-8 I2). These terms indicated the participants' intention to provide additional details to their original diary entries. Thus, dialogues surrounding terms were likely to include clarifications, expansions, or deeper insights into the diarised experiences.

In addition to focusing on the guiding phrases mentioned earlier, the researcher engaged in real-time communication with participants, seeking their assistance to distinguish between data that was unclear as to whether it was experience-near or experience-distant. Also, these real-time communications may lead to acquiring additional information about the diarised experiences. Table 3.12 shows an example of real-time communication with the participants while analysing and interpreting the interview data.

Table 3.12 An example of the real-time communication with P1-3

<div style="background-color: #e0ffe0; padding: 5px; border: 1px solid #ccc; margin-bottom: 10px;"> <p>打搅啦打搅啦，可以请问一下你在访谈里提到的「和女朋友在冷战」是和你记录的「想要买游戏手柄」这篇日记发生在同时吗？还要麻烦你稍稍说明一下啦，非常感谢</p> </div> <div style="background-color: #e0e0e0; padding: 5px; border: 1px solid #ccc;"> <p>是一起发生的 因为和她冷战了所以我想去买游戏手柄 转移一下视线 不然我俩继续会生气 但在我买的时候她突然来求和了 那我肯定是女票为重 手柄可以不继续买 就这样</p> </div>	<ul style="list-style-type: none"> • The researcher (chat box with green background): Sorry to interrupt, but I am wondering if the 'cold war with your girlfriend' you mentioned in the interview happened at the same time as the 'wanting to buy a joystick' you recorded in your diary? I am wondering if you could explain the relationship between these two instances a little bit. Thank you very much. • The participant (chat box with white background): They happened simultaneously. Because we had a cold war, I decided to buy a joystick to change my mind. Otherwise, both of us might still be angry at each other. But while I was looking at the alternatives, [my girlfriend] sent a peace-making message. Girlfriend was more important than the joystick. So, I stopped looking for joysticks. That's it.
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3.3.4.3.3 The story configuration

Story configuration followed the analysis and interpretation of interviews, aiming to create a complete story of each participant’s serendipitous experience. A complete story can enable the researcher to develop a clearer and more comprehensive understanding of the development of e-commerce serendipity. Story configuration involved three key steps.

(1) Synthesising

The first step was synthesising. During this process, the experience-near data was used to replace or clarify the ambiguous points in the original diary entries. Notably, the original diary entries and the complete interview transcriptions were preserved as separate documents with this synthesised one. By retaining these original sources, the researcher ensured that a backup was always available. If any part of the synthesis process introduced misinterpretations, the researcher could revert to these original documents for a re-analysis.

Synthesising led to two key changes to the original diaries: (1) it expanded on the details of the participants’ behaviours, including explanations for changes in actions and additional insights into the characteristics of the contexts in which the participants found themselves; and (2) it provided clarification for elements in the diary entries that carried special meanings. This included clarifications of certain internet slang, everyday language and additional details about the content of some figures. Table 3.13 offers examples of stories derived from this synthesised process.

Table 3.13 Examples of the synthesised stories

The expanded details	The clarified elements
<p><i>The original diary – Extracted from P3-6 D4:</i></p> <p>...When I initially opened Taobao, I did not intend to buy anything. But after just browsing the homepage of Taobao for about five minutes, my mind changed, and I thought I would definitely buy something...</p> <p><i>The configured story:</i></p> <p>...When I initially opened Taobao, I did not intend to buy anything. But after just browsing the homepage of Taobao for about five minutes <u>and receiving a lot of appealing recommendations – all endorsed by my favourite actors and actresses and all with great discounts</u> – my mind changed, and I thought I would definitely buy something...</p>	<p><i>The original diary – Extracted from P4-6 D2:</i></p> <p>... After a careful comparison of the discounted price and the original one, I felt it was really pennies from heaven (天上掉馅儿饼)...</p> <p><i>The configured story:</i></p> <p>... After a careful comparison of the price of the discounted price and the original one, I felt it was really pennies from heaven (天上掉馅儿饼)¹ – <u>because this pair of sneakers is usually very expensive, but this time I could get it at nearly half price; also, based on my experience, this kind of opportunity was quite rare, as the previous discount was just about ten percent</u> ...</p>

¹ Literally, the term ‘pennies from heaven’ metaphorically refers to ‘an unexpected stroke of luck’; ‘luck’ here could refer to a particular item or an event.

Notably, the experience-near data newly introduced to the diarised context was distinctly marked in red. This was done to facilitate participants in easily distinguishing the adjustments made by the researcher to the original diaries. As such, an efficient process for member-checking the configured stories could be expected.

(2) Reviewing

The second step was reviewing. This step was critical for ensuring that the newly incorporated interview data seamlessly meshed with the original diary content, especially regarding chronological coherence. The methods employed here closely followed the previously described methods for discerning chronological structures (see Section 3.3.4.3.1). If any ambiguities were detected in the interview data itself, or if its integration introduced new ambiguities into the diary narratives, these issues were immediately addressed – the researcher sent text messages to the pilot participants via WeChat, requesting further clarification.

(3) Member-checking and personal profile configuration

The third step was member-checking and personal profile configuration. Once the ambiguities in the original diaries were resolved using the newly acquired data, an initial version of each pilot participant’s serendipitous story was created. To ensure that these initial stories authentically represented pilot participants’ experiences, they were sent back to the pilot participants for member-checking. Participants could make immediate adjustments if any discrepancies were found between the story and their actual experiences. Notably, to ensure that the researcher could understand the nature of the adjustments, pilot participants were advised to track and highlight any changes they made to the initial story. Also, after making the necessary modifications, participants were encouraged to communicate their thoughts and reasons for the changes to the researcher via WeChat.

When participants checked the faithfulness of the stories, the researcher summarised the experience-distant data into a personal profile for each participant. These profiles, encompassing contents indicated in Table 3.14, were continually updated throughout the study. The information contained in these profiles was a key reference for understanding what influenced participants’ experiences of e-commerce serendipity.

Table 3.14 An example of personal profile

<i>Content</i>	<i>Example</i>
Personal characteristics	I consider myself curious about everything in the world, particularly the peculiar things. The more unusual something is, the more it intrigues me. (P3-3 I2)
Lifestyle	I am a so-called a pragmatist. If something is not practical or useful in my life, I would not even give it a second glance. (P4-6 I3)
Shopping preferences	When it comes to shopping, I seek out the niche and unique (...) I have a preference for products with special designs. (P4-2 I1)

Shopping experiences	I have been using Taobao for ten years, I know nearly everything about Taobao. (P3-9 I3)
Professional identity	I am a poor student, I have limited money, I cannot spend money as freely as I like. (P1-4 I2)

Similar to the configured stories, the personal profiles were also subject to participants' checks for faithfulness. Table 3.15 provides an example of the participants' checking of the personal profile.

Table 3.15 An example of member-checking on the personal profiles

<p>有个问题。你为什么说“这次之所以打开淘宝是因为我是淘宝的忠实用户”呀？我这个惯例“忠诚”只是相对于这些软件来说，如果有很多个购物渠道，我更喜欢用淘宝。这次我不是特地选的淘宝，开淘宝就是随手，因为它在手机上的位子最靠前。我觉得我没特地选的时候你不能用“忠诚”来套。</p>	<p>There is a problem (in the configured personal profile). Why did you mention (in the profile) that ‘I opened Taobao because I am a loyal user of it’? What I mean by ‘loyalty’ to Taobao is just a relative concept. If there existed different consumption channels (for me to choose), I would undoubtedly select Taobao. However, I did not deliberately select Taobao this time; I opened Taobao because it was placed in a prominent place on my phone. I think (the use of Taobao) without my deliberate selection is not due to loyalty.</p>
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The story configuration process concluded once the participants confirmed the authenticity of both the stories and personal profiles.

3.3.4.3.4 The analysis and interpretation of stories

The primary goal of analysing and interpreting stories was to explore how and why each serendipitous experience was developed according to the story. To achieve this, the plot (i.e., consequential structure) of each story needed to be found (Bates, 2004). To better identify the plot, participants' various interpretations of e-commerce serendipity provided during the research process were used as references. The analysis was executed through four core steps.

(1) Scene detection

The first step, scene detection, was designed to gain a clearer insight into the participants' emotions and behaviours during their serendipitous experiences. This facilitated a clearer understanding of the story's progression and prevented the researcher from becoming overwhelmed by excessive data in the latter analysis steps. During this step, special attention was given to the subjects and verbs within sentences, as these narrative elements are pivotal to the meaning of a sentence (Carroll, 2007; Fraser, 2004). Focusing on these elements allowed for complex sentences to be distilled into concise expressions of critical emotions and behaviours. Table 3.16 in the research document serves as an example of this scene extraction process.

Table 3.16 Example of scene extraction

<i>The original story (Quoted from P3-3 S9)</i>	<i>The extracted scenes</i>
Because I needed to perm my hair, so, today, when I was alone and had some free time, I planned to search for a barber shop on Meituan (because I trust this platform) by simply using the keyword ‘good barber shop’.	Searching for barber shop on Meituan
When receiving the search result, I re-ranked the results according to the ‘reputation of the shops’ and chose the top ranked one.	Finding a good barber shop
Next, I clicked to the homepage of that barber shop in order to find out about its service, and I found that the details of the service could only be learnt via WeChat chat, so, I added the WeChat of the barber	Contacting the barber for more information
After waiting for about an hour, he accepted my friend’s request and sent me a service list of all he provided.	Receiving a service list from the barber
I found the descriptions were vague, and when I asked the barber, he did not explain it; instead, he directly recommended me to choose one of the services, for which ‘was the best’ – this unclear feedback from him made me confused, whether he was doing this for my benefit or just wanted to make more money from me?	Confused by the information offered by the barber
To avoid being cheated by the barber, I decided to do a detailed search of the perm services on other apps.	Deciding to search for additional information from the others

(2) Logical line tracing

The second step was logical line tracing, aiming better to understand how scenes logically flow from one to another. This task was done via two methods:

- 1) The first method assumed that the logical progression of the story followed its chronological structure. The idea is that events occurring earlier in time are often causes for subsequent events – this aligns with common human experiences and the typical progression of storytelling narratives (Coulter & Smith, 2009; Webster & Mertova, 2007).
- 2) The second method was paying close attention to conjunctions within the original narrative, such as ‘because (因为)’, ‘therefore (因此)’, ‘the reason is (原因是)’. These terms are crucial for conveying causal relationships and help in mapping out the logical sequence of scenes. By examining these conjunctions, the researcher could better understand the consequential relationship between different scenes, particularly between scenes that occur nearly simultaneously.

To assist in applying the two methods of analysis – focusing on chronological structure and examining conjunctions – graphic notes were taken. By visually mapping out these changes, the researcher could more effectively track the progression of both emotional states and actions throughout the story.

(3) Skeletoning

The third step was skeletoning, which focuses on distilling the core scenes that provide meaning to the story and make up its plot (Fraser, 2004). The pursuit of these core scenes requires attention to two key elements: (1) the turning points within the sorted logical line – namely, scenes that witnesses obvious or sudden changes in participants’ emotions or behaviour (Riessman, 2002); and (2) the scenes that participants had predetermined as the beginning, middle, and end of their e-commerce serendipity narrative (Polkinghore, 1995). Having participants outline these key stages of their stories beforehand, combined with the researcher’s understanding of the online shopping culture in China, were crucial for this step of the analysis.

(4) Re-contextualisation

The final step, re-contextualisation, aimed to comprehend the factors influencing the development of the central plot. Two primary strategies were employed to comprehend these factors fully: (1) Repeatedly reading the stories, paying particular attention to the actors involved in the core scenes, their characteristics, interactions, and contexts. This detailed scrutiny helped identify the elements crucial in shaping the story’s plot; and (2) Referring to the personal profiles compiled during the research, which provided a deeper insight into the participants’ perspectives. By considering these profiles, the researcher could interpret the story’s evolution more effectively from the participants’ viewpoint, ensuring a more authentic and participant-centred analysis.

The analysis culminated in a succinct report that comprised two key aspects: (1) the plot underpinning each story, which was introduced in stages, specifically from the beginning to the middle and then the end of each story; and (2) The report also outlined the potential factors that shaped the characteristics of each stage of the plot. Table 3.17 presents a part of the content from this report, as derived from the story detailed in Table 3.16.


Table 3.17 An example of the analysis report

<i>Plot (core scenes)</i>	<i>Factors shaping the plot</i>
Perceive a need and make a plan Execute the plan Encounter an unplanned obstacle Change the plan	<ul style="list-style-type: none">• Me (participants): Limited knowledge about perm service, leading to an incomplete plan• Barber: Prioritise profit over consumer needs, hence reluctant to fully disclose service details• Context: Available free time and a need to perm hair, which allowed for time investment to alter the plan and understand perm services

Upon completion, the report was promptly sent to participants for member-checking to ensure the refined plots and identified factors still accurately represented their richly detailed experiences. Notably, in this study, all participants affirmed that the plots distilled by the

researcher and the causes identified for shaping the plots corresponded with their actual experiences. Table 3.18 displays a participant’s feedback on the analysis report.

Table 3.18 An example of member-checking for the analysis report

	<ul style="list-style-type: none"> • The researcher (chat box with green background): The initial analysis results have been summarised [in the report]; please do take some time to check it. If there are any problems or feedback about the analysis report, please do inform me at any time. Thank you so much. • The participant (chat box with white background): (replied three days later) Sorry for the late reply. I have read [the report], all the contents are what I want to express [in my stories].
---	---

3.3.4.3.5 The re-storying

The purpose of re-storying was to seek out commonalities and differences across participants’ stories. This analysis was pivotal as it helped translate the participants’ perceived e-commerce serendipity into a conceptual space that is broadly comprehensible, preventing the research from becoming a compilation of overly personalised anecdotes (Fraser, 2004; Riessman, 2002). The re-telling comprised three core steps: patterning, cross-story comparison, and re-contextualising. These will now be subsequently discussed in more detail.

(1) Patterning

The first step of re-storying involved uniformly naming the core scenes that comprised the central plot of participants’ stories. This step provided the researcher with an initial understanding of the similarities and differences in the plots of stories submitted by participants (Fraser, 2004); it also facilitated the subsequent process of cross-story comparison. The naming strategy typically centred around the verbs participants used to describe the core scenes, thus ensuring that the terms used for patterning echoed the participants’ own language. Additionally, this step incorporated insights from the pilot study. An example of the patterning for the plot presented in Table 3.17 is provided in Table 3.19.

Table 3.19 An example of patterning

<i>Plot (core scenes)</i>	<i>Patterning</i>	<i>Meaning</i>
Perceive a need and make a plan	Planning and expecting	Intentionally think about and list what you expect to do (and the steps) to achieve it
Execute the plan	Executing	Behaving according to the configured plan
Encounter an unplanned obstacle	Unplanning	Coming across unpredicted happenings
Change the plan	Re-planning	Intentionally contemplate shifting from the initial plan

(2) Cross-story comparison

The second step involved a meticulous cross-story comparison to understand the characteristics of different serendipity experiences. This step was crucial because the research presented three distinct Chinese translations for serendipity (i.e., coincidence, encountering and unexpected discovery), with each participant interpreting them differently. The core of the comparison was the patterned plot (Riessman, 2002). The process was divided into three distinct sub-steps (Bates, 2004; Riessman, 2002):

➤ *Comparing similar e-commerce serendipities*

The initial sub-step focused on comparing the plots of stories that narrated the same type of e-commerce serendipity. This process involved identifying recurring similarities in each story's plot, which were then woven together to form the central plot characterising that specific type of e-commerce serendipity. Meanwhile, the distinct elements in each story's plot were carefully preserved. These unique aspects then underwent further comparison and summarisation, leading to the identification of variations within the central plot of each e-commerce serendipity type. By balancing the extraction of a central plot and its variations, the multifaceted nature of e-commerce serendipity could be straightforwardly revealed.

➤ *Comparing different e-commerce serendipities*

In the second sub-step, the analysis shifted to comparing stories narrating different types of e-commerce serendipity. This cross-type analysis primarily centred on the central plots of each serendipity category. Similarities identified while comparing these central plots were collated to define the core characteristics and development routes of e-commerce serendipity as a whole. Concurrently, differences observed in these comparisons prompted further exploration into the variations of the central plots. This in-depth examination of variations allowed the researcher to highlight the unique elements distinguishing each type of serendipity. By delving into these distinctions, the study aimed to provide a thorough understanding of the diverse nature and manifestations of e-commerce serendipity experiences.

Several techniques were employed to effectively and efficiently carry out the two analytical steps mentioned above: (1) interpretations of different types of e-commerce serendipity provided by participants throughout the study were utilised as crucial references; and (2) Graphic notes were taken. These visual aids made it easier for the researcher to discern and understand the unique and familiar aspects across various narratives. An example of these graphic notes can be found in Figure 3.5.

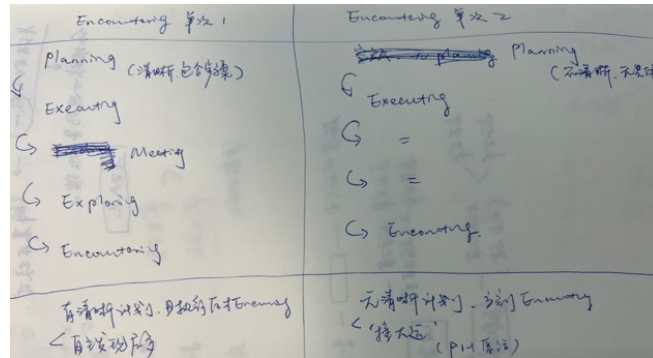


Figure 3.5 An example of the graphic notes taken in the re-storying stage

The outcomes of all comparisons were meticulously compiled into Word tables. The Word tables provided a more structured and accessible format for reviewing the analysis outcomes, facilitating subsequent analytical work.

(3) Re-contextualising

The third step of re-storying was re-contextualising, mirroring the approach and objective of the re-contextualisation used in analysing and interpreting stories. The aim was to identify factors influencing the development of e-commerce serendipity. This stage of analysis continued to focus on repeated readings of the narratives, with a particular emphasis on scenes surrounding behavioural turning points.

At the end of the re-story stage, a report similar to the one shown in Table 3.15 was sent to participants for member-checking. Compared to the content in Table 3.15, the re-story report was more ‘abstract’ (P2-8) as the scenes in the report were replaced with uniformly patterned names. Thus, during member-checking, participants were invited to focus on whether they could still recognise reflections of their own experiences within these abstract analytical results. Fortunately, all participants reported that the abstract analysis results still resonated with their personal experiences. This alignment between participants’ actual experiences and the abstracted report was critical for the faithfulness and reliability of the research findings.

3.4 Ethics concerns

Social research involving human participants is inseparable from ethical concerns (Blaikie & Priest, 2019; Clandinin & Caine, 2008). The following six tactics were followed to avoid being trapped in moral dilemmas.

First, before the research, ethical approval for conducting this research was gained from the university’s ethics committee (see Appendix 3). In the application process, a thorough evaluation of the potential harms of this research to participants was clarified, leading to

corresponding strategies to mitigate such risks in physically and emotionally protecting the participants.

Second, participation in this research was voluntary. Informed consent forms detailing the research content and objectives were distributed to each participant in advance. Data collection only commenced after participants acknowledged the nature of the research and confirmed their willingness to participate. Furthermore, to ensure participants' comfort and autonomy throughout the study, a free withdrawal mechanism was implemented. This mechanism empowered participants to disengage from the research at any stage without any obligation or penalty.

Third, given the impact of the COVID-19 pandemic, all face-to-face interactions were eliminated from the research process. The entire study was conducted through online communications, a decision made to ensure the physical health and safety of the participants.

Fourth, during the data collection process, the researcher was committed to not collecting any information irrelevant to the research objectives or information that participants were unwilling to disclose. Additionally, participants were reminded to thoroughly review their diary entries before submission to ensure no identifiable personal information was included. This precaution safeguarded the confidentiality of participants' data. Even after submitting their diaries, participants retained the right to withdraw their data, giving them continuous control over their personal information.

Fifth, during the research, all collected data and corresponding analytical results were securely stored within the university's research data storage. This system provided a robust infrastructure for data security, with a maximum storage capacity of 10TB, ample for accommodating all data generated throughout the research. Additionally, a specialised password was implemented to safeguard the data storage space against unauthorised access. This comprehensive data security approach ensured the research data's confidentiality and integrity. Furthermore, as part of the data management protocol, it was determined that all stored data would be permanently destroyed five years after the completion of the researcher's PhD.

Sixth, thorough anonymisation procedures were implemented prior to presenting the research findings. All participants were referred to by pseudonyms, ensuring their real identities remained confidential. Also, to ensure the utmost respect for participants' preferences, all data slated for presentation in the Findings chapter underwent a double-checking process by the participants themselves before being incorporated into the thesis. This step was taken to confirm that no information participants wished to remain undisclosed was inadvertently included in the thesis.

3.5 Reliability and fidelity

Reliability and validity are essential for guaranteeing the quality of most social studies (Blaikie & Priest, 2019). Namely, a good social study must withstand the questioning of its internal consistency and integrity and meet the requirements for its external confirmability and transferability (Bryman, 2016; Saunders et al., 2009).

Nevertheless, for narrative studies, the standard for evaluating its quality tends to be reliability and fidelity (Blumenfeld-Jones, 1995; Riessman, 2002). Specifically, a good narrative study needs to demonstrate its internal consistency and integrity and faithfully interpret and represent participants' voices (Blumenfeld-Jones, 1995). Validity is largely irrelevant to the quality of narrative studies (Riessman, 2002).

The change in evaluation standards roots back to the subjectiveness of stories (Bell, 2002; Blumenfeld-Jones, 1995). A told story is a representation of the teller's perceived reality, not meant to be an exact record of a world out there (Riessman, 2002). Thus, there is no reason or possibility to assume that the findings of a narrative study will, or should be, entirely consistent from one context to another (Bates, 2004; Clandinin, 2006). Instead, the strength of narrative studies lies in their ability to provide diverse interpretations of the same phenomenon in revealing the dynamic of social reality (Bartis & Mitev, 2008; Riessman, 2002). To effectively showcase this dynamic reality, narrative studies need to remain faithful to participants' voices. This fidelity ensures that their findings are grounded in the actual experiences and perceptions of the participants rather than being speculation of the researchers (Blumenfeld-Jones, 1995).

To ensure the reliability and fidelity of this research, the researcher made concerted efforts to restrain her voice and continuously reflected on her involvement throughout the study, which was realised through four strategies. First, prior to the research, the researcher engaged in a thoughtful reflection on her interpretations of serendipity and e-commerce serendipity. This introspective exercise made the researcher aware of any pre-existing biases towards the research phenomena (Clandinin & Caine, 2008). Recognising these biases was instrumental in ensuring that the researcher did not overly rely on them during interactions with participants or in interpreting participants' stories.

Second, participants' involvement was paramount throughout the research, ensuring their perspectives were consistently heard and considered. Specifically, the formal design of this research was shaped and refined with the assistance of pilot participants. Their contributions played a critical role in allowing this research to learn about participants' perceived e-commerce serendipity in a natural, minimally intrusive manner. Moreover, member-checking

was a continuous practice within the research, ensuring that the analysis conducted by the researcher remained faithful to participants' experiences.

Third, thick descriptions were produced during the research process, from which the descriptive research context and process could be learnt (Blumenfeld-Jones, 1995). The existence of these carefully generated research documents makes it possible for others to judge whether the results of the researcher's analysis authentically captured the real-life scenarios. Furthermore, some of the completed stories collected throughout the research were presented as supporting evidence in the findings chapter. This approach not only offered a more authentic presentation of the participants' perceived realities but also provided an opportunity for readers to understand the researcher's analytical process.

Finally, all the decisions made during the inquiry process were recorded in detail and reported to the supervisors. This was to support methodological transparency and rigour in the inquiry process. Therefore, the consistency and confirmability of this research were achieved, and the findings endowed with the opportunity to be further enhanced to a higher level (Saunders et al., 2009).

3.6 Limitations

Despite efforts to ensure the reliability and faithfulness of this research, three of its limitations still need to be addressed.

The first limitation is the potential for researcher bias. Notably, the presence of the researcher during the research might have influenced the participants' expression of their viewpoints. While it is acknowledged that completely eliminating such bias is challenging, the researcher still implemented various strategies to minimise it (as detailed in Section 3.5). Thus, the risk of bias has been controlled to a reasonable level.

The second limitation of this research lies in the limited participant range. The participant range in this study was limited. The research drew insights from 32 online consumers, predominantly aged 18-32 and mostly female (25 female and 7 male participants). While no notable differences in perceptions and experiences of serendipity were observed across age and gender within this sample, the narrow age focus and gender disparity still suggest the need for more inclusive research designs. This is particularly relevant given that serendipity is a subjective phenomenon (Makri & Blandford, 2012a), and consumer behaviour can be influenced by age and gender (Bakshi, 2012). In order to deepen the understanding of artificial serendipity and e-commerce serendipity, future investigations should require a more diverse group of participants.

The third limitation lies in the research context. This research primarily focused on the Chinese online marketplace, providing valuable insights into the distinctiveness and types of artificial

serendipity within this specific setting. However, the context-sensitive nature of serendipity suggests that the same phenomenon may manifest differently in other global settings. To attain a more holistic comprehension of artificial serendipity, future research should explore beyond the confines of the Chinese market, encompassing a broader spectrum of everyday life scenarios from various international contexts. Such an expanded approach would facilitate a more detailed investigation into the variability and core aspects of artificial serendipity across different cultural and situational environments.

3.7 Summary

This chapter elaborated on the designs for this thesis' research – a participants-centric narrative study. Throughout the research, a sustained collaborative relationship was maintained between the researcher and the participants. This long-term collaboration allowed this thesis to authentically perceive e-commerce serendipity from the perspectives of participants. In this way, fresh insights were gained into previously understated features and development routes of e-commerce serendipity. These new insights are elaborated in the following Findings chapter. Moreover, the discussion chapter will elucidate how these insights, derived from the genuine perspectives of participants, enrich current serendipity-related studies and theories.

Chapter 4 Findings

This chapter presents the research findings and response to the first three research objectives proposed in Chapter 1, which were:

- 1) To explore and understand online consumers' interpretations of e-commerce serendipity.
- 2) To identify the routes that direct consumers to experience e-commerce serendipity.
- 3) To reveal the factors influencing consumers' experiences of e-commerce serendipity.

Section 4.1 explores the participants' interpretation of e-commerce serendipity. Findings indicate that participants view e-commerce serendipity as an artificially-facilitated unplanned experience, co-shaped by both them and third parties¹. The active involvement of third parties makes the e-commerce serendipity an expected surprise that often affords participants a thrilling ride and varied outcomes.

Section 4.2 introduces how e-commerce serendipity unfolds, highlighting three development routes: coincidence, encountering, and unexpected discovery. Each mode showcases a unique interaction pattern between participants and third parties. Real-life stories told by participants are introduced to better illustrate the development of each route.

Section 4.3 unveils factors contributing to the distinct e-commerce serendipity experience. Factors identified span three interconnected dimensions: those tied to the participants, third parties, and surrounding conditions. An analysis of these factors highlights the reasons why e-commerce serendipity has different development modes.

Section 4.4 concludes this chapter, emphasising the artificially-facilitated nature of e-commerce serendipity.

Notably, the findings presented in this chapter primarily originate from the participants' first-person narratives and perspectives, whilst insights of third parties may not be as exhaustive. By giving prominence to participants' authentic experiences and viewpoints, this research illuminates previously underexplored e-commerce serendipity dimensions, thereby fostering a more nuanced, comprehensive understanding of the phenomenon. All the insights generated from the findings will be discussed in Chapter 5 Discussion.

¹ The term 'third party' is adopted for clarity, mirroring participants' language in their narratives. It refers to all the entities that directly influence participants' e-commerce serendipity but have no close interpersonal relationship with the participants. This includes e-commerce practitioners, e-commerce platforms and the technical agents equipped in the platforms.

4.1 E-commerce serendipity: an artificially-facilitated unplanned experience

This section addresses the first research objective of understanding serendipity in online marketplaces (i.e. e-commerce serendipity) from serendipitists' perspectives.

When participants were asked about their understanding of e-commerce serendipity, they primarily associated it with an unplanned experience consciously facilitated by both them and third parties:

P1-3 I4¹ – I would define [e-commerce serendipity] as an experience that is not entirely planned by me. It is an experience co-created with platforms and vendors, and it often leaves me with some good or bad points that I can use as conversation starters when discussing it with others.

P2-8 I3 – [E-commerce serendipity] is a kind of experience covering the entire interaction process between me, the vendor, the platform and perhaps even more people, depending on the circumstances. All of us intentionally created this experience.

P3-3 I3 – [E-commerce serendipity] is an experience that happens without my purposefully planning for it, and it always involves someone else, whether human or non-human. Also, experiencing [e-commerce] serendipity, which takes some time, often leaves me with some memorable points that I find worth recalling.

P4-5 I3 – [Serendipitous e-commerce] experiences are unplanned happenings. I know they will happen, but I cannot determine when or how they will happen. In addition, since they occur within an online marketplace, I would say that the influence of algorithms can also be perceived behind these experiences.

In the participants' eyes, e-commerce serendipity comprised a series of behaviours chained by *an unplanned plot*. When taking the serendipitous route, participants often experienced a feeling of reconciliation or a lack of control. That is, participants could not ensure that their personal intentions would consistently align with every happening during their serendipitous experience, as noted by P2-9:

P2-9 I3 – I feel that e-commerce serendipity is highly unplanned. Being unplanned means that I cannot entirely influence the outcome or direction of all my behaviours according to my decision-making intentions. There is always another force trying to affect my behaviour, and it is common for me to experience a reality that does not align with my thoughts as the [e-commerce serendipity] progresses.

¹ P3-1 refers to the first participant from the third age group. Additionally, I4 refers to the fourth interview with the participants, and S1 pertains to the first story shared by the participants. This systematic naming convention will be followed consistently for all future references to participants and data.

The root for the participants' inability to fully control the development of e-commerce serendipity is the active involvement of 'intelligent [third parties]' (P2-3) in addition to themselves. These third parties' actions and strategies add layers of 'dynamic' (P2-3) to the serendipity in the digital marketplace.

4.1.1 Actors involved in e-commerce serendipity

There are two main actors that actively facilitated serendipity in online marketplaces: (1) The participants themselves, who exhibited 'conscious resilience' (P2-1) to external intervention; and (2) The third parties namely, the e-commerce practitioners, the platforms, and all technical agents created and controlled by the e-commerce practitioners. Their involvement in e-commerce serendipity was often 'unavoidable and increasingly subtle' (P3-4).

More concretely, the involvement of third parties was unavoidable because they are the 'architects, controllers and foundations' of online marketplaces (P3-4). Hence, as long as participants visit online marketplaces, they inevitably rely on and are influenced by these third parties. Without third-party engagement, 'there would be no online shopping, let alone [e-commerce serendipity]' (P4-5). Participants' awareness of third parties' involvement was evident in their use of language when describing their serendipitous experiences, including being 'guided to unknown things by [the] platform' (P3-8), an 'encounter served by AI' (P4-2) and encounters 'supported by algorithms' (P3-3).

In addition, the third parties' involvement had nudged the participants towards experiencing more surprising moments – namely, moments beyond their expressed preferences and routines.

P3-10 I3 – AI also has independent thinking capabilities. It interacts with us actively, consciously and purposefully. It does not just mindlessly respond to our requests; it also considers how to influence and persuade us to accept its viewpoints, which often differ from our plans.

P3-6 I1 – For me, those elements beyond the ordinary are enough to be considered surprises. After all, our lives are not about ground-breaking scientific discoveries; we do not need to do something extraordinary to experience a surprise. It does not have to be something completely unprecedented to qualify as a surprise.

The ability of third parties to nudge participants towards more surprises is attributed to their conscious adoption of intelligent technologies, such as AI. These technologies enable third parties to design and provide intelligent agents endowed with 'exceptional data mining and analysis capabilities' in online marketplaces (P3-8). These powerful agents then lead participants to expect these surprising findings will be better choices than their usual options;

thus, they are willing to accept them. For example, trusting Taobao's¹ recommendation system, P3-8 discovered an umbrella that opened in reverse – a design completely different from and superior to that of ordinary umbrellas. This umbrella allowed P3-8 to stay dry while getting in and out of his car, avoiding the inconvenience of traditional umbrellas that often wet the interior.

Thus, for participants, online marketplaces with conscious designs appear to be contexts rich in potential serendipity. Over half of the participants intentionally visited the online marketplace without any specific needs but solely to enjoy the element of surprise.

P4-5 I2 – I really feel that AI algorithms and big data applications have truly made Taobao more prone to surprising occurrences. It feels like Taobao has indeed become what its name suggests – a treasure trove. Even if I casually open Taobao, there always seems to be something interesting that pops up. So, sometimes, even if I have nothing specific to buy, I intentionally open Taobao just to see what surprises it has in store for me.

Nonetheless, although most e-commerce serendipities were perceived as surprising and attractive, they were not always enjoyable and positive. This is because third parties' engagement and design do not often serve the participants' intentions; instead, third parties engage in and design for the e-commerce serendipity to subtly manipulate participants to abandon their intended plans and accept plans that better serve their commercial interests. With the integration of technologies such as AI, this third-parties' persuasion has become even 'more widespread and influential' (P4-6). This sentiment was echoed by P3-9:

P3-9 I3 – An individual's analytical and cognitive capability could hardly compete with the computing power of sophisticated artificial intelligence. After all, behind this artificial intelligence is vast scientific elites. AI is much smarter than we are, and discerning our actions and underlying intentions is not a challenging task for AI. [...] So, with the adoption of AI, platforms and vendors can more precisely determine when and how to intervene in our actions to maximise their benefits. Essentially, AI grants vendors and platforms an enhanced opportunity to manipulate all our in-store experiences, including serendipity.

In such a circumstance, participants found that the development of their serendipitous experiences would often be beyond their control and become 'more dynamic and uncertain' (P3-10).

Relinquishing control and feeling uncertain, however, did not mean that participants were positioned in an entirely passive position during the process. Being 'smart and antifragile creatures' (P2-1), participants were not inclined to easily delegate their decision-making

¹ Taobao (淘宝) is a major Chinese e-commerce platform, owned by Alibaba, renowned for its extensive assortment of products.

authority to third parties, particularly when those third parties held ‘conflicting value pursuits’ (P2-3). Instead, participants engaged in the unplanned course voluntarily, fully aware of the associated uncertainties and risks and confident in their ability to handle them:

P1-5 I3 – I actively embraced this unplanned experience. I was not so naive as to blindly trust vendors who might have conflicting interests. I am a human being with the ability to think independently, and I know that overly trusting vendors would jeopardise my own interests. So, I would never surrender my decision-making authority, and I believe I have the ability to safeguard my purse.

P4-5 I3 – Compared to the vendors and platforms, even intelligent algorithms, I still have more authority over the progress of the serendipitous event. Whether I continue this experience is mostly my decision, as I believe that no one would easily abandon their decision-making rights. I would also say that I am a savvy consumer. I have the ability to recognise most commercial traps and handle them effectively.

In other words, participants ‘would not engage in [e-commerce serendipity] unprepared’ (P4-2). Instead, they often consciously took steps to equip themselves with the necessary *shopping expertise* to navigate these digitally crafted experiences. This entailed the development of their shopping preferences (i.e. knowing what should be prioritised and discarded during shopping; P4-2) and shopping skills (i.e. knowing how to conduct satisfying shopping; P4-2). These nuanced insights could serve as a ‘reliable baseline’ (P2-7) for decision-making, empowering participants with the confidence to resist inappropriate manipulation by third parties and remain resilient in uncertain situations. With this newfound confidence, participants became willing and ‘fearless’ (P1-4) to embrace the serendipitous route:

P1-4 I3 – Knowing what I like and dislike makes it difficult for vendors to manipulate me entirely. At the very least, I would not be persuaded to waste money on things I do not like. With this confidence in not wasting money, I can be fearless in exploring recommendations that are received in an unplanned way.

P4-2 I2 – I think it is essential to ensure that you have enough skill to stay vigilant and protect your own interests before embarking on an unplanned route in a commercial context. Otherwise, it is better not to let vendors easily influence you, as you are very likely to be deceived in the unplanned experience.

In this regard, participants described their experiences with e-commerce serendipity as a ‘roller-coaster ride’ (P3-9) and ‘thrilling yet [they] engage with it voluntarily’ (P3-9). The conscious intervention of third parties ‘did not endanger’ the participants (P2-5); instead, it motivated them to step out of their comfort zones, exposing them to more diverse shopping possibilities.

P2-6 I1 – The comfort zone is called a comfort zone because it makes you feel certain and happy. Stepping out of this comfort zone can still be challenging. Without some external force, I would not do that myself. In this sense, I would say that I am actually thankful for all the platforms and vendors' guidance during the [serendipitous] experience; without them, I would not have had these thrilling experiences.

Throughout this adventurous process, third parties directed participants to experience moments that shattered the monotony, introducing them to surprising shocks that transcended routine. Such deep emotional engagement strengthened the memory of e-commerce serendipity, giving it a unique place in participants' everyday lives.

P3-9 I4 – [E-commerce serendipity] is like a roller-coaster ride, thrilling yet voluntary. Throughout this experience, I had a sense of losing control, but I knew that this loss of control would not harm me. In fact, I enjoy this unique sensation, as it gives me a feeling of pushing my limits in my everyday life.

4.1.2 Core scenes in the unplanned experience

Similar to riding a roller coaster, experiencing e-commerce serendipity is not instantaneous. Instead, it requires navigation of various unique checkpoints. The following scenes constitute the core checkpoints of an e-commerce serendipity experience: it begins as *an expected surprise*, then unfolds as *a thrilling ride* and ends with *varied outcomes*.

4.1.2.1 Beginning: An expected good surprise

For participants, e-commerce serendipity often began with 'an expected good surprise' (P3-3). Namely, a 'potentially rewarding occurrence' that participants were sure would happen, yet they 'could not always accurately foresee' when, where or in what form it would manifest (P3-3).

More specifically, these expected good surprises stood out from participants' planned routes in two main ways: (1) they *appeared inadvertently*, either at times or places that participants had not fully expected (e.g. P3-2 S2, P2-3 S4); and (2) they *introduced novel content*, which may be something that slightly or 'excessively' (P4-6) expanded or subverted participants' current knowledge (e.g. P3-8 S3).

P3-2 S2 – Finding this Tsumtsum of Loki was surprising but not entirely out of [my] expectations [...] I just wanted to find it on Taobao. However, I did not expect that Taobao would provide me with the Tsumtsum just when I opened it, even before I searched for it.

P2-3 S4 – Actually, stumbling upon a recommendation related to product K¹ on Bilibili.com² was surprising. The surprising aspect was not the product itself; I had purchased it a long time ago and knew what it was. What caught me off guard was that Bilibili.com recommended this product. K is a food item, but Bilibili.com primarily sells anime figures and merchandise that are completely unrelated to food. I didn't think that this platform would promote food products.

P3-8 S3 – Before Taobao recommended it to me, I had no idea that there was such a novelty as an inverted umbrella. I had never seen such a unique umbrella before. It was completely different from what I had previously known about umbrellas. This inverted umbrella was beyond my shopping knowledge.

While outside participants' planned routes, these expected good surprises 'always align closely' (P4-2) with their preferences and needs. This close alignment results in 'an immediately perceivable value' (P4-2), increasing participants' perceived pleasant of identifying these surprises. This is because for participants, shopping is essentially 'a personalised and repetitive activity' (P3-5), and 'good shopping findings' (P3-5) are those that subtly improve existing shopping routines rather than completely transforming them.

P2-3 I3 – Shopping is not conducting scientific research; I do not need a lot of shopping-related innovativeness. I just need findings based on my shopping history and search history [...] I do not have a use for extremely novel and unknown products, so if you introduce them to me, it is just a waste of both your time and mine.

P3-5 I2 – I believe that shopping is fundamentally a personalised activity that depends on my current survival status. My survival status was relatively stable during a certain period, so my shopping was repetitive. For an extended duration, I was only interested in specific products and focused exclusively on information related to these products. Most other information could be automatically filtered out by me.

The roots of such an expected surprise are twofold: (1) the third parties' adoption of 'intelligent technologies' (P2-5), especially AI, and (2) the participants' 'inherent adaptability' (P3-2).

More specifically, adopting AI technology has endowed third parties with 'superb analytical and predictive power' (P2-9). This empowerment has resulted in third parties having a deeper understanding of participants – so profound that it might 'surpass the [participants'] own self-awareness of [their] preferences and routines' (P1-1). Third parties have also developed a keen awareness of the latest market trends. This combination of deep participant insight and market

¹ According to P2-3's requirement, the name of the product she encountered was anonymised.

² Bilibili.com (哔哩哔哩.com), also known as Site B (B站), is a video-sharing platform popular among Chinese youth. This platform has introduced its own e-commerce services under the name Huiyuango (会员购), with a primary focus on selling anime-related products.

awareness enables third parties to ‘stay ahead of [participants] on [their] selected shopping route’ (P3-9), adeptly introducing ‘attractive and good surprises’ during participants’ online visits (P2-2).

Given third parties’ increased integration of AI design in online marketplaces, these good surprises have become an integral part of online shopping.

P4-2 I3 – Having been a Taobao user for 15 years, I have witnessed its transformation. The integration of AI has been the most significant change, making Taobao smarter than ever before. Now, each time I use Taobao, it consistently delights me with a series of surprises, whether through novel content or sudden appearances.

Participants naturally expected coming across good surprises during their online visits. This was attributed to the following: ‘human beings are inherently adaptable to all contexts’ (P3-2); individuals can flexibly modify their expectations of potential happenings within a context based on their past experiences. Three distinct expectation states for an upcoming good surprise were observed among participants:

- 1) Explicit expectations. In this case, participants actively sought good surprises by conducting targeted searches with precise keywords, i.e. ‘searches specifically tailored with detailed descriptors of the desired [surprises’] category and characteristics’ (P3-9). For example, P2-7 sought out ‘in style garbage bags’ (P2-7) on Taobao, hoping to be surprised by identifying some ‘uniquely appealing garbage bags that could light up [her] recently started new life in another city’ (P2-7).
- 2) Mild expectations. In this case, participants remained open and waited for surprises to find them, leaving the ‘responsibility for finding [good surprises] mainly to platforms and vendors’ (P1-4). This involved participants engaging in ‘casual and broad searches’ (P4-2), browsing platforms or hopping between various hyperlinks simply for fun. The expectation here was less about finding something specific and more about being open to any ‘relevant and interesting’ (P3-4) findings that might arise during their online visits.
- 3) Faint expectations. In rare cases, expectations can be faint. Participants might have wished to come across particular good surprises yet simultaneously doubted their likelihood, believing that the good surprises they imagined were improbable at the time. In this state of contradictory expectations, participants may have wanted to search for good surprises actively but often hesitated and showed indecision in their actions.

The specific expectation status that participants displayed towards a good surprise depended on two main factors: the real-time surrounding they were in before that e-commerce serendipity experience and their past shopping experiences. The former affected their ‘real-time mental

states' (P3-2), influencing whether participants had the 'mental bandwidth' (P3-2) to conceptualise what constitutes a good surprise. The latter affected participants' perceptions of the 'feasibility' (P3-1) of materialising the good surprise in the given situation; after all, 'reflection on the future is often shaped by reflections on the past' (P3-1), and past experience was the knowledge base upon which participants constructed their expectations of upcoming shopping experiences.

A more in-depth elaboration of how past experiences and real-time surroundings influence participants' serendipitous e-commerce experiences can be found in Sections 4.3.1.2.2 and 4.3.3, respectively.

4.1.2.2 Middle: A thrilling ride

For participants, the unfolding of e-commerce serendipity is akin to 'a thrilling ride' (P3-3). That is, the middle stage of e-commerce serendipity can unfold dynamically in various ways:

- 1) Participants may find themselves engrossed in the excitement of exploring the initially identified good surprise, perceiving a sustained sense of pleasure from the exploration.
- 2) In some cases, participants found themselves be guided by third parties to new areas of exploration. This redirection often leads to identifying something even more intriguing, adding an additional layer of excitement or even 'lucky' (P2-5) to participants' serendipitous experiences.
- 3) Alternatively, as participants explore the initially identified good surprise, they may actively recognise that this good surprise lacks the 'good value' (P3-10) they initially expected. This realisation can lead to a diminished sense of pleasure and even disappointment.
- 4) There were also instances in which participants' exploration of the identified good surprise was interrupted by 'more urgent or important' (P2-5) conditional happenings in their everyday lives. This reflects the reality that online shopping 'is just one aspect of [participants'] broader everyday lives' (P2-3), which include 'a myriad of other responsibilities and occurrences' (P2-3).

Regarding which middle way participants will ultimately take, this can 'only be determined once [they] actually engage with it' (P2-10). It is this essence of the 'dynamic and uncertainty of the exploration path' (P3-3) that infuses the participants' journey in e-commerce serendipity with 'a sense of thrill' (P3-3).

4.1.2.2.1 Straightforward and pleasant exploration

In straightforward and enjoyable exploration, participants immersed themselves in the pleasure of exploring the good surprise they initially identified, often driven by their own curiosity and the ‘attractiveness’ (P2-3) of the surprise. This straightforward and pleasant exploration involves acquiring participants’ target products in the same way as in regular shopping, or simply enjoying the browsing of ‘something interesting and admiring’ (P4-4).

P4-7 S2 – After clicking on the product link, I read the charger’s specifications, checked the consumer reviews about it and then proceeded to place the order. It felt quite similar to regular shopping.

P4-4 S1 – First, I checked the detailed pictures of the skirt and found out that it was really beautiful. So, I spent another five minutes checking the promotional video for this skirt, and I really liked it. Although I liked the skirt and enjoyed checking details about it, I did not consider buying it because I know this type of skirt does not suit me.

4.1.2.2.2 Redirected and exciting exploration

In redirected and exciting exploration, the exploration of initially identified good surprises led participants to either the commencement of *a reward cascade* or the start of *a learning loop*, adding ‘additional value’ (P2-3) to their e-commerce serendipity experience.

A reward cascade often emerged from participants’ intentional or accidental browsing of recommendations or push notifications related to the good surprise. Engaging with these related suggestions can lead to the identification of more cost-effective choices or complement the initial surprises, expanding the participants’ shopping options and exploration scope. For example, P4-4, while exploring a T-shirt encountered on Taobao, chanced upon a pair of sandals and a skirt suggested in the ‘*guess you also like*’ section. These additional surprises expanded her initial serendipity from a single item to a complete ensemble, ‘satisfying multiple needs through only one [serendipitous adventure]’ (P4-4).

A learning cycle often arose when participants intentionally sought out more information about the good yet ‘less familiar’ surprises (P3-8). This active exploration into less familiar areas can ‘open the door to a new realm of knowledge’ (P3-8), initiating a learning cycle:

P3-3 I2 – Unfamiliar content is like an iceberg; the more you dig into it, the more insights you will find and the more interesting it becomes for learning about it.

Notably, the insights learned through these loops might not be limited to those related to shopping:

P3-3 S1 – Initially, I was simply curious about Zhou Shen’s role in the food packaging design, so I watched the video intently without skipping or speeding through it. [...] To my surprise, by the end of

the video, I was captivated by the artwork of an illustrator with whom I was not familiar. His landscape paintings showcased a unique style, different from any I had seen before; they had an exotic allure. This prompted me to look up the artist's Weibo¹ account (mentioned in the video) [...] After exploring his Weibo, I realised I truly admired his artistic style and began browsing his posts [...] Interestingly, I stumbled upon another artist with a distinctive style through his followers. The entire experience felt like a continuous journey of discovering and learning new art styles.

As everything in life is 'interconnected rather than isolated' (P3-3), shopping can be 'inherently' linked with other aspects of life (P3-3).

4.1.2.2.3 Disappointing exploration

In disappointing exploration, participants realised that the initially identified good surprise was not 'as valuable as [they] thought' (P4-5) either before or during their in-depth exploration of the identified good surprises. Two types of 'less-than-expected' (P4-5) surprises were observed in this research.

The first was '*an obvious concealed deception*' (P3-10), which involved content that is 'completely in contrast to [participants'] expressed preferences' (P2-3) or 'entirely impractical commercial propaganda' (P2-2). The realisation of the identified surprise as a concealed deception can lead to feelings of disappointment or even a sense of 'having been deceived' (P2-3), prompting participants to abandon even the initially highly expected serendipitous route unhesitatingly:

P2-3 S2 – I really had high expectations of the book when I clicked on its link because it was about saving money, which was exactly what I was eager to learn. I had just started working and wanted to become better at managing my finances. However, my excitement quickly turned into disappointment when I started reading the book's introduction. It turned out to be a guide on how to be a good housewife. I strongly dislike books that try to dictate women's roles in that way. I believe women should have their own careers. This discovery made me feel that I had been deceived. So, I immediately decided to stop reading this book.

P2-2 S3 – What originally sold for 180RMB now only costs 18RMB? This is patently unrealistic and absolutely impossible. Based on this point, I can conclude that this push message is a commercial trap. So, I decided that I don't need to continue exploring this push message.

The second type of less-than-expected surprise was the '*attractive but risky shopping opportunity*' (P2-1). This kind of surprise involved content that was highly appealing to the participants but also unfamiliar to them. Participants' lack of familiarity with the surprise

¹ Weibo (微博) is a major Chinese microblogging platform that also features its own e-commerce service 'Weibo shop'.

created a sense of uncertainty, leaving them ‘uncertain about’ (P2-1) whether it was a well-hidden commercial trap or a genuinely exceptional opportunity.

Such uncertainty can lead participants to perceive a deeper engagement with the serendipitous route as ‘risky’ (P2-1), causing them to temporarily step back for more reflection, as noted by P4-6:

P4-6 I4 – Because of the lack of familiarity, it is difficult to notice flaws in the recommendations immediately. Any decision made in such a state of ignorance can be impulsive and risky, often bringing more harm than benefit to me. So, when finding something that is less familiar, I often hesitate to delve into it directly.

Given that these surprises also contained attractive elements, participants often found their avoidance of them to be temporary. During the period when they chose to temporarily avoid exploring the surprise, these surprises would act as ‘an itch’ (P1-3) that kept lingering in their minds. For example, when facing the dilemma of whether to explore a recommended newly launched joystick or not, P1-3 initially decided to divert attention away from the joystick and play a game. However, even while playing, P1-3 found himself continuously thinking about the joystick.

This recurring contemplation of these surprises was what often led participants to ultimately decide to return and explore the identified surprise. However, due to the rapid pace of information turnover in online marketplaces, some of these temporary avoidances often ‘inadvertently become permanent’ (P3-9). By the time participants decide how to proceed with the identified surprise, they might discover that it has already become lost in the overwhelming flow of information. In such cases, participants can only perceive a sense of regret and haste from their serendipitous experiences.

P3-9 I4 – I had intended to explore a piece of encountered information in detail but could not do so in the end. This unexpected situation arose mainly because I overestimated my memory capabilities. I assumed that I could remember the encountered information. So, I only glanced briefly at the details and then started to do something else first. I planned to come back and explore it later. However, when I tried to find that information again, I realised that I had forgotten its specific details. So, I lost the chance to explore that information.

4.1.2.2.4 An external intervention

An *external intervention* also happened either before or during participants’ in-depth exploration of a good surprise. The roots of these disruptions emerged from both inside and outside the serendipitous route, stemming either from the third parties’ shopping restrictions, the demands of participants’ pre-planned activities or from the broader surroundings in which

they were operating. The urgency or significance of these external interventions can ‘forcibly’ pull participants away from the serendipitous route (P3-2), resulting in their serendipitous experience becoming unfruitful.

P2-10 S1 – While I was enthusiastically browsing through camping equipment, I happened to glance at my phone and noticed that it was almost midnight – the mid-year sales event was going to start. Realising the time, I immediately paused my exploration and rushed to secure the items in my shopping cart. After all, the original reason for me opening Taobao was to secure a discount for all the items in my shopping cart.

P2-9 S3 – I was in the middle of examining the differences between the newly released TV and the older model when my mom called me to have dinner. So, I put down my phone and went to have dinner.

The dynamic nature of the middle stage of e-commerce serendipity arose from two factors: the rapid response of AI-facilitated third parties and the fact that participants are not always fully prepared when coming across ‘unplanned happenings’ (P2-3).

More specifically, the swift responsiveness of AI systems has led to a ‘rapidly evolving’ serendipitous landscape (P4-2). Once participants exhibit certain behavioural tendencies, third parties quickly adjust what is offered in online marketplaces in response, with some reactions even ‘anticipating the [participants’] next moves’ (P4-2). Under such circumstances, participants were endowed with more experience possibilities.

Nevertheless, participants may not have had sufficient background knowledge or the ability to coordinate multiple tasks to fully embrace these ‘enriched choices’ (P4-2). This lack of preparedness can lead to misjudgement of the value of the surprise and force them to abandon unplanned e-commerce serendipity in favour of more pressing tasks.

4.1.2.3 End: Varied outcomes

For participants, the outcomes of e-commerce serendipity varied in terms of both their nature – whether they were ‘good and can bring benefits’ (P3-9) or ‘bad and can cause loss’ (P3-9) – and timing – whether they were immediately apparent or unfolded over time.

Based on the above issues, participants categorised the outcomes of e-commerce serendipity into four types accordingly: ‘an immediate and unchanged good outcome’ (P2-2), ‘an immediate and unchanged bad outcome’ (P2-2), ‘an immediate good outcome with hidden insight’ (P3-3), and ‘an immediate good outcome with a hidden downside’ (P4-6).

4.1.2.3.1 An immediate and unchanged good outcome

Perceiving an immediate and unchanged good outcome could lead participants to term their serendipitous experience ‘a good serendipity’ (P2-2). Three main types of immediate and unchanged good outcomes were observed: (1) *emotional pleasure* (e.g. P4-2 S1); (2) *satisfying purchases* (e.g. P2-9 S4); and (3) *a slight gain in knowledge* (e.g. P2-10 S2).

P4-2 S1 – After watching the entire Douyin¹ video, I brushed the information aside. While this mini washer looked chic, I deemed it a useless toy that I would never purchase. Also, I might not remember this washer for a long time, as remembering useless information is actually a waste of my brainpower. Nevertheless, the experience of stumbling upon this little washer was noteworthy. At that moment, the toy satisfied my desire for something interesting and curious. Also, the video for this washer was well produced, and watching it made me feel as though I was playing with the toy myself. For me, watching the Douyin video and enjoying the feeling of ‘owning’ this toy for a few seconds was memorable enough.

P2-9 S4 – I was quite satisfied with encountering this experience and the purchase it triggered, and I would rate it 9.5 out of 10 in terms of satisfaction. I didn’t anticipate that Taobao would recommend this great 1+1 medicine set to me, which included not only the medicines my mother needed but also additional medicines that my father could use for free. This means that I spent a certain amount of money and received items worth more than that amount.

P2-10 S2 – After coming across a post on Xiaohongshu² about the gift-giving culture, I took the initiative to delve deeper by searching for related content on Douban.com³ and watching videos on Bilibili.com. This comprehensive exploration gave me a well-rounded understanding of the topic. [...] With the insights I gained, I am now confident that I can find an appropriate and reasonable gift for my boss.

The main contributor to these immediate and unchanged good outcomes was the participants’ ‘sophisticated shopping expertise’ (P2-6), which was crucial in helping them navigate serendipitous routes effectively. Specifically, the experienced participants were often able to remain composed in the face of unplanned events, which allowed them to resist inappropriate guidance from third parties. This resistance enabled the participants to maintain ‘full decision autonomy’ (P4-1) during the e-commerce serendipity process, ensuring that they could ‘fully and independently’ (P4-1) interpret the value of the identified surprises. This comprehensive

¹ Douyin (抖音), internationally known as TikTok, is a popular short-video social media platform originating from China. As it has evolved, it has become a significant social commerce platform where vendors market their products.

² Xiaohongshu (小红书) is a major Chinese social media and e-commerce platform, famous for promoting the exchange of shopping experiences among its users.

³ Douban.com (豆瓣) is a Chinese social networking service platform that mainly offers a place for user reviews and recommendations on books, movies, music, and other cultural products. Also, users could buy books, music albums, and handicrafts via Douban.com.

understanding helped them avoid decision-making errors and potential negative consequences stemming from overlooking critical information.

Moreover, their shopping expertise played a crucial role in the participants' ability to manage their personal expectations regarding their serendipitous experiences and outcomes in a reasonable way. Specifically, the experienced participants were generally aware that 'online shopping does not always guarantee that [they] would always get the [products] exactly as [they] envisioned' (P3-9). Consequently, these participants were less likely to have unrealistic expectations of online shopping. Their realistic outlook enabled them to 'easily find goodness and satisfaction' (P4-4) in their online shopping experiences, even when they were navigating through the unplanned landscape of serendipitous discovery.

4.1.2.3.2 An immediate and unchanged bad outcome

Immediate and unchanged bad outcomes often manifested as *dead ends* resulting from disappointing changes during the e-commerce serendipity process. These dead ends often led participants to realise that their time and efforts had been in vain, resulting in feelings of 'disappointment' (P1-1), 'frustration' (P3-1), and even 'anger' (P4-6). Participants who experienced these *negative emotions* unhesitatingly termed their serendipitous experience 'a bad serendipity' (P2-2).

These negative emotions were often most strongly felt if the participants had abandoned a planned task that was particularly important to them for the sake of the e-commerce serendipity. In this case, the waste of time and energy indicated the loss of a 'should-have-been-gained benefit' (P2-6). P2-6 recounted that she had missed her lunch as she had spent the entire lunch break checking a list of 'useless' discounted products pushed at her by Taobao before the 618 Shopping Festival. As a foodie, she rarely missed meals. Thus, 'being tricked to skip lunch' made P2-6 extremely angry.

At times, reaching a dead end could further lead to a loss of trust in or even 'great disgust' (P2-9) toward the third party that facilitated the serendipitous experience. For instance, when P-1 realised certain discounts were deceptive and unobtainable, she promptly uninstalled Pinduoduo¹ and did not use it again. Similarly, P4-3 recounted uninstalling the same shopping application after discovering that a substantial 30-minute investment in an unexpected rebate task had merely yielded inconsequential Pinduoduo points.

To 'escape from' (P3-3) these negative emotions, participants often chose to 'promptly and completely' (P1-1) conclude their e-commerce serendipity experience, and they 'would refuse

¹ Pinduoduo (拼多多) is a major Chinese e-commerce platform renowned for its low-price strategy. However, it has been criticised for its poor handling of false information and failure to deliver high-quality products.

to think about it further’ (P1-1). Despite the distress these immediate and unchanged bad outcomes caused, they did not deter participants from recognising their experiences as instances of e-commerce serendipity. This perspective was maintained for two key reasons: (1) first, these experiences initially brought a sense of good surprise; and (2) second, suffering from immediate bad outcomes could be ‘a valuable lesson’ (P1-1) for the participants, alerting them to be more cautious and helping them avoid similar ‘bad serendipity’ (P2-2) in the future.

4.1.2.3.3 An immediate good outcome with hidden insight

In some instances, good outcomes that initially resulted from e-commerce serendipity could grow ‘increasingly insightful’ as time passed (P4-2). This hidden insight could, in turn, transform a good serendipity into a ‘fantastically rewarding one’ (P4-2).

Such cases were often seen when participants initially ‘learned something’ (P3-3) through e-commerce serendipity. Since knowledge is absorbed over time, the immediate takeaways from a serendipitous experience might only represent ‘the tip of the iceberg’ (P3-3). The more significant, profound insights tended to remain hidden, requiring more time to fully surface.

As time goes by, knowledge gained from e-commerce serendipity could sometimes transcend the shopping field, extending to the participants’ work or social interactions. For example, by further investigating an accidentally discovered product on Goofish¹, P4-5 realised that an ‘incredibly strong relationship’ (P4-5) existed between herself and a friend she had ‘not contacted for a long time’:

P4-5 S1 – I was amazed to find something posted by my friend on Goofish, so I took a screenshot of the painting tools and sent it to my classmate via WeChat immediately. After that, I closed Goofish. [...] For about two hours later, she relied to me, confirming that the vendor of the painting tools was her! She was also equally surprised and excited by my discovery! [...] This surprising connection proved that our friendship between the two of us was not shallow. Our friendship was incredibly strong!

In another case, after casually exploring a book that was repeatedly recommended by Taobao for the second time, P3-3 unexpectedly came across a good starting point for her work:

P3-3 S2 – After browsing some detailed content again in the afternoon, I immediately realised that this book was ‘the original work of a popular TV series that starred JT and ZBB’. The popularity of the TV series triggered its fans to read the original work. This new knowledge reminded me to write

¹ Goofish (闲鱼) is the largest second-hand goods trading platform in China.

about the issue of IP¹ adaptation, which has recently been a hot issue. With this concern, I therefore made a note of this book in my news writing system.

Upon further reflection, these newly gained insights may lead to more tangible benefits that could enhance the participants' social relationships or foster their career development:

P4-5 S1 – After this unplanned meeting, I asked [my classmate] about painting-related issues a few times. We are also planning to attend an art exhibition together tomorrow. I just feel that we have grown even closer now.

P3-3 S2 – Later that afternoon, after I'd made a note of that book, I discussed my writing plan with my boss. He agreed that the book and the TV series based on it would be suitable sources to include in the article. However, we still need to figure out how best to incorporate them into the piece.

4.1.2.3.4 An immediate good outcome with hidden downside

In some cases, e-commerce serendipity could initially lead to an immediate good outcome only for its 'bad parts' (P2-2) to be gradually revealed as time progressed. Four types of concealed downsides were observed:

- 1) A purchase of high expectation but that turn out to be ordinary;
- 2) An emotional pleasure that turned out to be fatigue;
- 3) A promising shopping experience but with a concealed commercial trap;
- 4) An attentive service but with concealed malicious manipulation.

Notably, not every hidden downside led participants to re-term the initially good serendipity a bad one. To use the participants' own words, not all subsequently revealed downsides could 'cancel out' (P3-7) the initially perceived 'goodness' (P3-7) of the e-commerce serendipity. Of the four types of downsides, only the last two could negate the initial good aspects. This is because these downsides were often belatedly realised due to third parties' 'malicious manipulation' (P4-6) and could lead to 'substantial tangible harm' (P2-5) to the participants, which often turned out to be the waste of their 'limited' (P2-5) monetary resources.

On the other hand, the first two types of downsides were often a result of the participants' oversight; furthermore, the 'disappointing aspects' (P3-1) of these experiences typically did not result in significant resource loss for the participants and might even have offered some benefits. Since participants were less likely to 'punish [themselves] for [their own] mistakes' (P3-9) and might still derive some, 'albeit less-than-expected, benefits' (P3-1) from the

¹ IP is the acronym for the term 'intellectual property'.

experience, they usually did not change their initial perceptions of the serendipity as being good due to these two types of hidden downsides.

(1) A purchase of high expectations but that turned out to be ordinary

In this instance, participants might ‘inadvertently’ (P2-3) develop unrealistic expectations of the value of the good surprise they identified during the serendipitous experience. This oversight often stemmed from two core roots.

The first root was the participants’ ‘intense desire’ (P3-9) for the identified surprise. Such an intense desire could lead the participants to idealise the identified surprise, a phenomenon often encapsulated in the adage that the grass is always greener on the other side. For instance, P3-9’s longing for a skincare serum that she had repeatedly failed to purchase due to its high demand and popularity among beauty bloggers led her to idealise its quality excessively.

The second root was the participants’ lack of adequate knowledge about a given shopping domain. This lack of knowledge could result in participants being unable to interpret even the ‘truthful and objective descriptions’ (P1-3) of the identified surprise that were ‘honestly provided’ (P1-3) by third parties. For instance, due to his unfamiliarity with beauty products, when P1-3 purchased a birthday gift for his girlfriend, he bought a Dior tinted lip balm under the mistaken belief that it was lipstick. The mismatch between the product’s actual attributes and his girlfriend’s expectations of lipstick led to disappointment with the product’s colour payoff.

Due to unrealistic expectations, participants might experience disappointment with their purchases even when the product was of good quality. An example of this is that P4-7 felt let down by a mini adapter because it was larger than expected even though it was of ‘excellent quality and met [his] requirements’ (P4-7).

Notably, the inherent good quality of the products could often offset the initial disappointments the participants perceived when receiving the products. Consequently, participants typically did not categorise these purchases and related serendipitous experiences as bad. For example, despite P4-7’s initial dismay that the mini adapter was larger than expected, he ultimately felt relatively satisfied with the purchase and was happy to use it.

(2) An emotional pleasure that turned out to be fatigue

E-commerce serendipity could afford the participants an emotionally enjoyable experience but at the cost of belated physical and cognitive fatigue. The responsiveness of AI systems to the participants’ behaviours enabled third parties to present a continuous stream of appealing stimuli, fostering an addictive urge for ‘non-stop exploration’ (P3-6). For example, P3-6 found

herself spending three hours on Taobao following an initial encounter with a hairpin. Each time she clicked on a hairpin, the platform recommended more well-designed options that closely matched her aesthetic preferences, making the serendipitous experience ‘incredibly engaging’ (P3-6). This kept P3-6 ‘excited’ and her exploration ongoing (P3-6). However, once she eventually put down her phone, P3-6 became aware of the physical consequences of her extended screen time, experiencing soreness in her wrist and dryness in her eyes.

The delayed perception of fatigue led some participants to temporarily avoid information as they needed some ‘unaffected time to recover’ (P2-1). For example, after a two-hour serendipitous adventure on Xiaohongshu, P2-1 deliberately stopped the push notifications of all shopping apps for a week. P1-1 stopped using Vipshop¹ for three days when she realised that the pain in her wrist could have been caused by her excessive swiping on the app the night before.

After overcoming the fatigue, which ‘is often not a difficult task’ (P1-5), the participants once again found themselves ‘immersed in the interesting stream of shopping-related information and surprising findings’ (P1-5). This cycle further highlighted that experiencing belated fatigue did not have ‘substantial bad impacts’ (P1-5) on the participants; instead, the participants would continue to view their initial serendipitous experience as a good one even though their perception of its goodness might not be as high as immediately after the experience.

(3) A promising shopping experience but with a concealed commercial trap

Sometimes, e-commerce serendipity could also bring ‘substantial tangible benefits’ (P2-10) to the participants, leading them to make an ‘incredibly promising purchase’ (P2-10), such as one that offered ‘an unexpectedly high value for money’ (P2-10). However, such a purchase could later become a source of regret. It might turn out to be a well-disguised commercial trap, leading to an impulsive purchase or a purchase that failed to meet expectations.

By leveraging marketing strategies, multimedia elements, and AI to create ‘an immersive shopping environment’ (P3-6) – one with a reasonable number of carefully designed multimedia elements – third parties were able to envelop the participants in a ‘constant feeling of euphoria’ (P3-7). In such settings, the participants might trust their emotions over logic, only seeking positive information about the store and its products while ignoring negative reviews. Consequently, they could be misled into spending money on products they may never use, succumbing to impulsive purchasing decisions.

¹ Vipshop (唯品会) is a major Chinese e-commerce platform that offers high-quality, popular, branded products at a significant discount compared to the retail price.

For example, P3-7 was enticed to impulsively purchase a lipstick that appeared appealing but turned out to be of poor quality. Notably, this emotion-dominated decision-making also occurred among participants who claimed to be rational. In P4-2's story, she encountered a series of indoor decorations on Taobao that perfectly matched her aesthetic taste, offering her 'royal-like enjoyment' (P4-2). As a result, she bought a vase from an unknown brand, even though she had no interest in flower arranging.

The belated realisation of having fallen into a commercial trap could lead participants to re-interpret the serendipitous experience as a bad serendipity. Moreover, such a belated commercial trap could be followed by participants' temporary avoidance of receiving shopping-related information either because of a 'conscious control of consumption expenses' (P1-4) or because unplanned shopping had already 'used up [their] living expenses' (P1-1).

(4) An attentive service but with concealed malicious manipulation

The darker aspects of e-commerce serendipity can be even more insidious. Leveraging AI, third parties can craft e-commerce serendipity into 'an attentive shopping service' (P2-8), that is, one that seemingly helped the participants consistently purchase cost-effective products. Charmed by the quality of this service, the participants might come to regard third parties as 'trusted advisors' (P2-8) and depend on their recommendations for 'nearly all shopping decisions' (P2-8). This dependence was able to subtly shift the control of shopping choices from the participants to third parties, allowing the latter to manipulate the participants more deeply.

For instance, P2-1 claimed that she had once been stuck on Xiaohongshu for three months, continually browsing and even purchasing 'ugly and expensive' items that she would never have looked at on other platforms. This episode started after she opened a push reminder from the app following the really satisfying purchase of a skirt. P2-8 felt her independent information search skills had 'deteriorated a lot' after a prolonged period of embracing e-commerce serendipity. When she wanted to actively hunt down a pair of good-looking shoes worn by a colleague, she was unable to devise a specific search term.

In short, according to P2-8, some satisfying e-commerce serendipity consists of multiple difficult-to-detect filter bubbles. Having entered such a bubble, participants' preferences can be manipulated without their awareness, causing them to become 'slaves of e-commerce serendipity' (P2-8) and find it impossible to live without the 'wicked aids' (P2-8) of third parties.

4.1.3 Summary

Section 4.1 addressed the first research objective, introducing the participants' perceptions of e-commerce serendipity, which is an artificially facilitated unplanned experience.

Being artificially facilitated means that e-commerce serendipity is rooted in conscious human designs, often those of third parties and participants themselves; meanwhile, the fact it is unplanned means that the course of e-commerce serendipity constantly took dynamic turns beyond the participants' intentions. These turning points might emerge at specific stages of the experiences or persist throughout and were, often pre-set by third parties using AI technologies.

In practice, participants were not only aware of these conscious designs by third parties but often welcomed them. This acceptance stemmed from their understanding that online marketplaces are inherently artificial environments and that AI-facilitated surprises often seem more appealing than routine options. Nevertheless, whether these AI-facilitated surprises ultimately benefitted the participants was, to some extent, determined by their preparedness during the course of serendipitous experiences. Differing levels of preparedness led to dynamic interactions between the participants and third parties, resulting in distinct serendipitous routes with varying outcomes.

The next section explores these varied serendipitous routes in detail, illustrating the multifaceted nature of e-commerce serendipity.

4.2 The serendipitous routes

This section addresses the second research objective of exploring how e-commerce serendipity develops. Based on participants' narratives, e-commerce serendipity can develop through three routes: *coincidence*, *unexpected discovery*, and *encountering*.

These routes differ in terms of the interactions between participants and third parties; the remainder of this section will discuss each, using participants' stories as illustrative examples. All examples were selected because of their rich details, which allow for a better elaboration of the uniqueness of each serendipitous route. A summary of the key similarities and differences between the three serendipitous routes is given in Table 4.1 in Section 4.2.4.

4.2.1 Coincidences

Coincidences, as identified in 7 stories, occurred when participants interacted with 'altruistic' (P3-8) third parties who 'miraculously realised a dream that [participants] thought was impossible to achieve' (P2-4). Through coincidences, third parties could afford participants a 'wish-fulfilling' ride (P2-4), ultimately leading to a good purchase.

4.2.1.1 Overview of coincidences

For participants, the experience of a coincidence often began with the surprising discovery of ‘a dream product’ (P2-4) – a product they ‘were extremely expected’ to purchase but felt they were unlikely to ‘identify the dream product and purchase it’ at that specific time and place (P2-4).

The root of this contradictory mindset among the participants was that, prior to the occurrence of the coincidence, they had made several unsuccessful attempts to obtain the dream product on the same platform. Reasons for these failures varied but could include: (1) the rarity of the product (e.g. P2-7 S3), (2) its overwhelming popularity (e.g. P2-4 S1), or (3) a prohibitively high price (P3-8 S4).

P2-7 S3 – Every *Detective Conan* fan would love to have this ‘Egg of Memories’ figurine, but unfortunately, it is a limited-edition [product], with only a few thousand units released in 1999. So, if I want to get my hands on it now, my only option is to browse through second-hand platforms daily and try my luck.

P2-4 S1 – This pair of yellow Converse Chuck 70s can indeed be described as my dream product! Ever since I spotted O wearing them, I have been drawn to them. The colour combination and the height of the upper align perfectly with my preferences. I am really keen on them. However, perhaps due to O’s influence, these shoes have become extremely difficult to buy, leaving me unable to own them so far.

P3-8 S4 – This massage chair is truly exceptional in every aspect. I have had my eye on it for several weeks. However, with a price tag exceeding 12,000 RMB, it’s somewhat beyond my budget, which has made me hesitant to make the purchase.

Past failures in locating their dream products led to a loss of hope among the participants that resulted in their ‘wavering’ (P1-4) in their pursuit of these products, despite having the time and energy to undertake the pursuit. Nevertheless, the participants’ failed attempts provided insightful opportunities for third parties. Online footprints left by the participants enabled third parties to gain ‘a more direct and accurate’ (P3-8) understanding of their preferences and needs. This deeper insight, in turn, allowed third parties to conduct targeted market searches and create ‘miraculous’ recommendations (P2-4) in facilitating the occurrence of coincidences, that is, good surprises that directed the participants to find the most wanted items at the *most unexpected time and place*. Before the arrival of these good surprises, the participants often had only *faint expectations* of coming across them.

A deep understanding of the participants enabled third parties to ‘accurately predict’ (P3-8) their subsequent movements, allowing them to provide additional miracles and enable *a reward*

cascade through coincidences. Therefore, the participants found that, after embarking on a coincidental route, ‘all [their] shopping requirements could be met’ (P2-7). Even more impressively, third parties would ‘alert [the participants] in a timely fashion’ (P2-4) to more cost-effective shopping opportunities than expected, steering the coincidental journey in a more rewarding direction. The arrival of these ‘additional fortunes’ (P3-9) effectively alleviated any concerns the participants might have had during their shopping experiences, directly encouraging them to make direct purchase decisions.

The pervasive sense of fortune throughout the coincidental process, combined with the strong desire to acquire the dream product, typically led to *an immediate emotional pleasure* after making *a satisfying purchase*. However, this initial positive appraisal did not always persist. When the dream product was received, the level of satisfaction dipped in three out of the seven stories. This decrease was often linked to a disparity between the reality and the expectations, triggered by the participants’ tendency ‘to overly value what they do not have’ (P3-9).

P3-9 S3 – You know, as human beings, we tend to value what we do not have. So, while waiting to acquire this serum, I might have already subconsciously inflated its value. Besides, the entire coincidental process seemed to grant my every wish, inevitably making me feel like I was on top of the world. This feeling further solidified my belief that the value I had subconsciously attributed to the product was its genuine worth.

A decrease in satisfaction, however, did not alter the participants’ perceptions of the coincidences as ‘good [serendipitous] experience[s]’ (P2-2). These perceptions prevailed due to three main factors: (1) first, the participants had indeed fulfilled their shopping desires; (2) second, the root of the unrealistic expectations was the participants’ self-imagination rather than third parties’ persuasion; and (3) third, they had received ‘attentive and prompt service’ (P2-7) throughout the coincidental process.

Despite the possibility of a slight decline in overall satisfaction toward the end of the experience, occurrences of coincidences were found to be the most infrequent. This is because third parties and participants are on opposite sides of the online marketplace; thus, it is relatively rare for third parties to ‘altruistically serve the interests of [participants]’ (P3-8) in the way described above.

4.2.1.2 Example of coincidence

To better illustrate the route of coincidence, the stories told by P1-4 and P3-2 are introduced as exemplifying instances. The former depicted a coincidence that brought immense satisfaction to the participant from start to finish. In contrast, the latter showcased a coincidence

that seemed ‘extremely good’ (P3-2) at the midpoint but in which there was a slight decline in satisfaction at the end.

4.2.1.2.1 The story of P1-4

In this story, a fortuitous coincidence luckily enabled P1-4 to secure the NAKED eyeshadow palette, a ‘discounted’ (P1-4) product she had long coveted. With the attentive services of third parties, the entire process unfolded ‘smoothly and was nearly effortless’ (P1-4), yielding immense satisfaction for P1-4. As a result, she perceived the entire serendipitous experience as exceedingly positive.

Real-time conditions and past experience

I have always cared a great deal about makeup. I would consider myself a beauty product enthusiast, always eager to explore and try out new cosmetic products.

I have a dream product, the first-generation NAKED eyeshadow palette by Urban Decay. I discovered it through a video uploaded by one of my favourite beauty bloggers. The palette’s blend of bold yet subtle colours caught my attention. It perfectly suited my skin tone, and the texture of the powders seemed fantastic, better than those I already have. So, I really wanted to acquire this palette.

However, when I searched for the palette on Taobao, I was disappointed to find out that it had been discontinued and was now extremely difficult to buy.

So, I had been checking Taobao daily for the past three days, hoping to find and buy this hard-to-get item. I used the product name as the search term and searched multiple times. However, my efforts had been fruitless so far. Each time I excitedly clicked on a store selling the NAKED eyeshadow palette, I was only met with disappointment as the first-generation palette that I was looking for was already sold out. I truly felt so disappointed; not being able to get hold of this palette was causing me distress.

Today, even though I thought the chance of finding and buying the palette was extremely slim, I still planned to check Taobao again. This is because the palette is incredibly beautiful, and I really did not want to miss out on it. But I would purchase one of the later versions as an alternative if I still could not find the palette in stock this time. I love this palette, but I also did not want to spend too much time looking for it. So, this would be my last attempt to look for this palette.

In this story, P1-4 spoke of the first-generation NAKED eyeshadow palette as her dream product. To obtain this product, she conducted multiple searches on Taobao. However, because the produce is so rare, she had no success. The repeated failures in her purchasing attempts began to shake P1-4’s resolve to acquire the product. In fact, before the coincidence outlined here occurred, P1-4 only had a faint expectation of finding the eyeshadow palette. Moreover, she was hesitant about spending more of her spare time searching for this specific eyeshadow palette and even planned to purchase an alternative product instead.

Nevertheless, for Taobao, P1-4’s multiple unsuccessful purchasing attempts provided valuable data, enabling the platform to pinpoint her innermost purchasing target – or, in P1-4’s words, ‘to hear [her purchasing] desperation’. The specific search terms she used revealed the range of products in which P1-4 was interested, and the repeated searches demonstrated her strong interest in these types of products. Furthermore, her behaviour of consistently viewing but not

purchasing allowed Taobao to deduce that she was specifically interested in the first generation of the eyeshadow palette.

Notably, insights regarding Taobao's 'behind-the-scenes operations' (P1-4) emerged from a collaborative effort during the follow-up interview with P1-4. This collaboration in the interview process suggests a deep reflection and understanding on P1-4's part, shedding light on how participants perceive the influence of third parties on their serendipitous e-commerce experiences.

Beginning

With this thought in mind, I opened Taobao again.

As soon as I opened it, I was surprised to see that the purchase link for the eyeshadow palette was featured on my homepage. Because I had been looking at the palette for so long, I immediately noticed the link to it when it appeared. Taobao had finally heard my desperation! What a miracle and stroke of good luck!

I could not contain my excitement and immediately clicked on the palette to take a closer look.

Indeed, Taobao's keen ability to hear P1-4's 'desperation' played a crucial role in delivering what seemed a miracle to her, namely, a link to the first-generation eyeshadow palette she had long coveted. Specifically, the link appeared to be *a good surprise that had appeared inadvertently*. It provided P1-4 with the opportunity to finally acquire the product she had been longing for at the very moment that her expectations of finding it were 'extremely slim' (P1-4). That is, P1-4 only had *a faint expectation* for the upcoming coincidence.

Middle

When I clicked on the link, my primary goal was to verify that the vendor was indeed offering the first-generation NAKED palette. After all, I had previously come across numerous vendors who claimed to be offering the first-generation product but were actually offering the second- and third-generation ones, rather than the first-generation one I wanted. I did not want my hopes to be dashed again.

To do so, I adopted a two-step approach. Initially, I meticulously examined the product description, paying close attention to the images of the palette. By referencing the video from the beauty blogger I had seen earlier, I carefully compared the packaging and the shade numbers depicted in the images to tentatively ascertain that it was the first-generation palette. Following this, I reached out to the vendor's customer service. I explicitly asked whether the palette being sold was really the first-generation NAKED palette and received a definitive confirmation in return. This time, I finally managed to find the first-generation NAKED palette, which was such good luck!!

Having verified the version of the product, my next step was to assess the vendor's credibility. It was crucial to me that I purchased a genuine product, not a counterfeit. To assess the vendor's credibility, I looked at the vendor's rating on Taobao and conducted a thorough review of customer feedback. I was lucky again, because the vendor seemed trustworthy.

Feeling confident in the vendor's credibility and fuelled by the great excitement of the moment, I immediately decided to proceed with the purchase! I did not want to miss out on this purchasing opportunity by letting someone else grab it.

Upon embarking on this coincidental route, P1-4 actively scrutinised the identified good surprise by drawing on her accumulated shopping expertise. Her previous experiences of ‘having [her] hopes dashed’ (P1-4) had taught P1-4 the importance of verifying whether the good surprise truly matched her dream product. To carry out this verification, P1-4 utilised her shopping skills, choosing ‘reliable references’ (P1-4) to aid in her assessment.

Luckily, this time, P1-4 found that the coincidence did indeed present a good purchasing opportunity that satisfied all her shopping requirements: Taobao successfully directed her to the appropriate version of her dream product, her dream product was readily available for immediate purchase, and the vendor of the product was deemed trustworthy. This succession of favourable developments triggered a strong sense of ‘fortune’ (P1-4), prompting P1-4’s swift decision to make a purchase.

End

After making up my mind, I wasted no time and excitedly placed my order.

This experience was a coincidence, as what I wished for came true at the right moment. I was super-satisfied with the experience and the purchase, as it effortlessly resolved my longstanding obsession and brought me great happiness.

Upon receiving the palette, I was genuinely delighted with it. The colours exactly matched my tastes and what I saw in the beauty blogger’s video, with no variation. The product also works wonderfully, with excellent colour payoff and no fallout. So, I would say that I am highly content with the coincidence. The timing was good, and it gave me exactly what I had been longing for, rather than random and useless items. I truly feel that Taobao delivered a dedicated and satisfactory service to me on this occasion.

Purchasing the palette and navigating through the entire coincidental experience brought P1-4 immense pleasure and satisfaction. On the one hand, this experience met her longstanding and unmet shopping desires. On the other hand, throughout this experience, P1-4 did not suffer any undue stress; rather, she felt a sense of appreciation for the thoughtful services provided by Taobao.

Remarkably, P1-4’s satisfaction persisted after she received the product. In the follow-up interview, she credited this to the video she had seen earlier, which provided ‘an accurate and unbiased introduction to the eyeshadow palette’ (P1-4). This ‘unbiased introduction’ gave her a clear understanding of the product, minimising any chance of disappointment from potential online-to-reality discrepancies.

4.2.1.2.2 The story of P3-2

In this story, P3-2’s experience of coincidence fortuitously led her to acquire the ‘unique and extremely popular’ hat (P3-2) on which she had missed out during its initial release. This ‘lucky and unforeseen’ purchase (P3-2) initially brought her a wave of immediate gratification. However, upon receiving the hat, P3-2 experienced a slight decrease in satisfaction, which she

attributed to a discrepancy between the reality and her expectations. Having longed for the hat for so long had inadvertently caused P3-2 to have inflated perceptions of its beauty, creating a higher expectation than the hat could realistically meet.

Real-time conditions and past experience

This story took place one Sunday. Since I had nothing else to do, I decided to browse Taobao, as it never fails to present interesting items to me. Also, to 'lend purpose' to my browsing and avoid feeling like I was merely wasting time, I decided to explore the China-chic¹ products. China-chic brands have been gaining immense popularity recently, and I have a significant interest in them. It's fair to say that China-chic products have become my latest shopping obsession.

Among all the new favourites, my attention was drawn to a particular hat launched by G,² which had secured a spot on the top of my wish-list for some time. There were two reasons this hat was at the top of my list.

First, this hat boasts a unique design with a curved brim and a rare powder-purple colour. I have a penchant for such quirky items. Also, the hat was launched by a brand owned by B,³ one of my favourite actors. From design to brand, everything about this hat aligns with my tastes – how could I not buy it!

Second, I had missed the opportunity to purchase it when it was initially released last week. On that day, I even set an alarm to remind me to make that purchase. However, when I quickly opened the link to the hat – I put this hat in my shopping cart when it was at pre-sale stage so I could quickly find it – this hat (except the black version, which I did not like) was sold out. I could not get my hands on this hat because it was extremely popular, and everyone was rushing to purchase it. I was a little disappointed at that time. But, interestingly, the unavailability of the hat also heightened my desire for it, lending it a sense of allure. After all, there's a common notion that we most desire the things we can't obtain are often perceived as the most desirable.

Despite my keen interest in this hat, I only had a slim expectation of finding and securing it during this visit. This was because the product had only been launched recently. I expected a delay before it was re-stocked – maybe I could only get this hat one to two months later as, to my knowledge, the production capacity of these China-chic brands tends to be quite limited.

In this story, P3-2 considered the hat from a China-chic brand to be her dream product. To secure this product, she had pre-emptively placed the hat in her shopping cart before its official release, intending to 'quickly' (P3-2) purchase it as soon as it became available. Yet, despite her thorough preparation, which included setting an alarm as a reminder to make the purchase, P3-2 was unable to acquire the hat because it was 'extremely popular' (P3-2). Her inability to successfully purchase the hat, along with her previous experiences of trying to buy similar products from the China-chic brand, led P3-2 to expect that 'finding and securing' (P3-2) the hat would be possible in the following two months. Consequently, before the coincidence, she only had a *faint expectation* of finding the hat and was primarily visiting Taobao to kill time. Identifying the hat was just an ostensibly reasonable but actually implausible excuse for her to justify 'wasting time' (P3-2) on Taobao.

¹ China-chic brands (国潮品牌) are a category of brands that have gained popularity by blending elements of Chinese culture, aesthetics, or heritage with modern and fashionable designs. These brands aim to showcase China's rich cultural traditions and contemporary influences in their products, catering to both domestic and international markets.

² To protect the privacy of the participant, some specific details of her stories have been redacted.

³ To protect the privacy of the participant, some specific details of her stories have been redacted.

Nevertheless, before the coincidence, Taobao and the hat vendor had both had the chance to develop a comprehensive understanding of P3-2's fondness for the hat. Taobao could ascertain P3-2's specific liking for the hat, including her preferred style, by analysing the history of her shopping cart and online footprints. Meanwhile, the hat vendor could recognise the intense demand among consumers, including P3-2, as evidenced by their 'rush to purchase it' (P3-2). Equipped with this insight, Taobao became more vigilant about updating information related to the hat, possibly alerting P3-2 to its availability. Simultaneously, the vendor might have taken steps to expedite the restocking of the hat to meet the high market demand.

Notably, this understanding on the part of Taobao as well as the vendor's behind-the-scenes actions were deduced in collaboration with P3-2 in the follow-up interview.

Beginning

Surprisingly, the moment I opened the Taobao app, I was instantly greeted by the G hat on my homepage. What a coincidence! It seemed like Taobao knew exactly what would attract me most!

The probable reason for Taobao's familiarity with my wish-list could be that, ever since the day I missed the opportunity to acquire the hat, I had been checking Taobao for several days to see whether the hat had been restocked.

Even more excitingly, I noticed that this hat was featured under the 'Summer Renewal' discount event section, indicating a potential promotion – Wow, I am so lucky! Also, I am soooooooooooooooooo happy! I knew about the event, but I did not think it would start at that time or that the hat would be one of the promoted products. Thank you so much, Taobao, you are my best and trusted friend! You enabled me to reunite with the hat! Also, thank you so much, G, you knew that your consumers like this hat so much!

Therefore, I immediately clicked on the 'Summer Renewal' discount event to see just how much of a discount would be applied to this hat.

Taobao's and the hat vendor's understandings of 'what can attract [P3-2] most' (P3-2) facilitated the occurrence of this coincidence, which emerged as *a good surprise that appeared inadvertently*. Through this serendipitous event, P3-2 happily reconnected with the hat she had long desired sooner than she had expected finding it.

In addition to reuniting P3-2 with the hat, the coincidence directed P3-2 to an inadvertent meeting with a potential promotion event for the hat with which P3-2 was familiar but which she had not expected to 'start at [that] time' (P3-2). Being able to participate in the promotion event, in turn, added an extra layer of 'luckiness' (P3-2) to the coincidence.

Middle

Upon reaching the event page, I promptly found the link to the hat, as it was positioned at the top, and clicked on it. The link redirected me to G's official store. I ascertained this was G's official store because there are two small characters, TMall,¹ next to the link. In my experience, only the official store can add the TMall label.

Because it is an official store, the items had to be authentic, so all I had to do was confirm whether the purple hat I wanted was in stock. To my delight, it was in stock, bringing me a wave of happiness!

While I was thrilled, I did not rush to place an order. After all, I am a sophisticated consumer with ample shopping skills, and I was not going to be fooled by Taobao. If there was a promotion for this hat, as Taobao claimed, I was determined to get it at that discounted price. Otherwise, I would hold off on the purchase.

Motivated by this thought, I began to check the price of the hat. To my disappointment, it seemed as if there was no discount – it had been 139RMB previously, and it was still being sold at that price. This realisation made me feel somewhat disappointed.

Despite this disappointment, my fondness for the hat prevailed, prompting me to reach out to customer services (according to my experience, customer services often know where to get the discount) and give the hat a fighting chance to be mine. Surprisingly, a dialogue box popped up automatically when I clicked on the customer service window, offering a link to exclusive coupons for the 'Summer Renewal' discount event. What a coincidence and stroke of good luck again– it was precisely what I was hoping for! Without hesitation, I clicked on the link.

Upon clicking on the link to the discount event, I discovered that participation was exclusive to store members. With membership, the hat was priced at 119RMB – a deal I would not be willing to pass up. Undoubtedly, I would become a member and get this discount!

However, when I was about to become a member, I came across another bad situation. That is, becoming a member required me to give the store the authority to access all my personal information on Taobao. Trading my privacy for a mere 20RMB discount? Absolutely not! So, at that moment, I found myself hesitant once again about whether to proceed with the purchase.

Surprisingly, perhaps because I had been on the membership page for such a long time, one customer service representative reached out with a message, saying, 'Dear [Customer], upon becoming a member of our store, you can instantly enjoy another 30RMB coupon'. This revelation certainly lifted my spirits! Another stroke of good luck! After all, a total discount of 50RMB on the hat seemed like a rather cost-effective deal. So, swayed by the potential savings, I decided to become a store member after all.

Upon embarking on the route that this coincidence had opened up, P3-2's shopping expertise became instrumental. Drawing on her past experience, P3-2 confirmed that the good surprise she had stumbled upon was indeed her dream product. This confirmation added an additional sense of 'thrill' to the coincidence (P3-2). However, despite this thrill, P3-2, being 'a sophisticated consumer with ample shopping skills' (P3-2), did not rush into the purchase and opted to conduct a thorough check to ascertain whether Taobao was genuinely offering the discount implied at the beginning of the coincidence.

¹ On Taobao, consumers can choose from two primary types of stores: (1) TMall official stores (天猫旗舰店): directly affiliated with reputable brands, these stores offer authentic products and higher trust levels but often at a premium price; and (2) agent stores: these independent sellers provide more affordable options, albeit with varying degrees of product authenticity and quality.

This check, however, led to a slight disappointment for P3-2: the hat was not available at the expected discount. Yet, her sophistication as a consumer and fondness for the hat prevented P3-2 from being deterred by this setback, and she soon found a way to resolve her concerns.

As P3-2 was actively resolving her concerns, the vendor's customer service team gradually became involved. By 'intelligently' (P3-2) tracing and analysing P3-2's behaviour, the team identified the factors that had caused P3-2's purchase hesitation. In response, the team introduced two instances of 'additional good luck' (P3-2). Each instance served as a good surprise that appeared inadvertently, reigniting P3-2's desire to make a purchase just when she was on the verge of giving up. These additional surprises, which shifted the route of the coincidence in a more rewarding direction, leading P3-2 to a *reward cascade* and ultimately facilitating P3-2's final decision to proceed with the purchase.

End

After securing the coupon, I completed the purchase immediately.

I was extremely satisfied with this coincidence. It was extremely good! On the one hand, I got the hat I wanted at nearly half the price, making it a great deal. On the other hand, this time the trade-off for my privacy brought tangible benefits, unlike previous instances where my privacy might have been compromised without any return. All in all, this coincidence was just great.

I finally received the hat. While it was decent, it did not entirely meet my expectations. The shade of purple was darker than I had envisioned. I had expected a taro purple, but it seemed more akin to a royal purple. This may be because I idealised it too much while waiting for it.

The deviation in colour left me somewhat discontented, yet I could not deem the hat a bad or an unsatisfactory product. Actually, wearing the hat proved to be very comfortable, and it had aesthetic appeal, as purple is a relatively rare and unique colour. To be honest, I love this hat.

Furthermore, this disappointment was not due to deception by Taobao or G; they actually helped me a lot by offering me the chance to buy the hat at a reasonable price. This disappointment was mainly rooted in my idealisation of the hat, so I thought there was no need to blame Taobao or G for this experience.

So, overall, despite minor disappointments, the coincidental experience and purchase remained above my threshold of satisfaction. This experience was still good.

Purchasing the hat immediately brought P3-2 a great deal of pleasure and satisfaction, as she had obtained the desired product at a reasonable cost and with high value for money. However, this high level of satisfaction did not last when she received the product. When it arrived, P3-2 realised that the colour of the hat differed from her expectations, which caused her to feel somewhat disappointed. However, this feeling of disappointment did not lead P3-2 to regard the coincidence and subsequent purchase as a bad serendipity. According to P3-2, the hat's aesthetic design was still beautiful and it was 'very comfortable' to wear (P3-2), which contributed to her overall satisfaction with the product. Moreover, P3-2 did not feel deceived by Taobao or the vendor during the coincidental experience. Instead, she felt assisted by both parties, which positively influenced her perception of the entire coincidence.

4.2.2 Unexpected discoveries

Unexpected discoveries, as identified in 11 stories, occurred when the participants interacted with ‘knowledgeable’ (P1-2) third parties that introduced them to surprise findings they had ‘never heard of before’ (P3-7). During unexpected discoveries, third parties could afford participants a learning cycle, ultimately enhancing the participants’ knowledge.

4.2.2.1 Differences and similarities between coincidences and unexpected discoveries

Compared with a coincidence, an unexpected discovery has the following three distinct features:

- 1) First, although it is termed unexpected, participants often had mild expectation of its occurrence. In contrast, participants’ expectations that a coincidence would happen were usually faint.
- 2) Second, the good surprise in an unexpected discovery was notable for its novel content, which often significantly expanded or subverted the participants’ current knowledge. In contrast, the good surprise in a coincidence typically involved familiar content but ‘astonished’ (P1-3) the participants due to its inadvertent appearance.
- 3) Third, due to the rapid iteration of online information, coupled with the capability of third parties to capture and recommend the latest changes, the participants often experienced unexpected discoveries more frequently than coincidences.

Despite these differences, unexpected discoveries shared similarities with coincidences:

- 1) First, the surprises identified via both routes were often relevant to the participants’ established preferences and concerns. This relevance ensured that the identified surprises could be ‘directly applicable and meaningful’ (P4-1) to the participants, enticing participants to change their plans to embrace them.
- 2) Second, both could lead to a redirected and exciting exploration. However, for the participants, an unexpected discovery usually afforded a learning cycle, while a coincidence typically afforded a reward cascade.
- 3) Third, both could result in the same immediate good outcome, that is, a satisfying purchase and an emotional pleasure. However, beyond the purchase, an unexpected discovery could also contribute to the consumer’s knowledge, and this slight gain in knowledge might contain hidden insights.
- 4) Fourth, both unexpected discoveries and coincidences could eventually lead the participants to discover hidden downsides in what they initially perceived as immediate

satisfaction. These hidden downsides were usually a result of the participants' personal oversight. However, these downsides did not change the participants' overall perception of coincidences and unexpected discoveries as types of good serendipity; they merely reduced the participants' satisfaction levels with the experiences. The personal oversight leading to decreased satisfaction with an unexpected discovery often stemmed from the participants' unfamiliarity with a specific shopping domain. In contrast, the oversight that diminished their satisfaction with coincidences was typically rooted in their intense desire for a dream product.

The following sections will delve further into the nuances of unexpected discovery, aiming to illustrate its uniqueness better.

4.2.2.2 Overview of unexpected discoveries

For the participants, the experience of an unexpected discovery often began with a good surprise that introduced *novel content(s)* that entirely 'disrupted [their] existing knowledge' (P1-2) or 'expanded [their] knowledge scope' (P2-10).

P1-2 S2 – While I was engrossed in ZR's¹ live-streaming show, a barrage of real-time consumer comments flooded in, all echoing the same sentiment: 'ZR, you are brave enough to conduct this live-streaming show, but why not address allegations of selling counterfeit products?' This sudden influx of comments was in stark contrast with my perception of ZR. In my mind, she has always been genuine – selling items of good quality, although not the most affordable. Why did these real-time comments paint a different picture of the ZR I thought I knew?

P2-10 S2 – I initially believed that the best gifts for my boss were limited to typical items suited for middle-aged individuals, like tea or silk scarves. But to my surprise, I discovered that probably sending a gift for her directly was a the most ordinary or probably a risky idea, as it can make my colleagues feel that I am bribing to my boss. The best choice I could consider might be selecting gifts for her children. This revelation was enlightening. It made me realise there are so many facets to gift-giving I had not considered before.

The awareness of the novel surprises can be traced back to three roots: (1) The first root was the participants' 'sustained engagement' (P3-3) in the 'domain' (P4-2) – that is, the shopping sector where the surprise originated. This ongoing engagement led participants to believe that items within this domain were both 'appealing and relevant to [their] everyday lives' (P3-3), making them more 'curious about' (P3-3) new developments within this area. Moreover, participants' ongoing engagement in a given domain provided valuable insights for third parties about the participants' distinct interests and existing levels of knowledge in that area. Equipped

¹ To protect the privacy of the participant, some specific details of her stories have been redacted.

with this information, third parties were able to formulate more strategic recommendations, directing participants toward content within the domain that was new to them.

(2) The second root was the ‘trust’ (P3-3) that participants had developed for third parties who provided the surprise. This trust was essential; without it, even ‘an extremely insightful’ (P3-8) novel surprise might not have motivated the participants to embrace it. As, in the commercial world, ‘novelty often means risk’ (P4-2), the so-called new product or service recommendations could be commercial traps that third parties set for ‘deceptive purposes’ (P4-2), particularly because ‘a lack of knowledge in a particular area can make [participants] more vulnerable to deception’ (P3-3). If the participants could not be certain of the reliability of these third parties, they were unlikely to ‘gamble [their] time and effort’ (P2-10) on something that might benefit the third parties at their own expense.

(3) The third root was the ample spare time and effort that participants had at their disposal. Exploring the unfamiliar could indeed be ‘time-consuming and effort-intensive’ (P2-10). Without sufficient time and energy, participants would find it challenging to delve into uncharted territory.

When they were in environments curated by trusted third parties and had ample time, the participants often expected to come across something interesting. The reasons for this mindset were twofold: (1) First, the participants ‘wanted something interesting to spend time engagingly’ (P3-3); (2) Second, they believed these trusted third parties ‘understand what [they] are interested in’ (P3-6) and, in turn, ‘could present [them] with compelling contents’ (P4-2). In other words, the participants had *a mild expectation* that the so-called unexpected discovery would occur.

P3-6 S3 – The day was Sunday; there was no work to be done. I simply wanted to pass the time. Thus, I planned to casually browse through Weibo or WeChat. I chose these two platforms because they are the ones I use most frequently and my favourites; they know what I am interested in. So, browsing these two platforms would hopefully lead me to discover something engaging, which would be a good way to while away the time. Of course, it was fine if I did not come across anything particularly interesting, as exciting things do not happen every day. Besides, at this moment, I just wanted to relax and did not intend to actively search for intriguing content. So, I had some hope, but not a great hope, of finding something interesting.

Having ample time also allowed participants to explore ‘everything [they] found’ (P3-6) carefully and in detail. Thus, once they had embarked on the route of unexpected discovery, participants went beyond merely reviewing the content of the identified surprises. They sought additional information to corroborate and enrich their understanding of the ‘novel contents identified’ (P3-3).

Moreover, the participants' detailed investigations communicated their 'strong commitment to learning' to third parties (P3-8). In response, third parties tended to provide the participants with related and 'even more novel additional surprises' (P3-8), further enriching the participants' explorations. Nevertheless, the decision to continue embracing these new surprises and engaging in a learning cycle remained in the hands of the participants – after all, 'shopping or everyday life does not necessarily need novelty to progress' (P2-10). In the context of shopping, the participants may not always have had a strong desire for knowledge acquisition. Their engagement with the learning process may have varied based on their real-time status, which was affected by the real-time conditions surrounding them.

Once participants opted to engage with the *learning cycle* – that is, to continuously discover and explore unfamiliar information – their serendipitous experiences often extended beyond the confines of shopping, as 'every activity in life is interconnected' (P4-2). This interconnectivity meant that a shopping-related discovery could evolve into valuable insights applicable to other areas of their lives, such as their professional work and social interactions. Even if participants chose not to engage in the full learning cycle, the thorough and proactive exploration of the identified novel surprises could still enable an 'enhancement in [their] current understanding about a given shopping field' (P3-8). The knowledge gained from unexpected discoveries could often direct participants to three distinct outcomes:

- 1) First, the newly acquired knowledge served merely as *a slight enhancement in their shopping expertise* (5 out of 11 stories). This 'minor increase in shopping expertise' (P1-2) might guide the participants toward more reasonable shopping choices in the future. However, the minor knowledge enhancement might also gradually fade from the participants' memory, leaving only the memory of the pleasure of learning about it.
- 2) Second, the knowledge could directly convert into practical benefits, leading to *immediate emotional pleasure* and *a satisfying purchase* (3 out of 11 stories). This satisfaction might, however, decrease over time (2 out of 3 stories). The *decrease in satisfaction* was often due to the participants 'not fully understanding the newly acquired knowledge' (P3-7), which led to unrealistic expectations about the benefits of their purchases. Despite this, because the participants approached these surprises with caution during the middle stage of an unexpected discovery, even 'the disappointing discoveries' (P3-6) could still yield some 'slight gains' (P3-6). These slight gains, in turn, made participants perceive the unexpected discoveries as ultimately good serendipity.
- 3) Third, other pieces of gained knowledge might take time to fully manifest their value (3 out of 11 stories). As time progressed, the knowledge acquired from such unexpected discoveries, whether focused specifically on shopping or encompassing broader topics, had the potential to incubate *hidden insight*. Thus, over time, these insights could evolve

into even ‘more valuable insights’ (P4-2).

4.2.2.3 Examples of unexpected discovery

To better illustrate the unexpected discovery route, the stories told by P4-2 and P3-7 will be introduced as exemplifying instances. In the case of P4-2, an unexpected discovery overturned the participant’s existing beliefs, impacting both her shopping and professional realms. In the case of P3-7, on the other hand, the unexpected discovery only broadened the participant’s existing knowledge within the realm of shopping.

4.2.2.3.1 The story of P4-2

In this story, an unexpected discovery raised P4-2’s concern about the quality of a designer-brand sofa. What she had previously regarded as a ‘perfect’ (P4-2) type of sofa was revealed to have ‘fatal flaws’ (P4-2). This new insight was crucial in helping P4-2 make a more informed and thoughtful decision regarding her sofa selection. Also, this new insight led P4-2 to reassess her responsibilities and perspectives as a designer, encouraging her to contemplate her professional ethos and practice more deeply.

Real-time conditions and past experience

Having recently finished the structural aspect of decorating my new home, I was gearing up for the final touches with inner furnishings. At the weekend, I set everything else aside to devote myself entirely to furniture hunting.

My background in design has made me discerning when it comes to furniture choices. I only admire and explore the products that stand out in terms of design aesthetics and exhibit impeccable craftsmanship. So, when purchasing furniture, I will only gravitate toward furniture from designer brands. These are the only perfect types of furniture, in my opinion, and they are the only types of furniture for which I have frequently searched and constantly followed up for updates online.

To find the ideal designer furniture, I planned to start my search on Xiaohongshu. In my experience, the platform boasts a collection of the most unique, niche, and unconventional items. I trusted this platform to have good taste in fashion and design-related things. Xiaohongshu would not select rustic products, like Taobao does. So, starting my search from this platform was a good choice.

With the plan in mind, I opened Xiaohongshu and began my search for sofas. I chose to start with the sofa because I believe it lays the foundation for a home’s inner decor and sets the ambience for other furnishings.

Since I trusted Xiaohongshu’s taste in selecting suitable furniture, including even some designer brands that I had not heard of, I used the simple search term ‘Sofas’. Just as I had imagined, even with this loosely structured search, Xiaohongshu presented a range of unique designer sofas.

Then, I meticulously went through them, hoping to find some extremely niche and unique designs. I just want my home to be special and different from others’ homes. When exploring the search results, I primarily focused on the main image. I delved deeper into the details only if the primary photo appealed to me – that is, only when I spotted unique designs in the main image. After exploring like this for an hour, I shortlisted three sofas that piqued my interest, saving them to my Xiaohongshu favourites and regarding them as my purchasing alternatives.

Before she made an unexpected discovery, P4-2, due to her professional identity as a designer, had developed a strong admiration for furniture from designer brands. This admiration was not transient; it was a consistent part of her approach to selecting furniture as she focused

exclusively on pieces from these designer brands and also ‘constantly’ (P4-2) followed trends and updates from these brands.

Therefore, when it came to selecting furniture for her own use in her spare time, P4-2’s focus was exclusively on pieces from these sought-after designer brands. Neither was her choice of platforms to assist in this selection random; instead, P4-2 relied on the platform she had long observed and trusted for its ‘good taste in fashion and design-related issues’ (P4-2). This trust in the platform’s taste meant P4-2 did not feel the need to input detailed keywords. Instead, she provided only rough guidance, expecting the platform to utilise its capabilities to help her discover the surprises she desired.

Beginning

Just as I marvelled at how well Xiaohongshu understood my tastes, showcasing designs I loved, a surprising and even shocking outlier swiftly caught my eye in the flow of information. It was a post titled ‘Designer-brand sofas – a blight on home décor’.

The content of this title, which starkly contrasted with my understanding of designer sofas, snagged my attention.

Strangely, even though I was a bit shocked and slightly unhappy when I first saw this post, those negative feelings quickly faded.

Instead, I became intrigued by and curious about the post. This unusual interest stemmed from my deep love for designer brands. I wanted to investigate the post, identify any flaws, and, ultimately, defend my passion by demonstrating that designer brands were the best.

So, without only a little hesitation, I made the choice to shift my focus and delve into this intriguing post.

As a trusted platform, Xiaohongshu did indeed meet P4-2’s *mild expectations* by recommending posts she ‘had never heard of’ (P4-2). Despite this alignment with her expectations, P4-2 still experienced surprise and shock due to Xiaohongshu’s recommendations. The content of one post, in particular, ‘starkly contrasted’ (P4-2) with her preconceived notions about designer-brand furniture, causing her initial shock and a degree of ‘unhappiness’ (P4-2).

Faced with this unexpected discovery, P4-2 faced ‘hesitation’ about making a decision: whether to embrace or disregard this somewhat interesting yet unsettling surprise. Ultimately, her ‘strong love’ (P4-2) for designer-brand furniture motivated P4-2 to confront the surprise. This deep affection led her to thoroughly examine the post to find, seeking to identify any potential flaws. Her motivation was not only to satisfy her curiosity but also to defend the reputation of these designer brands and reinforce her belief that these brands were ‘the best’ (P4-2).

Middle

After opening the post, I read it line by line, with adequate caution – because, at this time, I was still sceptical about its content [and thought] I was bound to find the flaws in the post and prove my original thoughts were correct.

But surprisingly, after reading carefully, I was convinced by the post’s views.

Specifically, the author of the post firmly stated that designer sofas are simply garbage and not worth purchasing, as these sofas often prioritise aesthetics over comfort, rendering them unsuitable for prolonged sitting. The author’s views were bolstered by market research and data, lending credibility to his stance.

Even though I found the author’s perspective credible and somewhat persuasive, I was hesitant to embrace it fully as, in my experience, such posts often amplify their viewpoints to attract more attention. The new and strange viewpoints it contained might be fake.

To reinforce my confidence about buying designer sofas, I revisited my Xiaohongshu favourites and identified the three sofas I had shortlisted. I then searched for these products on Taobao by copying their names. Once there, I delved into the consumer reviews to gauge whether other consumers shared my positive sentiments about these sofas and whether the positives overshadowed the negatives.

To my surprise, the customer feedback (I used to not review any customer feedback during shopping, as I wanted to make my own and uninfluenced choice) was a slap in the face. The customer reviews revealed that nearly all the sofas I had selected had comfort issues – particularly for those who, like my husband, enjoyed lounging on them.

The backrest of one sofa was too high and rigid, making it uncomfortable to rest one’s head when lying down. Another innovative but impractical feature was the hole in the seat, leading to insufficient support for the buttocks and waist when one reclines. The other sofa was designed with sharp angles, rendering it unsuitable for relaxed lounging.

This evaluation further authenticated the post’s argument and made me recognise the myopia of my previous mindset. I had been exclusively concentrating on aesthetic beauty, neglecting the crucial aspect of practical usage.

As a result, I decided to re-evaluate my sofa selection and opted to discard my initially selected sofas.

Upon embarking on the route opened up by this unexpected discovery, P4-2 approached the identified surprise with a mix of ‘scepticism’ (P4-2) and caution. Although the arguments presented in the surprise appeared ‘persuasive’ (P4-2), she did not immediately take them at face value. Her past shopping experiences had taught her that posts with a strange nature often harbour ‘fake’ information (P4-2). Consequently, P4-2 relied on her shopping skills to select appropriate references to validate the reliability of the novel arguments presented in the post, including even some skills that she had previously not used. This process was not just about fact-checking; it involved P4-2 actively reflecting on the information at hand.

Through a thorough cross-platform verification, P4-2 eventually became convinced of the reliability of the novel argument. This realisation led her to acknowledge ‘the myopia’ (P4-2) of her previous mindset, which, in turn, prompted her to abandon her original shopping plan.

End

Taking a step back from my discovery, I removed all three sofas from my Xiaohongshu favourites and decided to leave Xiaohongshu to take a breather, thinking it best to regroup and process my thoughts.

Also, I chose not to save the post as I had already retained its most critical point, so keeping it was unnecessary.

This experience was an unexpected discovery for me, revealing something previously unknown within a realm that I believed I had comprehended thoroughly. Also, the fresh insights I gained overturned my initial immature beliefs. I could now more objectively evaluate all types of furniture.

Reflecting on this unexpected discovery, I deemed it a positive and good experience even though, because of this discovery, I had to remove the carefully chosen sofas, resulting in a loss of time and effort.

However, through these small losses, I became aware of the shortcomings of my previous shopping knowledge. They served as a wake-up call, prompting me to reassess my shopping mindset and preventing me from incurring more significant losses in the future.

Considering the long-term value of this experience, I found it both meaningful and satisfying.

Even though I have not yet purchased a sofa, the post and this experience have been tremendously valuable. The cognitive shift it brought about has even positively influenced my work.

As a designer, it is common for me to concentrate on creating innovative and unique designs. However, this experience has made me realise the importance of prioritising practicality. From this experience, I have realised that there is always a gap between designers' visions and users' perspectives. While as designers, we must prioritise users' perspectives, the users are the ultimate owners of the product, and the designed products should fulfil the practical requirements of their owners rather than exclusively catering to the tastes of designers.

Given the abovementioned considerations, this experience was decidedly positive and fantastic.

The shift in P4-2's 'immature' shopping beliefs and plans (P4-2) allowed her to approach subsequent furniture purchases with a 'more objective' mindset (P4-2). This shift in perspective effectively helped her avoid potential shopping mistakes, making P4-2 pleased and satisfied with the novel post and the entirely unexpected discovery journey.

Moreover, the content of the novel post was not just relevant to P4-2's shopping; it deeply resonated with her profession as a designer. Reflecting on this unexpected discovery, P4-2 came to appreciate the hidden insight and broader value of her experience, which went beyond acquiring shopping-related knowledge and touched on profound aspects of design philosophy. Realising this, P4-2 found the experience of unexpected discovery rewarding and even 'fantastic' (P4-2).

4.2.2.3.2 The story of P3-7

In this story, an unexpected discovery led P3-7 to uncover an unexpected method of easy weight loss, ultimately prompting her to purchase a weight loss product that met her needs.

Real-time conditions and past experience

The experience took place during the lunch break, the time when I usually dedicate myself to relaxing after a challenging morning of work.

This time, after finishing two news reports, I felt that I did not have the capacity to engage in any activities that required mental effort. So, I selected Weibo as a means of relaxation, hoping to stumble upon something interesting and even unusual. I chose Weibo because I enjoy using it; it provides a wide range of information and the latest news, making it a good app for passing the time.

Having opened Weibo, I aimlessly clicked on The Weibo Trending Topics¹ that seemed interesting and read a few posts relating to them. It was a mindless process that did not require much mental effort.

After roughly 20 minutes of scrolling through Weibo without finding anything particularly interesting, I chose to set my phone aside and have a short nap. Given that I only had an hour's lunch break, I did not want to spend it all on uninteresting content.

Prior to the unexpected discovery, P3-7 was enjoying a break at work that gave her the chance to 'aimlessly' browse Weibo, an app she 'enjoyed' using (P3-7). During this casual browsing session, P3-7 had a *mild expectation* of coming across something 'interesting and even unusual' (P4-7). It was precisely this relaxed approach to browsing and open mindset that paved the way for the subsequent unexpected discovery.

Beginning

However, just as I was about to close the app, a tailored notification from Weibo promptly caught my attention.

The notification highlighted a post about an unheard Magic and Quick Leg Slimming Device – the Ohyamashiki Body Make Pad. Maybe I have searched for weight loss products on Weibo frequently, so this time this app recommended this product to me.

And this time, this post immediately caught my interest for two reasons. First, slimming down, particularly rapid weight loss, has become my priority. After all, I put on 10 kg during lockdown. I have always been inclined toward any product promoting weight loss. Therefore, spotting the keywords 'Quick Leg Slimming' was especially thrilling and exciting for me.

Second, I had never heard of this product before, which sparked my curiosity to explore further. To me, the unknown always holds a certain allure, and anything intriguing invariably ignites my curiosity.

Despite my excitement and curiosity about this new discovery, memories of past disappointments with unknown slimming products made me cautious. I had previously come across products that promised much but delivered extremely little. Hence, confronted with this new product, I resolved to be extremely cautious and not take every piece of information from the vendor at face value – even if that information seemed entirely credible.

With this cautiousness in mind, I clicked on the link to the post.

In this story, the most direct trigger of the unexpected discovery was P3-7's long-term interest in weight loss products. Her focus on this type of product led her to notice Weibo's 'tailored' (P3-7) recommendation just as she was about to close the app. The reason this attention-drawing recommendation appeared can be traced back to Weibo's analysis of P3-7's 'frequent' (P3-7) searches related to weight loss.

The happy surprise P3-7 discovered broadened her understanding of weight loss products, as it was a product she had 'never heard of before'. Identifying something unfamiliar in a familiar domain sparked P3-7's curiosity about the identified product, motivating her to explore it further.

¹ The Weibo Trending Topics (微博热搜榜) refers to the list of the most popular and trending topics on the Chinese social media platform Weibo. The ranking is based on the frequency and popularity of keywords, hashtags, and discussions that are being widely shared and talked about on the platform at a given time.

Middle

Upon clicking on the post, I carefully read its entire content and discovered that the slimming principle of this body pad was something I had never heard of before.

The post pointed out that the thickness of the legs might be due to weak big toes. If your big toes are weak, your legs must work harder to maintain balance and stability when walking. This increased strain can make the leg muscles bulkier. Hence, addressing the underlying issue of the weak big toe is necessary as even activities like running can exacerbate the problem.

And the body pad itself provides a simple solution to this problem. If you wear the body pad on your feet, its ergonomic design ensures that your big toe is held firmly and stays in close contact with the ground.

When I had grasped the principle behind leg slimming and the product's design, I was somewhat sceptical. After all, this theory of slimming was entirely new to me.

To validate the theory, I decided to test it out for myself. I took advantage of the quiet office atmosphere during lunchtime to stand up and walk a few paces. To my astonishment, I observed that my big toe did indeed seem to lift while walking, just as the theory had proposed. This quick test boosted my confidence in the theory's authenticity.

However, while I had verified the underlying principle, I remained doubtful about the actual efficacy of the product. I decided to look into customer reviews to gather more perspectives.

I then turned to Taobao, keen on finding customer reviews of the body pad. Inputting the product's name into the search bar, I came across the brand's official store and several agent stores selling the same item. To get a comprehensive view of the reviews, I chose the store with the highest sales volume (an agent store). I reasoned that a higher sales figure would provide a broader range of feedback, offering a more diverse understanding of the product's quality.

Upon entering the store, I delved straight into the customer reviews. I carefully went through all 50 or so comments. What stood out was the predominantly positive feedback regarding the Body Make Pad. Even the negative reviews often mentioned that the perceived ineffectiveness was linked to inconsistent usage, rather than an inherent fault with the product.

With this in mind, I started considering purchasing the body pad.

Eager to further validate the product's claims, I roped in my closest colleague, urging her to join me in a more thorough test of the leg-slimming method touted by the Body Make Pad.

For this test, which was a more extensive evaluation than my earlier experiment, we both slipped off our shoes and socks to closely observe our walking patterns, even recording videos to scrutinise our steps in detail.

The results were illuminating. The video provided a clear visual demonstration of our respective walking styles. It was evident that my big toes barely grazed the ground when I walked. In stark contrast, my colleague, whose legs were slimmer, had her big toes firmly planted with each step.

This striking difference bolstered my belief and confidence in the scientific rationale behind the product's leg-slimming method. It made my decision (a rational decision) clear: I resolved to buy the Body Make Pad.

I chose to purchase from the store with the highest sales volume, reasoning that so many consumers cannot be wrong in trusting it.

Upon embarking on the route of unexpected discovery, P3-7, though 'excited' (P3-7), still exercised caution due to past experiences where she had been misled by products claiming to be effective but proving otherwise. Her prior disappointments made her vigilant in this new venture.

She did not depend on only one source to verify the claimed benefits of the identified surprise. Instead, she consulted various credible resources, including customer reviews on Taobao and

colleague feedback. Moreover, P3-7 even self-tested the reliability of the product designer's claim. This careful and discerning approach allowed her to confidently assess the product's true value, leading to her informed decision to purchase it. The spare time she had, particularly during her lunch break, was pivotal in allowing her to conduct such a thorough examination. Without this free time, such an extensive investigation would not have been feasible.

End

With the decision made, I proceeded to make the purchase.

For me, this experience was an unexpected discovery that introduced me to a previously unheard-of product and presented new possibilities for weight loss.

And I thought this experience of unexpected discovery was both surprising and fascinating. The product that I discovered during this experience perfectly catered to my long-term desire to lose weight. Also, compared with the previous solutions I was familiar with, this newly discovered product appeared to be more efficient and effective – after all, it seemed to address the root cause of having thick legs, and it promised to slim down my legs rapidly!

Also, when I placed my order, the vendor gave me a free gift – a tube of toothpaste that I had been wanting to try for a while (see Figure 4.1). This further added to my satisfaction with this experience. This experience was fantastic!



Figure 4.1 The order placed by P3-7¹

I have received the Body Make Pad and have been using it for about ten days now. To be honest, my feelings are somewhat mixed.

While the pad has definitely improved the contact of my big toes with the ground when I walk and is comfortable to wear, I have not noticed any significant slimming effects on my legs, which is a bit disappointing given its 'rapid slimming' claim. Perhaps this disappointment emerged because of my fault. I did not hear about this product before, so, my understanding of 'rapid slimming' may be too superficial.

But apart from this less-than-expected slimming speed, I would still say that the body pad did prove the other functions it claimed, so, I would say I have still learnt some new things. And so, at this stage, I would still say that this unexpected discovery is positive and has left me satisfied.

P3-7 felt a surge of pleasure and satisfaction after purchasing the Body Make Pad, believing she had found a more effective slimming tool than any she had known. This initial satisfaction was amplified when the vendor included a quality toothpaste as a gift, leading her to evaluate her unexpected discovery as 'fantastic' (P3-7).

However, her satisfaction level decreased once she received and tried the pad. Contrary to her anticipations, the Body Make Pad did not bring about rapid weight loss around her legs. The

¹ P3-7 granted their informed consent to display this picture here.

gap between reality and P3-7's anticipation might be due to her lack of familiarity with such products, and this unfamiliarity with such products likely led to overestimated expectations, resulting in disappointment.

Despite this change in her level of satisfaction, P3-7 did not perceive the discovery or purchase as entirely bad. Although the Body Make Pad did not meet her initial expectations, it did fulfil its claimed function of improving the contact of her big toe with the ground. Thus, P3-7 still viewed the unexpected discovery as a good serendipity, appreciating the new perspective on weight loss it offered.

4.2.3 Encounters

Encounters, as identified in 105 stories, occurred when the participants interacted with third parties who recommended surprises that 'stand out in the context' (P3-3). These surprises were often recommended 'for clear commercial intent' (P3-9). Thus, for the participants, experiencing encountering was like 'a tug of war' (P4-7) where they and third parties 'jostle' (P4-7) for individual benefits. This interaction dynamic led to varied outcomes, whereby the participants might have either benefitted or lost from the experience of encountering.

4.2.3.1 Difference and similarities between the three routes

Encountering shared similarities with both coincidences and unexpected discoveries in several aspects.

- 1) First, the participants' expectations that encountering would happen could be mild, similar to their expectations of experiencing an unexpected discovery.
- 2) Second, encountering, like coincidences, could bring the participants a good surprise that appeared inadvertently. It could also, like unexpected discoveries, bring a good surprise with novel content.
- 3) Third, encountering could afford the participants a reward cascade, akin to coincidence.
- 4) Fourth, encountering could lead the participants to embrace a satisfying purchase and an emotional pleasure, just as coincidences and unexpected discoveries do.
- 5) Fifth, over time, the hidden downsides of the encountering might gradually appear, as happened long after an unexpected discovery and a coincidence.

However, encountering also possessed unique characteristics that distinguished it from coincidences and unexpected discoveries.

- 1) First, encountering could stem from the participants' explicit expectations – a trait not exhibited by either coincidences or unexpected discoveries.
- 2) Second, unlike coincidences, the good surprises brought by encountering were not almost

unforeseeable. Instead, their inadvertent appearances aligned with the participants' overall understanding of the situations. Moreover, unlike that of unexpected discoveries, the content of the good surprises in encountering was not entirely unknown to the participants. For the participants, most of it was familiar, and only a few elements were unfamiliar.

- 3) Third, encountering could afford the participants a range of middle routes – straightforward and pleasant, disappointing, or disrupted exploration. These dynamic middle routes were not typically associated with coincidences and unexpected discoveries.
- 4) Fourth, the outcome of encountering could also be bad, as was either immediately apparent or revealed itself over time. This kind of bad serendipity was not typically experienced with coincidences or unexpected discoveries.

The following sections will delve further into the nuances of encountering, aiming to illustrate its uniqueness better.

4.2.3.2 Overview of the encountering mode

For the participants, the experience of encountering often began with identifying one or both of two types of good surprises. The first type introduced novel content that 'slightly expanded [their] shopping scope' (P2-1) whilst the second 'reconnected [them] with familiar things in an unexpected place' (P4-7).

P2-1 S3 – I initially assumed that searching 'latest version of Dyson vacuum cleaner' on Taobao would show me popular models like the V11. However, to my surprise, the first recommendation was Dyson's robotic vacuum! This was an expansion of my shopping scope, as I had not thought about buying a robot to do the cleaning. Given my penchant for convenience and my preference for the Dyson brand, it seemed like a match made in heaven. So, I clicked on the link to this robotic vacuum right away. After all, when you spot something promising, why hesitate to explore it?

P4-7 S1 – Honestly, I was surprised when I stumbled upon this nonanimation – a Rubik's Cube – within Rennigou¹, as in my understanding, Rennigou only sells anime-related products.

The roots of these two types of good surprises were consistent with the origins of the novel surprises that triggered unexpected discoveries – namely, the participants' continued focus on the domain where the surprise originated, trust in third parties providing the surprises, and ample spare time and effort participants had in hand. The reasons the same underlying factors led to different serendipitous routes (i.e. encountering and an unexpected discovery) were twofold: the participants' proactive searches for good surprises and third parties' 'lack of marketing insights' (P4-7) into the domain where the surprises originated.

¹ Rennigou (任你购) is a Chinese platform that specialises in assisting users with the purchase of anime-related products.

More precisely, before encountering, the participants may have been *explicitly expecting* to identify good surprises. To do so, they may have engaged in targeted searches, effectively communicating to third parties the specific types and scopes of good surprises they were interested in finding. This ‘prenotification and restriction’ (P4-4) gave the participants better control over the content and timing of the good surprises they may have come across. Therefore, the participants were less likely to be overwhelmed or taken aback by excessively unfamiliar content. However, third parties’ limited marketing insights resulted in their primarily recommending ‘mainstream [offerings] within a specific shopping domain’ (P4-7). In such scenarios, even if the participants had only *a mild expectation* of encountering good surprises and left the task of discovering these surprises to third parties, they were unlikely to come across entirely new or unfamiliar items.

P4-7 S1 – The surprisingly identified finding – the Rubik’s Cube – was actually a familiar thing for me, as I had bought it before. However, this time, I still felt a sense of joy in finding it and had a desire to explore it further, as I have a deep love for the Rubik’s Cube. Additionally, I realised that Rennigou, as a platform primarily focused on selling anime-related products, might lack marketing insights about other product domains. Hence, this platform might predominantly recommend very popular and mainstream items.

Due to their familiarity with the good surprises recommended by third parties, the participants often needed to ‘spend little time understanding [these surprises]’ (P2-7). Thus, they could quickly shift their focus to ‘reflect on why [these surprises] appeared’ (P2-7). This reflection often led to the same realisation, namely, that the surprises had appeared because of third parties’ commercial intent. When third parties recommended familiar good surprises during the participants’ casual browsing, it often served as ‘a clear reminder for [them] to repurchase a product’ (P3-4). However, surprises that appeared after the participants’ active searches, even if they were ‘upgraded versions’ (P2-1) of known products, often required the participants to pay more. For instance, P2-1 initially planned to buy a vacuum cleaner for 2,890 RMB, but the encountered robotic vacuum cleaner cost 4,679 RMB. This price difference between the plan and the surprising find ‘undeniably benefits third parties’ (P2-1). Even when the prices of a known product and the surprise were similar, recommending superior products could have ‘reinforced [the participants’] trust in [third parties]’ (P3-7), thereby still benefiting the third parties in the long run.

Indeed, because of the clear understanding of third parties’ commercial intent, the participants tended to approach the encountering route with ‘additional caution’ (P4-5). This caution sometimes enabled them to recognise that what they had initially thought were *good surprises were commercial traps*. This recognition could have abruptly brought the participants’ encountering experience to *a dead-end*. For example, P3-9 experienced ‘significant frustration

and anger’ (P3-9) upon realising that the skincare product ‘highly recommended’ (P3-9) by Taobao was a ‘rebranded version of a three-no-product¹’ (P3-9). This sense of anger led her to close the app immediately.

On the other hand, excessive caution could also prevent the participants from capturing some ‘seemingly risky but really good shopping opportunities’ (P4-5). In the online shopping environment, ‘good deals often attract multiple interested consumers’ (P4-5). If a participant had hesitated, another consumer might have seized the opportunity. For instance, P4-5 missed out on purchasing a desired juicer due to concerns over its ‘unusually low price’ (P4-5).

As the participants scrutinised the good surprises, the third parties behind these surprises also closely observed their behaviours. Thus, when the participants embarked on the encountering route, they might have found themselves in a *reward cascade* – that is, a situation in which they were continuously discovering ‘more intriguing offerings’ (P3-6). This was the third parties’ strategy to ‘extend [the participants’] in-store time and encourage [their] spending’ (P4-6). However, this process of reward cascade was often ‘time-consuming’ (P2-3) and might not always have unfolded smoothly. As the participants engaged in ‘pleasantly exploring a series of good surprises’ (P2-2), they may have faced unexpected *external disruptions*. These unforeseen factors could have abruptly and regrettably disrupted their encountering experience, leading to an unsatisfactory end, as highlighted in the cases of P2-9 and P2-10 in Section 4.1.2.2.4.

If the participants were able to maintain their momentum in the reward cascade, they could end the encountering with *an emotional pleasure* or even *a satisfying purchase*.

P3-3 S6 – Even though I did not make a purchase this time, I discovered a new cross-border e-commerce platform. This counts as gaining new knowledge, so overall, I was pleased with this encounter.

P2-10 S4 – I was quite pleased with this encounter, as it finally provided me with a cost-effective opportunity to purchase the Xuanma egg yolk cake, a cake that I had always wanted to try.

However, considering the underlying commercial motives of third parties, the participants may also have concluded their encountering with *belated fatigue* or *a belatedly realised impulsive purchase*.

P2-2 S4 – Due to the colour difference, I was unable to use the lipstick and had to return it. To my surprise, I had to bear the shipping costs for the return, which added to my frustration. Initially, I was

¹ Three-no-product (三无产品) is a Chinese term referring to products that lack three essential attributes: a registered trademark, a company name and address, and a product standard code or number. These products are often considered low-quality, unregulated, and potentially unsafe, as they typically do not meet the official safety and quality standards set by regulatory authorities.

upset because of the colour difference, but having to pay extra for a return only exacerbated my disappointment. This entire experience has left me extremely displeased.

More concerning was the possibility that prolonged indulgence in the reward cascade could lead to participants' gradual *loss of independent decision-making in shopping*. This risk is exemplified in the stories of P2-1 and P2-8 discussed in Section 4.1.2.2, where the participants found themselves increasingly reliant on serendipity offered by third parties, diminishing their ability to make autonomous choices. Given third parties' 'persistent pursuit of commercial gains' (P3-10) and 'ease in understanding and manipulating [participants'] expressed preferences' (P4-1), encountering became the most frequently experienced serendipitous route of the three types.

4.2.3.3 Examples of encountering

To better illustrate the encountering, the stories told by P3-5 and P2-2 are introduced. P3-5's story exemplifies an encountering from which the participant had mild expectation for its occurrence but from which she ultimately gained. On the other hand, P2-2's story represents an encountering that unfolded while the participant was undertaking an active search for it, but, contrary to expectations, culminated in a loss.

4.2.3.3.1 The story of P3-5

In this story, P3-5 was casually scrolling through Douyin when an interesting pillow advertisement 'suddenly' (P3-5) caught her attention, directing her to Taobao. There, Taobao's recommendation system guided P3-5 to various intriguing pillow products. Even though this spontaneous exploration did not result in a purchase, it provided P3-5 with 'an enjoyable 30-minute diversion' (P3-5), adding a touch of pleasure to her everyday life.

Real-time conditions and past experience

This story happened when I was alone in my dormitory and had ample free time.

After a busy day, I simply wanted to relax and clear my mind.

Therefore, I opened one of my favourite apps – Douyin – and began swiping through its collection of short videos. Based on my past experience, swiping through Douyin is enjoyable and the optimal way to unwind, as it requires minimal effort. The platform knows what I like and always delivers interesting and engaging content directly to me, eliminating the need for active searching.

This mindless pure pleasure was exactly what I needed at that moment! Let's ask Douyin to find some interesting things for me!

Prior to the encounter, P3-5 was in 'mindless' mode (P3-5). She simply chose to interact with 'one of [her] favourite apps' (P3-5) and did nothing beyond that. While interacting with the platform, P3-5 did not engage in any 'active searching' (P3-5). Instead, relying on her past 'enjoyable' experiences with the platform (P3-5), P3-5 was content to let the platform curate

‘interesting things’ (P3-5) for her. This openness to Douyin’s recommendations also stemmed from the ample free time P3-5 had, which gave her the freedom to explore and enjoy the content presented by Douyin without the pressure of a specific goal or time constraint.

Beginning

As I continued to scroll through the short videos mindlessly, an adorable and interesting pillow suddenly caught my attention, giving me the idea to use my brain to explore it in depth.

It drew my attention and interest for three reasons. First, identifying a recommendation for a pillow on Douyin was unique and special. Prior to this, Douyin had mainly recommended beauty videos or clips of small animals to me. This pillow video, especially as it was a sales pitch, was distinctly different from the other videos I had watched today or even previously. I did not think that I would find a pillow on Douyin. Yet, identifying this short video did not leave me feeling perplexed, as it was simply about a pillow, a rather ordinary everyday item, not something particularly innovative or novel.

Second, the pillow had a unique design, which piqued my curiosity. Unlike the traditional pillows that you hug, this pillow was designed to hug you back. Only this one novel feature was enough to pique my curiosity and make me want to learn more about it. After all, I am always interested in exploring peculiar products.

Third, the pillow was shaped like an octopus, which happens to be my nickname. This connection between the pillow’s design and my nickname created a sense of personal resonance. It felt as if the pillow was designed specifically for me, adding an extra layer of fascination and appeal.

Thus, without hesitation, I clicked on the sales link provided in the video.

Although I clicked on the shopping link, I did not actually consider buying the pillow at that moment. I was simply curious about its specific use and wanted to understand this unfamiliar product further. After all, I did not need to buy a pillow, and honestly, I did not think that Douyin would recommend any super good things – it’s main business is short videos rather than e-commerce. If I wanted to make a purchase, I would rely on the recommendations of professionals like Taobao.

After clicking on the link, I was immediately redirected to Taobao. For me, this was quite a common occurrence, as I knew that many vendors use Douyin as a way to attract customers and drive traffic to their Taobao stores.

The beginning of P3-5’s encountering experience can be described as identifying a good surprise that both appeared in an unanticipated place and introduced a novel surprise that slightly expanded her knowledge. More concretely, the surprise was just about a ‘rather ordinary everyday item’ (i.e., the pillow); moreover, the pillow only had ‘one unique and novel’ feature that set it apart from the traditional pillow. Yet, for P3-5, identifying recommendations for pillows on Douyin was a first-time experience; thus, for her, the short video showing the pillow appeared to be a surprise which surfaced in somewhere unexpected.

This modest surprise in the recommendation by Douyin could be attributed to its primary focus ‘on short videos rather than e-commerce’ (P3-5). As it does not have a central e-commerce focus, Douyin may not possess the same level of market insight as more specialised shopping platforms, such as Taobao, thus leading to fewer exceptional surprises.

Middle

Upon landing on the product page, I quickly scrolled through the additional images to better understand how the pillow was used. This process took approximately three minutes, as the pictures were detailed and easily

comprehended. I realised the pillow was longer than a regular one, so it could be wrapped around your body. There were no substantial differences between this and a standard pillow. So, I considered leaving Taobao and was ready to return and continue browsing Douyin.

Yet, just as I was about to exit Taobao, a related recommendation caught my eye: a poached egg-shaped pillow from the same store. Its delightful design was to my taste, prompting me to click and explore further. After all, returning to Douyin would mean watching more mindless short videos to kill time. Why not indulge in viewing these adorable pillows instead?

Having perused all the photos of the poached egg pillow, I stumbled upon another recommendation from Taobao: a copybara pillow. Its charm was undeniable, leading me to investigate further. From there, I found myself cascading through a series of unusual yet endearing pillows recommended by Taobao. Each one I viewed was just as captivating as the last. Yet, I was still clear that I would not buy any of these pillows, as I did not need them. I would not make an impulsive purchase.

After cautiously and enjoyably browsing the pillows for roughly 30 minutes, I began feeling aesthetic fatigue and decided I had seen enough. I was ready to return to Douyin.

Yet, before I switched back, I recalled the octopus pillow that initially piqued my interest – despite the many designs I had seen, this one still stood out as the most adorable. I retrieved it from my Taobao browsing history and decided to save its primary image. I wanted to keep this pillow as a souvenir to commemorate this delightful journey of continuously discovering adorable pillows.

Upon diving into the route opened up by the encountering, P3-5 was greeted by a reward cascade crafted by Taobao. That is, she continuously encountered a series of enticing recommendations from Taobao, each featuring increasingly attractive pillows. This sequence of charming finds kept P3-5 immersed in browsing Taobao for about 30 minutes. Despite this engagement, P3-5 always retained her sense of caution. She maintained her decision-making autonomy throughout, which was particularly evident when she chose to end the cycle.

That is, when P3-5 felt that Taobao could no longer afford her pursuit of joy, she disengaged and redirected her focus toward a more fulfilling third party, namely, Douyin. Moreover, before she left the route of the encountering route, P3-5 took some ‘souvenirs’ (P3-5), enhancing the significance of her encounter.

The key to P3-5’s ‘cautious’ (P3-5) approach during this experience could be attributed to her early realisation that the recommendations she encountered were essentially ‘sales pitches’ (P3-5). This awareness allowed her to enjoy the browsing experience while retaining a critical perspective, ensuring that her decisions were made consciously rather than impulsively.

End

Thus, I captured a screenshot of the main image of the pillow from the Taobao page, which was the same image that initially caught my eye on Douyin. I love this pillow, and I can confidently affirm that this encountering was good, although I did not purchase the pillow or have any tangible gains from the encountering.

I subsequently added it to my plog¹ and posted it on Weibo – the plog’s content is presented in Figure 4.2. Only a few close friends are aware of my Weibo account, so I feel comfortable sharing various plogs there, documenting the small joys of my everyday life. I just wanted to share this cute pillow with my friends.



Figure 4.2 The pillow encountered by P3-5²

Initially, after sharing this post, I thought the entire encountering was fantastic. That is, I had discovered an interesting pillow and learned about the various designs available in the market. Also, my closest friends could share the excitement with me.

However, to my surprise, my boyfriend commented on my post, saying, ‘What is that in picture 2? It looks ugly’. This comment truly upset me, as I could not believe he found this adorable pillow ugly. Consequently, we argued for a bit. While the argument with my boyfriend affected my mood negatively, it did not diminish my overall satisfaction with the encountering. I was simply frustrated that he could not say something positive and chose to argue over such a small matter.

A week after this encountering experience, looking back now, I still believe it was still quite enjoyable.

Although I did not derive any substantial gains from it, it brought me simple happiness and piqued my shopping interest. My boyfriend’s comment was merely a minor incident that did not dampen the overall enjoyment of the experience. After all, what one perceives as interesting is subjective, and I am able to define it for myself without being influenced by his opinion.

P3-5’s careful approach throughout the process of her encountering process allowed her to ‘confidently affirm’ that she had derived genuine pleasure from the experience. Thus, despite her boyfriend’s differing opinion on the aesthetics of the pillow she encountered, P3-5 remained certain that her experience was ‘fantastic’ (P3-5). Her cautious mindset enabled P3-5 to focus more on her personal satisfaction than external disruptions.

4.2.3.3.2 The story of P2-2

In this story, P2-2 encountered a promotion for her favourite paper tissue after actively searching for 618 discounts on Xiaohongshu. Drawn by the appealing discount and her preference for that paper towel, P2-2 momentarily shifted her focus to secure the deal. However, this decision took a regrettable turn. P2-2 soon discovered that Xiaohongshu’s recommendation

¹ ‘Plog’ is a term that combines the words photo and blog. It refers to a type of online journal or diary where individuals share their daily experiences, thoughts, and photos with others. Plogs typically consist of a series of posts that document personal moments, events, or activities.

² P3-5 granted their informed consent to display this picture here.

had directed her to a vendor peddling counterfeit goods, leaving her both disappointed and irritated by the encounter.

Real-time conditions and past experience

Today, with the coming of Taobao's 618 mid-year sales, I consciously set aside some time after work to figure out my shopping list.

Aiming to grab the best deals, mainly the deals for cosmetic products, I specifically turned to Xiaohongshu for insights. In my experience, shopping information shared on Xiaohongshu is timelier and has a higher reference value than other shopping platform. Also, the biggest 618 discounts are often on cosmetics and everyday items.

To find insightful information, I entered '618 cosmetics must-buy list', '618 everyday item must-buy list', and 'biggest discount' to search for insights on Xiaohongshu. After entering the keywords and pressing the search button, many cosmetics appeared instantly.

To ensure I was getting the most recent information, I filtered the results by the 'latest' posts and then browsed through them one by one. While browsing, I first glanced at the accompanying images of each post, and if something piqued my interest, I delved deeper into the details.

At that moment, my screen was filled with information on cosmetics, displaying tempting offers. The discounts were hard to resist, for instance, a 'buy one, get a free refill' offered for MUF powder. I felt satisfied and in control, believing I was in control of everything.

Before engaging in this encountering experience, P2-2 'consciously' set aside ample time to 'perfectly' (P2-2) plan for the good surprises she anticipated encountering. To achieve this, she chose Xiaohongshu as her platform, as it is known for its trustworthiness and insightful content. Then, P2-2 employed precise keywords in her searches and meticulously organised her search results, effectively communicating to Xiaohongshu the specific surprises she hoped to find. This proactive approach toward seeking good surprises proved effective. The recommendations provided by Xiaohongshu aligned well with the scope of surprises P2-2 had pre-defined.

Beginning

Despite feeling that my behavioural plan was perfect, I was surprised to find a superb search result – a piece of discount information about my favourite paper tissue, Nepia tissues.

I noticed this information for two reasons. First, the familiarity of the Nepia packaging made it impossible for me to overlook this information. Second, the promotional image stated that six boxes of Nepia tissues were available for just 89.8RMB, a striking discount from the usual 130RMB for the same quantity. Good job, Xiaohongshu, you were definitely good at searching for shopping information!

Since such a great deal for my favourite tissues was hard to resist, I clicked on the Xiaohongshu post immediately, even though I knew that it was highly likely to be an advertisement.

The beginning of P2-2's encountering experience could be termed as identifying a good surprise that subtly expanded her knowledge. In particular, the identified product (i.e., the tissues) was something P2-2 was already familiar with and liked. Moreover, the fact that Xiaohongshu recommended this specific brand of tissues aligned with P2-2's search terms; thus, the appearance of these tissues on Xiaohongshu did not surprise her.

P2-2's sense of surprise stemmed mainly from the discount offered on the tissue. P2-2 was accustomed to seeing this product, but the unexpected price reduction presented by Xiaohongshu added a novel twist, making the encountering feel surprising.

Middle

After opening the Xiaohongshu post, I immediately checked the comment section to find details about the Taobao store with the promotion. I knew that Xiaohongshu does not allow store names or links from other platforms in the main post. If someone breaks this rule, their post can be taken down. So, I expected to find the store information in the comments.

After locating the Taobao store name in the comments, I quickly searched for it on Taobao and found the store. On visiting the store's homepage, I realised it was an agent rather than the official store. Knowing that these agent stores often do not have the best reputations, I became more cautious and even a bit sceptical. I decided not to make an immediate purchase based solely on the low price.

To ensure I made a wise purchase, I compared the product packaging shown by the vendor to the tissues I currently have at home. After ascertaining they were similar, I checked the vendor's Taobao rating. It was above average, signalling a reasonable degree of reliability.

While all these evaluations seemed to indicate that the product I encountered was comparable to the one from the official store, I still hesitated to say that I would buy directly from this store.

Because all the information I had gained at this point was mostly controlled by the vendor, I was a bit worried that there was a possibility that the information I had gained so far could be misleading or false.

I decided to delve into customer comments for more clarity – after all, customers are more honest and reliable than vendors. You know what? Out of five reviews, two raised concerns about the authenticity of the products, with one even providing a picture as evidence. The discrepancies were evident when I compared this image with my product from the official store.

Now, I can say that this store was using counterfeit products and attractive prices to deceive consumers.

Although initially excited when she embarked on the route opened up by the encountering, P2-2 did not let the third party entirely steer her experience. Instead, P2-2 maintained a degree of 'caution' (P2-2), especially when she realised that the vendor promoting the discount had a dubious reputation. Realising the vendor's questionable credibility, P2-2's 'scepticism' intensified (P2-2). She chose not to blindly trust the vendor's claims but instead drew upon her own knowledge and sought feedback from other consumers. These sources, which she considered to be 'more reliable' (P2-2), helped her to uncover the vendor's concealed deception whilst also changing the direction of her encountering experience in a negative direction.

P2-2's cautious approach throughout the encountering process stemmed from an early insight. At the beginning of the encountering, P2-2 recognised that the promotion of the tissue was essentially 'an advertisement' (P2-2). This awareness at the outset of the encountering experience informed her subsequent actions, leading her to scrutinise the situation more critically and avoid being misled by superficially attractive offers.

End

What a waste of time and such a deceptive tactic! I hate this encounter. Consequently, I promptly exited the product page without making any purchase, realising that there was nothing to gain from it. Next, I returned to Xiaohongshu to keep searching for deals on the cosmetics I like.

Reflecting on this encountering experience, I perceive it as a bad one. First, I have a strong aversion to counterfeit products, as they are deceptive in nature. Furthermore, I felt that my time was wasted, and my emotions were toyed with. This experience only left me feeling that I was manipulated by the vendor.

Even though more than 20 days have passed, I still view this experience as negative, lacking any positive elements. It simply served as a reminder of the things I despise most, without contributing anything beneficial.

Although her identification of the vendor's deceitful practices saved P2-2 from a potential impulsive purchase, her time and effort had already been wasted, leading to her frustration and disappointment. Given that this lost time and energy cannot be reclaimed, P2-2's negative perception of the encountering as a bad serendipity that led to a dead end remained unchanged long after the experience ended.

4.2.4 Summary

This section explored how e-commerce serendipity develops, elucidating three distinct serendipitous routes: coincidence, encountering, and unexpected discovery. Each route illustrates unique yet comparable interaction modes between the participants and different third parties, as detailed in Table 4.1.

Table 4.1 The serendipitous routes

Background and real-time conditions			
	<i>Coincidence</i>	<i>Unexpected discovery</i>	<i>Encountering</i>
Actors involved	Participants failed to find their dream product(s)	Participants consistently engaged with a particular domain	Participants consistently engaged with a particular domain
	Third parties altruistically assisted the participants	Trustworthy third parties with marketing insights	Trustworthy third parties
Real-time surroundings	Ample free time and effort	Ample free time and effort	Ample free time and effort
	Faint expectation of a particular good surprise	Mild expectation of a good surprise	Explicit expectation of particular types of good surprises OR Mild expectation of any good surprises
The experience of e-commerce serendipity			
	<i>Coincidence</i>	<i>Unexpected discovery</i>	<i>Encountering</i>
Beginning	A good surprise appearing inadvertently at an unanticipated time (and place)	A good surprise introducing entirely novel contents	A good surprise appearing inadvertently in an unanticipated place OR introducing content with slight novelty

Middle	Straightforward and pleasant exploration <i>OR</i> A redirected and existing exploration	Straightforward and pleasant exploration <i>OR</i> A redirected and existing exploration	Straightforward and pleasant exploration <i>OR</i> A redirected and existing exploration <i>OR</i> A disappointing exploration <i>OR</i> An interrupted exploration
End	A good outcome	A good outcome	A good or bad outcome

Coincidence was the ‘most idealised’ (P1-4) e-commerce serendipity route for the participants. Third parties maintained an altruistic stance within this route, directing their actions mainly toward benefiting the participants. Consequently, by following this route, the participants could realise dreams they had once deemed unattainable. Thus, a coincidence was often termed a good serendipity.

Unexpected discovery is ‘the growingly prevalent’ (P3-7) e-commerce serendipity route that has emerged with the advent of intelligent technologies. These technologies have equipped third parties with a deeper understanding of the participants and markets, making them more insightful in pinpointing areas where participants’ knowledge is lacking. With the support of these insightful guides, the participants embarked on the route of unexpected discovery to not only enhance their shopping expertise but also expand their knowledge across various domains. Thus, unexpected discovery was often termed a good serendipity.

Encountering was the ‘most common’ (P1-3) e-commerce serendipity route and mainly occurred due to third parties’ commercial motives. In these scenarios, third parties recommended good surprises primarily to advance their business goals. Thus, as the participants navigated the encountering route, the situation they identified often resembled regular planned shopping, leading them toward either a good or a bad outcome.

For participants, the underlying factors that led to these three distinct serendipitous e-commerce routes lay in the characteristics and features of the interacting parties – the participants and third parties – as well as the real-time surroundings that influenced their interactions. The next section of this study will explore the factors contributing to the dynamics of e-commerce serendipity in greater depth.

4.3 Factors influencing e-commerce serendipity

This section answers the third research objective, which is to understand the factors that influence e-commerce serendipity.

For participants, the factors that influence e-commerce serendipity can be traced back to three primary sources: the participants themselves (i.e. the *serendipist-related factors*), the third

parties involved (i.e. the *third-parties-related factors*), and the real-time environments that influence the cross-actor interactions (i.e. the *conditional factors*).

4.3.1 Serendipitists-related factors

As ‘primary experiencers’ (P4-4) of e-commerce serendipity, participants held significant influence over the occurrence and progression of such experiences; ‘without [participants’] consent, e-commerce serendipity might not even exist’ (P4-2).

P2-9 I1 – I can begin and end a serendipitous experience at any time. I am an independent individual with rational thinking abilities, so I can freely decide what I want to do about my experiences.

P4-4 I4 – We are the primary experiencers of e-commerce serendipity; we hold the greatest influence throughout the entire serendipitous journey. After all, without us as experiencers, this experience of [e-commerce serendipity] would not even exist. It is our presence that gives rise to the very notion of [e-commerce serendipity].

The influence that participants held over e-commerce serendipity, in essence, stemmed from a combination of their personal characteristics (i.e. curiosity and sensitivity) and acquired insights (i.e. lifestyle, shopping expertise, privacy awareness, and professional identity).

4.3.1.1 Personal characteristics

According to participants’ self-reports, curiosity and sensitivity were the essential characteristics that permitted them to experience e-commerce serendipity. For participants, *curiosity* referred to their traits to ‘accept randomness and embrace the unfamiliar’ (P2-5) and is the foundation for their willingness to embark on adventures beyond their planned routes. Without curiosity, it was ‘virtually impossible’ (P2-10) for participants to experience serendipity.

P1-3 I2 – I prefer to take the unplanned route mainly because of my curiosity. In other words, the desire to understand why something suddenly appears in front of me and where it will lead me is the driving force that supports my decision to continue venturing along an uncertain path.

P2-10 I1 – I believe that [e-commerce serendipity] is an experience that can only be truly enjoyed by those who are curious about the world. If you lack curiosity about the world, you are destined to remain confined to a limited existence, making it virtually impossible to appreciate something beyond your daily routine.

P3-2 I2 – Curiosity is undoubtedly the driving force behind my willingness to experience serendipity.

P4-4 I3 – If we talk about the factors that influence serendipity, I think curiosity comes first.

A compelling example that showcased the influence of curiosity was found in P3-3, who rated her curiosity level at ‘a perfect 10, the highest possible score’ (P3-3). Her ‘insatiable desire’

(P3-3) to explore and discover the unknown served as the driving force behind her numerous e-commerce serendipity experiences. Remarkably, within the research period, she encountered serendipitous moments a total of 16 times.

Sensitivity, in participants' terms, related to their 'degree of concern for everything happening around [them]' (P3-1), especially 'unusual events' (P3-1). Heightened sensitivity can serve as the 'radar for surprises' (P3-1), in turn, assisting participants to better spot serendipitous opportunities in their everyday lives, as stated by P2-4 and P3-1.

P2-4 S4 – In this story, I had a surprising encounter with a fantastic promotion for skincare products on Taobao's opening page. [...] If I am not observant and sensitive enough, I would have missed out on this opportunity. After all, this opening screen advertisement lasted for less than 5 seconds, essentially a fleeting moment.

P3-1 S3 – The reason I had this encounter was because I was sensitive to something unique among the numerous video posts – the static shopping information about navel oranges released by HNXD. If I did not have such a radar for surprise, I might have missed out on this serendipitous experience. Since videos on Douyin automatically switch, if I had not acted promptly on one information, it would have been replaced by the next post, and I would have lost it.

4.3.1.2 Acquired insights

In addition to personal characteristics, e-commerce serendipity was also influenced by the insights the participants acquired in their everyday lives. These insights, often self-acquired 'through everyday practices and trials' (P4-2), function as 'a repository of experiential wisdom' (P1-4), empowering participants to navigate the unplanned route more adeptly.

According to participants, *lifestyle*, *shopping expertise*, *privacy awareness*, and *professional identity* are four acquired insights that notably influenced how they experienced e-commerce serendipity.

4.3.1.2.1 Lifestyle

Lifestyle refers to the way participants 'prefer to organise and structure [their] lives' (P2-3), which was learned via exposure to both family influences and societal dynamics. Among participants, two common lifestyles were reported: a hedonistic one and a pragmatic one. Those who adopted distinct lifestyles reported differences in how often they experienced e-commerce serendipity.

The participants who self-admitted to having a hedonistic lifestyle often prioritised 'immediate pleasure' (P2-7), with shopping naturally assuming 'a significant role' (P3-6) in their lives.

P2-7 I3 – To be honest, I would describe my lifestyle as rather hedonistic. I firmly believe that life is unpredictable and that it is essential to seize the present moment. So I often invest my resources, both time and money, in pursuing immediate pleasures, striving to satisfy my desires and buying what I want most.

P3-6 I4 – I would describe myself as someone deeply influenced by hedonism. I am the kind of person who lives by the ‘live for the moment’ philosophy. I enjoy shopping—both the act of making real purchases and simply indulging in window shopping. Shopping provides me a sense of ownership and immediate satisfaction, which is why it holds such an appeal for me.

These participants would intentionally set aside time to visit online marketplaces, either to make actual purchases (like P4-4) or to simply stay informed about the latest shopping trends (e.g. P3-6).

P4-4 S1 – Perhaps I am just a shopaholic. Every few weeks, I make it a point to set aside time to browse various shopping platforms to buy new clothes. In my opinion, new clothes can truly lift my spirits.

P3-6 S2 – Almost every evening before bed, I browse Taobao and Xiaohongshu to stay updated on the latest shopping trends. Being aware of these trends is a significant way for me to unwind and relax.

Frequent visits to online marketplaces exposed these participants to more shopping-related information. This exposure, in turn, provided these participants with more opportunities to enjoy serendipity. After all, the essential step in experiencing e-commerce serendipity was to ‘be ready to receive shopping-related content’ (P4-4).

The participants deemed that following a *practical lifestyle* emphasised their pursuit of ‘the long-term sustainability of [their] lives’ (P4-1). Compared with shopping and expenditure, they were more concerned about ‘saving and learning’ (P2-10) and more inclined to conserve resources for activities that provide clearer and more tangible benefits for themselves. Hence, this group of participants tended to visit online marketplaces less frequently. As a result, they were less likely to experience serendipity in online marketplaces.

A vivid example that highlights the influence of lifestyle differences on serendipity frequency involved P2-6 and P2-7, a couple who shared ‘almost the same living status’ (P2-6). P2-7, who self-identified as hedonistic, regularly spent around half an hour per day exploring shopping platforms and enjoying four e-commerce serendipity experiences during the research period. Conversely, P2-6, who saw herself as practical and ‘only gets interested in shopping when there are discount events’ (P2-6), reported only one serendipitous story during the same timeframe.

4.3.1.2.2 Shopping expertise

Shopping expertise encompassed personal shopping preferences and skills. Expertise not only affected how often participants experienced e-commerce serendipity but also influenced their ability to navigate the serendipitous routes they embarked upon.

(1) Shopping preferences

Shopping preferences reflected participants' 'likes and dislikes towards different products, brands, vendors, and platforms' (P2-1). For participants, e-commerce serendipity typically arose during interactions with their preferred third parties. In addition, the good surprises in these experiences were often traced back to the domains where the participants had 'a consistent interest' (P4-2).

This phenomenon can be attributed to two main reasons. First, preferences often led participants to place greater trust in these third parties, making them more inclined to embrace the surprises that these platforms offered, as P2-4 and P3-4 reported:

P2-4 S2 – Since I have always believed that Taobao is very user-friendly, I immediately clicked to view the recommended shoe covers this time.

P3-4 S1 – Although I was not quite sure what this 'Wanwan style' means, I still went ahead and clicked the link. All this was because I thought Taobao is a good shopping platform; I trusted its recommendation.

The more participants were willing to embrace the surprises offered by third parties, the better these third parties understood the participants. This mutual interaction fosters a cycle where third parties can create more 'tailored surprises according to [participants'] expressed preferences' (P3-6), as noted by P3-6 and P4-4.

P3-6 I4 – I think the main reason that all my stories happened on Taobao is because I really love Taobao; it is my favourite shopping platform. [...] My fondness for it has even reached the point where I consider it an essential leisure tool. While most people might watch videos when they're bored, I browse Taobao. Maybe it is because I have spent so much time on it that Taobao knows me incredibly well. So, every time I open Taobao, it definitely brings me some tailored surprises, and some exclusive little moments of happiness just for me.

P4-5 S2 – This is another story that happened when I was using Goofish. [...] The reason why this encounter happened again in Goofish may be because I have come to like this app very much recently and used it all the time. My frequent use has allowed Goofish to accumulate a large amount of data about me over time, providing me with tailored recommendations that could better catch my attention.

The aforementioned mutual interaction, in turn, enhanced the ‘relevance and personalisation’ (P3-6) of the good surprises that participants might have come across. For participants, they were ‘very willingly’ (P3-2) or even ‘exclusively willingly’ (P3-4) to embrace these personalised surprises, as these surprises had ‘more immediate utility’ (P3-4) in their everyday lives.

However, relying exclusively on preferences to navigate their e-commerce serendipitous experiences can sometimes lead participants to undesirable outcomes. On balance, the primary reason that third parties continually recommend preferred surprises to participants was ‘to pursue higher business returns’ (P3-7). Consequently, participants who blindly followed the surprises offered by their preferred third parties might have inadvertently fallen into commercial traps, as exemplified by P3-7’s experience as follows:

P3-7 S3 – Because I have always had great trust in Taobao and a strong interest in Japanese snack toys, I placed an order immediately [...] When I received the item, I realised that the snack toy was completely different from what I had imagined [...]. It goes to show that I should not make purchasing decisions just because of my inexplicable fondness.

(2) Shopping skills

To adeptly navigate the ‘risky serendipitous route’ (P2-10), participants need to rely on their shopping skills, including knowledge about online platforms and shopping experiences.

Knowledge about online platforms denotes participants’ comprehension of ‘how these platforms operate’ (P3-9). Extensive knowledge about online platforms provided participants with the confidence to ‘customise good’ (P4-2) e-commerce serendipity, namely, guiding third parties to provide more surprises that were ‘genuinely’ (P3-9) aligned with their personal preference and real-time concerns.

To achieve this customisation, knowledgeable participants would employ two strategies: (1) inputting unrelated keywords during targeted searches and (2) browsing less-favoured contents during routine platform visits. Through these strategies, participants can ensure that the platforms gained insights into their individual preferences while simultaneously preventing these insights from becoming overly specific and limited. Consequently, a space for ‘more relevant surprises’ (P4-2) was preserved.

P4-2 I4 – I believe I have the power to customise my serendipitous experience on Taobao. This stems from my extensive understanding of Taobao’s operational principles, as I have been using this platform for over 15 years. With this knowledge, I can effectively manipulate the platform to better serve my personal interests. For example, when I search for shoes, I do not limit my query to just shoes. After receiving the initial search results, I will not immediately click on them. Instead, I take

this opportunity to search for completely unrelated content such as umbrellas. By doing this, Taobao becomes uncertain about whether I am satisfied with the search results it has provided. To keep me engaged, Taobao must then start presenting shoes that are more design oriented and unique than the typical options. As a result, I can discover more nicely designed shoes, surprising myself during my shopping experiences.

P2-1 I2 – Sometimes, I deliberately view less-favoured items. Even though I am not really interested in these items, I do so to avoid being detected by the shopping platform and prevent them from repeatedly recommending the same items to me. In this way, I could find more surprising items on these platforms.

Nevertheless, given the integration of increasingly intelligent technologies into online platforms, these strategies did not always guarantee success. These intelligent technologies enabled platforms to discern participants' 'actions and underlying intentions' (P3-9) more easily, making it less likely for participants to manipulate the platforms.

P3-9 I3 – The analytical and cognitive capabilities of an individual could hardly compete with the computing power of sophisticated artificial intelligence. After all, behind this artificial intelligence is the collective of vast scientific elites. AI is much smarter than us, and discerning our actions and underlying intentions is not a challenging task for them.

Shopping experiences encompasses participants' 'evolving understanding of a specific product domain, and the tactics they develop for effectively interacting with a particular platform or vendor' (P4-5). These experiences played a pivotal role in shaping how participants approached and engaged with serendipity in the e-commerce realm.

Often, participants tended to avoid embracing surprises with highly unknown contents. This was because past experiences often led participants to believe that such findings might 'be wrong' (P4-2) or 'be of no use' (P4-1) to them, as expressed by P4-1:

P4-1 I2 – Like me, I rarely care about products I do not know much about. This might be because I feel that these are probably of no use to me. After all, my lifestyle is fixed, and my income is limited. The things I need are generally limited. If I have never been exposed to this thing, then there is a high probability that I will not be able to use it.

In addition, participants often worried that the more unfamiliar a finding is, the higher the chance that it could be a commercial trap. This concern aligns with the viewpoint of P4-6:

P4-6 I4 – Because of the lack of familiarity, it is challenging to immediately notice flaws in the recommendations. This state of ignorance heightens the risk of falling into a commercial trap wherein we might act more on emotion, which potentially leads to irrational thinking and relatively impulsive decisions.

Once participants embarked on a serendipitous journey, their shopping experience emerged as the ‘most reliable defence’ (P3-2) against unwarranted manipulation by third parties. Often, the core reason behind the emergence of ‘bad serendipity’ (P2-2) was the participants’ lack of understanding about the findings and/or the third parties involved in the serendipitous experience.

P2-2 S3 – For such a bad encounter was my lack of knowledge about Pinduoduo. Because I did not know much about the reputation of this platform, I fell for its marketing tactics and ended up buying something completely useless.

P3-6 S1 – Because it was my first time buying Müller shoes, and I did not have an overall understanding about the average price for it and ended up paying too much for them.

P4-6 S3 – The root cause of being deceived is that I was not familiar with Douyin’s marketing tactics.

4.3.1.2.3 Privacy awareness

The integration of intelligent technologies such as AI also compelled participants to contemplate privacy-related issues as they went through e-commerce serendipity. Their varied *privacy awareness*, in turn, resulted in participants embracing of different serendipitous findings and outcomes.

Those participants who prioritised privacy tended to be more cautious when deciding whether to embark on a serendipitous route. If they believed that a surprise appeared because of ‘[third parties’] inappropriate collection’ (P3-9), they might opt to forgo that surprise, even if it ‘seemed to be a super great one’ (P3-9).

P4-7 I3 – I remember one time when my friend and I were discussing buying a SWITCH on WeChat.¹ Then, after about 10 minutes, I immediately received a surprising push recommendation from JD.COM² about a promotional campaign for SWITCH. While this discovery might be a good serendipity for others – as it comes timely and points out a cost-effective way of purchase – my initial feeling about it was scare. It felt as though JD.COM had been monitoring my WeChat conversations. So, I immediately blocked all access points JD.COM had to my phone’s data.

P3-4 I2 – I am usually cautious about the unusual recommendations on Taobao. If it often involves items I have never searched for on Taobao but have only encountered on other apps, I will definitely ignore or even report it. Because my privacy is more important than all the other things.

¹ WeChat (微信) is a major Chinese instant messaging, social media, and mobile payment platform, which also features its own e-commerce service ‘Weidian (微店)’.

² JD.com (京东) is a leading e-commerce platform in China. The platform is known for its commitment to quality, authenticity, and its vast logistics network, which ensures fast and reliable delivery.

Such an inclination in choice confined these participants to a relatively narrower range of serendipitous findings, mainly centred on those that they had previously interacted with on a specific platform.

P2-3 I3 – To be honest, I can, to some extent, expect what surprising findings I will bump into on JD.COM, as I only used JD.COM to search for certain electronic products. So, the surprises I can find are definitely surrounding those products.

This relatively mundane serendipitous experience, however, also had its advantages. That is, the findings discovered were generally of high usefulness to the participants, as stated by P2-6 and P3-2:

P2-6 I2 – I always report any inappropriate recommendations displayed on Taobao to prevent receiving unwanted items and to assert my control over the platform. I want to let these platforms know that I am the master of them. In this way, the surprises that these platforms give me always cater to my needs and are useful in my everyday life.

P3-2 I3 – I have denied platforms like Taobao access to my photo gallery, location information, camera, microphone, and other sensitive data. By limiting data access, the platforms can provide more focused suggestions related to shopping and even dig deeper into the specific products that I prefer rather than just offer a wide range of irrelevant products. As a result, most serendipitous findings I came across were highly useful to me.

On the other hand, the participants who were less concerned about their privacy were more inclined to embrace ‘nearly all the intriguing surprises’ (P4-4). Even if they became aware of improper information acquisition behind the appearance of a surprise, they would embrace it without much hesitation, as evident in their view:

P4-3 I3 – Our own privacy is not that important because we are not important figures. Being able to exchange privacy for convenience or discounts on purchases is a worthwhile trade-off.

P2-4 I2 – I am not particularly concerned about privacy protection. I do not feel like I have anything important or confidential to protect. In fact, I think allowing platforms to analyse my privacy and provide personalised recommendations based on that analysis might be better. Because platforms understand the market better than we do, their recommendations are likely to be more interesting and beneficial than what we can find on our own.

As a result, these participants tended to embrace a more diverse and novel set of serendipitous findings, making their serendipitous adventures more ‘thrilling and interesting’ (P2-1). However, prioritising the exactment of serendipity over their own privacy can potentially lead to long-term loss. After being excessively exposed to third parties, participants may feel

constantly manipulated, finding it challenging for them to make independent and advantageous shopping decisions. This aligns with the viewpoint of P2-1:

P2-1 I3 – After I initially discovered the dress that surprised me so much, I got excited and gave Xiaohongshu permission to access all the content on my phone. I just wanted to get more fantastic recommendations from it. Once I did that, Xiaohongshu created more interesting and useful surprises for me. So I became even more addicted, constantly trusting Xiaohongshu and giving it more personal data. But gradually, I began to realise that something was amiss. The constant stream of surprises, while exciting, also made me feel like I was losing control. Xiaohongshu seemed to know me better than I knew myself, often recommending items to me before I even started searching for them. This gave me a sense of being constantly monitored, and I started to question whether all this sharing was really worth it.

These negative memories of being manipulated form integral parts of participants' shopping experiences, which, in turn, can assist participants in more effectively managing their serendipitous experiences.

4.3.1.2.4 Professional identity

Professional identity, 'whether as a student or an employed' (P2-10), also had an impact on how often participants experienced e-commerce serendipity and the ultimate benefits they derived from it.

Excluding extreme cases (i.e. P3-3), the students in this research tended to experience e-commerce serendipity more frequently than those in employment. During the data collection, the students documented, on average, four serendipitous stories each. Furthermore, during the follow-up interviews, they elaborated on additional serendipitous experiences that were not formally recorded. By contrast, those employed recorded an average of 3.25 serendipitous stories, which, for the most part, constituted all their e-commerce serendipity experiences throughout the research period.

The reason for this difference could be the 'more ample free time' (P2-10) that the students had. With 'enough free time' (P2-10), the students had the flexibility to structure their daily schedules as they please. Thus, they could allocate more time for shopping and, consequently, come across shopping-related surprises more frequently.

P2-4 I4 – I am currently a third-year college student, and I have very few courses to attend. This means that I usually have a lot of free time and can pursue whatever I want. I often spend a significant amount of time browsing through platforms like Taobao and Xiaohongshu. Naturally, I will have more e-commerce serendipity experiences.

In addition, the students tended to be ‘more impulsive’ (P2-10) in their shopping decisions and were more willing to try various ‘unconventional products’ (P2-10). This openness made the students more inclined to embark on the serendipitous route.

The employed participants faced stricter social and company rules. This limited not only their free time for shopping but may also restrict their choices. For instance, P2-6, P2-8, and P4-7, who were employed in financial roles, were obliged to acquire formal attire, essentially ‘distancing [themselves] from the realm of casual wear’ (P4-7). Faced with numerous shopping constraints, they had a relatively narrow exposure to consumer information, naturally limiting their opportunities for serendipitous encounters.

In spite of experiencing e-commerce serendipity less frequently, those in employment derived greater benefits from serendipity than the students for two main reasons. First, the enhancement of their financial status empowered the working group to undergo both ‘consumption upgrade and serendipity upgrade’ (P2-10), which led them to serendipitous encounters with products of higher quality.

P2-10 I3 – I have been working for just half a year, but I can clearly feel that I've experienced a consumption upgrade as well as a serendipity upgrade. After purchasing a few high-quality beauty products, Taobao started recommending better-quality products to me. The surprises I have encountered since working have mostly been from well-known brands like Lancôme, not the random and unknown brands I used to come across during my student days. This kind of serendipity feels more worthwhile to me because the products are definitely of good quality.

Moreover, financial resources empowered those in employment to swiftly purchase the serendipitously discovered products they desired, which led to more substantial experiential gains. As expressed by both P2-8 and P3-3, their improved economic situations after entering the workforce significantly reduced their likelihood to yearn for serendipitous findings they could not afford.

Conversely, for students, a ‘desiring but not obtaining’ dilemma (P1-2) often occurred in their serendipitous experiences. As such, serendipitous experiences that could have potentially led to tangible benefits were transformed into mere instances of ‘happy window shopping’ (P1-5).

4.3.2 Third parties-related factors

Third parties, namely the e-commerce practitioners, the shopping-related platforms, and all technical agents created and controlled by the e-commerce practitioners, also played an important role in shaping e-commerce serendipity. Without the involvement of these parties, participants might ‘not have the opportunity to stumble upon as many surprises’ (P2-9). Also,

if it were not for the manipulation of these third parties, participants might ‘not have fallen into the trap of bad serendipity’ (P2-2).

The influence that third parties exerted on e-commerce serendipity can be attributed to a combination of their ‘general qualities’ (P3-3) and their serendipity-prone designs.

4.3.2.1 General qualities

According to participants, general qualities are ‘the attributes necessary to support the business operation of a third-party’ (P3-3), including: its *business positioning, reputation, shopping-related resources, system stability, and sales management*. These qualities can affect whether participants could experience ‘good and satisfying serendipity’ (P2-2) in a given online marketplace.

4.3.2.1.1 Business positioning

Third parties’ business positioning is referred to as ‘the core type of business supported by a specific platform or vendor’ (P4-7). On the basis of this business positioning, the participants classified the third parties involved in their serendipitous experiences into two groups:

- 1) The ‘*shopping professionals*’ (P3-1). These include platforms and e-commerce practitioners whose core businesses centre around shopping. Typical representatives include platforms such as Taobao, JD.COM, Pingduoduo, Goofish, and all associated vendors.
- 2) The ‘*non-shopping professionals*’ (P3-1). These are platforms and e-commerce practitioners for whom shopping is a secondary aspect of their businesses. Examples include WeChat, Bilibili.com, and Weibo.

The occurrence of e-commerce serendipity was notably higher when participants interacted with shopping professionals. Out of 123 instances, 78 involved these professionals. The predilection of shopping professionals to facilitate e-commerce serendipity stems from their ‘profound understanding’ (P2-5) of participants’ shopping preferences and the ‘latest market trends’ (P3-4).

P3-5 I4 – My serendipity essentially occurs during interactions with shopping professionals, as they have a better grasp of my shopping preferences and know how to surprise me. After all, most of my shopping happens on these professional platforms, where most of my shopping-related behavioural traces are captured by these professionals.

This understanding enabled the professionals to deliver a surprise that ‘aligns more closely’ (P2-5) with participants’ preferences and everyday concerns, making such surprises effective catalysts for serendipitous experiences.

4.3.2.1.2 Reputation

According to participants, third parties' reputation influenced their trust in these parties. The better the reputation of a third party, the more likely participants were to experience good serendipity in their interactions with that third party.

Reputable third parties tended to garner more trust from participants. For participants, a strong reputation indicated a third party's 'commitment to delivering high-quality offerings' (P2-5), 'maintaining accountability in their actions' (P2-8), and 'ensuring transparent transactions' (P3-1). This elevated trust can lead participants to interact with these third parties 'more intensively and more attentively' (P3-6).

In these 'engaged and attentive' (P2-5) interactions, participants not only explored a variety of offerings by the third parties, but also investigated the details of each offering with greater scrutiny. The in-depth exploration fostered a conducive environment for uncovering serendipitous findings that were outside the participants' immediate focus.

P4-2 I4 – I experience serendipity more frequently on Xiaohongshu, and one of the reasons for this is my high level of trust in this platform – I believe that all the information it provides makes sense. So, every time I visited Xiaohongshu, I would go through each piece of information very carefully. In some cases, I even browse through the comments section of each post, not wanting to miss any details. This deep interaction made it easier for me to discover surprising and interesting findings hidden on the platform.

In addition, participants' frequent visits provided these reputable third parties with valuable insights into their shopping preferences. Armed with this knowledge, they could curate 'more considerate' (P3-6) serendipitous opportunities for participants to explore. Upon embracing these tailored opportunities, the participants, were more likely to make purchase decisions, thereby achieving tangible experiential outcomes.

P3-6 I3 – Because I trust Taobao and almost spend several hours on it every day, so, Taobao has a deep understanding of my preferences. Now, almost everything provided on Taobao is what I like. In such an environment tailored to my tastes, it is hard not to come across some considerate surprises.

By contrast, third parties with a poor reputation often struggled to earn participants' trust. Often, participants approached these 'untrusts' with caution (P4-6), always concerned that their offerings may be commercial traps. As a result, when participants noticed the appealing surprises offered by these untrustworthy third parties, they were inclined to discard this 'unplanned luck' (P3-10). For example, owing to Pinduoduo's negative reputation, P3-10 avoided spending any time on discount information she came across on this platform, despite a discount of 'a substantial 50% off' (P3-10).

Even when participants were enticed to explore surprises from less reputable sources, they could suffer from subpar service or inadequate information, which could lead to an overall unsatisfactory experience.

P1-4 S2 – I had heard about the subpar services of vendors on Douyin previously, and this time, I experienced [this bad service] first-hand. I messaged the vendor to enquire about the differences between link No. 1 and link No. 2, as this was not clearly stated, and yet there were discrepancies in the price for the same cup shown on these two links. To my dismay, I waited nearly 20 minutes without receiving a response. Such a slow response time would be unthinkable on Taobao. The experience with Douyin vendors was truly frustrating.

P2-10 S3 – Frankly, I would not use Pinduoduo if it were not for the allure of cheaper prices, as I am aware of its poor reputation [...]. However, despite being mentally prepared, the inappropriate content on Pinduoduo still managed to shock me this time. Can you believe that Pinduoduo would allow vendors to include content that is borderline pornographic on the product details page for women's socks? It is utterly repulsive.

Compounding the issue, when serendipitous experiences arose from these less reputable sources, participants frequently chose not to pursue their serendipitous findings. This decision deprived them of tangible rewards that could have 'balanced out [their] initial negative experiences' (P2-10).

4.3.2.1.3 Shopping-related resources

For participants, third parties that possessed 'an abundance of reliable shopping-related resources' (P3-6) were 'often' (P2-7) more prone to facilitate enjoyable e-commerce serendipity. According to participants, having access to a wealth of reliable market resources (i.e. resources that are 'high-quality, up-to-dated, and have extensive coverage' – P3-3) can stand as a testament to the third parties' 'expertise' (P4-4) and 'competence' (P3-5) in online marketplaces.

P4-4 I4 – The greater the richness of resources, the greater the expertise this third party must possess in shopping, market management, and technical management. After all, collecting, processing, analysing, and updating information are no easy tasks. It takes robust technological support and market acumen to achieve all of this. Just look at the platforms with the richest resources today, like Taobao and Amazon – they are leaders in the e-commerce domain.

P3-3 I3 – I believe that the extent of your resources can reflect your influence and authority in the consumer domain to some degree. After all, in today's information age, information is a key competitive resource. If one platform or vendor possesses the capability to accumulate a substantial volume of resources, it can, in my perspective, reflect its competence.

When a third party demonstrated expertise and competence in shopping, the participants would trust it more.

P4-4 I4 – Indeed, as leading parties in the shopping domain, these experts are likely to excel in market research and user protection. So, their services and suggestions are always more helpful for us. Certainly, when faced with individuals or platforms that can provide significant assistance in shopping, it's natural to trust them more.

P3-3 I3 – Platforms with greater competence in shopping definitely deserve more of my trust, as their competences mean that they can give us more insightful and reliable shopping advice.

Owing of this trust, the participants were more willing to engage with these third parties and explore their offerings. The sheer volume of reliable resources that these ‘experts’ (P2-10) had also afforded participants an exciting ‘treasure-hunt-liked [serendipitous] experience’ (P1-3), where each click or scroll could unveiled an additional good surprise.

P1-3 I4 – I think Taobao truly lives up to its name; it is indeed a place for a treasure hunt. There are so many products and services available on the platform, and the quantity is vast. So, I can never completely predict what I will discover on Taobao. Every time I use Taobao, it's like going through a treasure hunt, and within this process, there are many opportunities for surprise.

Sometimes, however, a sheer volume of reliable resources was akin to ‘emotional opium’ (P4-6), whose ‘exciting surface’ would ‘deceive [the participants] into prolonged in-store visits’ (P4-6). While these visits might have been enjoyable at that time, participants might feel fatigue and regret soon afterward.

P2-7 I2 – While I believe that a richer information environment often increases my chances of experiencing good serendipity, I must acknowledge that the same situation may not hold true every time. At times, I find that discovering too many interesting things during a single online session can have downsides. An excess of captivating information might entice me to spend an extended period on the same platform. While this extended stay can be enjoyable and pleasurable, it may also lead to fatigue later on.

While having access to a vast amount of reliable shopping-related resources might have risked trapping participants in a state of overload, not having access to such resources could potentially deprive participants of any serendipitous opportunities. This can be linked to the viewpoint of P2-7:

P2-7 I2 – When confronted with information that appears unreliable, I tend to become hesitant, refraining from exploration. It is simply not worth allocating my limited resources to something that, at a glance, seems unlikely to offer value. Similarly, if the volume of information is scant, it is probable that I will not uncover any surprises. After all, as the saying goes, ‘Clear waters host no fish.’

4.3.2.1.4 System stability

Given that ‘everything in online shopping relies on network connectivity’ (P2-1), the stability of third parties’ network systems was also an essential prerequisite for participants to experience enjoyable e-commerce serendipity.

Without a stable Internet system, what ‘could have been an enjoyable serendipitous experience’ (P1-5) for participants could easily be disrupted or even come to an abrupt halt. For instance, P1-5 missed the opportunity to explore an unexpected discovery of a perfume sample because Weidian crashed¹, while P2-4 lost the chance to purchase a pair of limited-edition sneakers she had come across unexpectedly because of the dead links encountered on Poizon.² Moreover, P3-9 was unable to buy a ticket for a ‘surprisingly reopened’ music festival because the system of Damai.com³ ‘could not cope with the surge of users attempting for ticket purchase’.

These involuntary interruptions in serendipitous experiences could, in turn, further diminish the participants’ trust in a specific third party, as stated by P2-4:

P2-4 I3 –If a platform cannot even handle simple and basic network system maintenance, how can it convince me that it can safeguard my shopping experiences and offer pleasant surprises?

The diminished trust level could potentially lead participants to disengage with the potential serendipitous route offered by the third party. This can be observed in the narratives of P1-5, who mentioned that since experiencing the crash, she rarely uses Weidian. Even when she does, she focuses only on her planned targets and pays less attention to other content, resulting in fewer serendipitous experiences with Weidian.

4.3.2.1.5 Sales management

According to the participants, *sales management* refers to the ‘shopping restriction and after-sales guarantees’ set by third parties (P4-7). A third party with fewer shopping restrictions and robust after-sales guarantees was seen as more ‘consumer-friendly’ (P4-7). This perception of consumer-friendliness, in turn, fostered greater trust in the third party and made it more likely to facilitate enjoyable serendipity.

Shopping restrictions encompassed both time limitations and purchase restrictions. Time limitations indicated that ‘a product or marketing campaign is only accessible within a specific

¹ Weidian (微店) is a Chinese online social commerce service owned and incorporated in the WeChat platform. Weidian allows individuals and businesses to set up and operate their own virtual stores.

² Poizon (得物) is a popular shopping platform focused on sneaker culture and streetwear fashion. The platform serves as a marketplace where users can buy, sell, and trade sneakers, clothing, and accessories, particularly those related to streetwear and urban fashion trends.

³ Damai.com (大麦网) is a platform that specialises in selling tickets for various live events, including concerts, sports events, theatre performances, and other entertainment shows.

period of time’ (P3-10); while purchase restriction referred to that ‘particular products or marketing campaigns were only available to specific groups of individuals’ (P1-4).

When these restrictions were in place, participants may find themselves unable to obtain the serendipitous findings they desired. An example was P3-10, who missed out on purchasing the jeans she discovered because she did not act swiftly on the day when the product became available. Another example was P1-4, who had to forego the beautiful set of makeup brushes she stumbled upon because it was exclusively available to those who had paid a deposit.

For participants, being unable to access the products they desire can make them feel that ‘the time and efforts [they] invested were wasted’ (P3-10). The feeling of wasted resources can, in turn, frustrate the participants and lead them to question the ‘sincerity’ (P1-4) of certain third parties, P1-4 explained:

P1-4 S4 –If you had told me earlier that this set was only available for those who paid the deposit, I would have considered you quite honest. But this time, you concealed this information and told me when I am going to make the purchase – when I had already spent a lot of time and effort to understand and explore the product. You clearly deliberately concealed such important information just to boost the traffic from my visit. This caused me to waste my time, energy, and emotions, while you increased the visitor count to your store.

As a result, participants may opt to decrease their engagement with such ‘deceptive vendors and platforms’ (P3-10), reducing the serendipity potential of these third parties.

An after-sales guarantee referred to ‘the return policies and other assurances aimed at resolving problems with a purchase’ (P2-2). The presence of robust after-sales guarantees can instil in participants the belief that a third party ‘do consider consumer rights’ (P3-1) rather than ‘solely prioritising [their] own interests’ (P3-1). This, in turn, led to increased trust in these third parties and a greater willingness to embrace the unplanned surprises they offered. Furthermore, owing to the existence of robust after-sales guarantees, some participants were even more inclined to invest monetary resources in the serendipitous findings provided by certain third parties.

P2-1 I4 – On Taobao, I am more likely to buy the [serendipitous findings], as Taobao has a seven-day no-reason return policy. If I do not like that thing, I can return it, even without me paying for shipping.

P4-4 I2 – Sometimes I would directly purchase things I might not have seen before. I do this partly out of curiosity, and partly because Taobao now has this fast refund option. If you do not like something, you can immediately return it and get your money back.

4.3.2.2 Serendipity-prone designs

Serendipity-prone designs referred to ‘conscious and intentional designs’ (P3-9) employed by a third party to encourage participants to ‘continuously engage in’ unplanned serendipitous routes (P3-9).

P3-9 I4 – Well, in my opinion, all the serendipity experiences in online marketplaces are the result of intentional designs by third parties. Otherwise, why would a rational consumer like me continuously engage in things that I originally thought I would not be interested in?

The serendipity-prone designs highlighted by the participants were *the designs of recommendation systems (RSs), the design of marketing strategies, and the design of interfaces*. The effectiveness of these designs directly influenced how participants experienced e-commerce serendipity and the resulting outcomes they acquired.

4.3.2.2.1 The design of RSs

RSs had a dual effect on participants’ serendipitous experiences, as – they can serve as a ‘helpful reminder’ (P2-1), ensuring participants do not miss out on some good surprises, but can also turn into a ‘potent deceiver’ (P3-6), leading participants to unwittingly invest in some commercial traps.

P2-1 I3 – At the heart of my serendipitous experience are the powerful recommendation systems of each platform. These recommendation systems, or the helpful reminders in my eyes, are responsible for spotting and presenting these [serendipitous findings]. Without the help of these reminders, I cannot have the chance to come across [these findings].

P3-6 I3 – One big reason I got stuck in the exploration cycle is because Taobao has a super-smart recommendation system. It is like a potent deceiver who knows me really well and can predict exactly what I will do next. So, it always knows how to trick me to jump into some commercial traps best.

Empowered by ‘intelligent technologies’ such as AI (P2-5), well-designed RSs were ‘superb’ (P2-9) and even outperformed the participants in information processing and analysis. This advantage enabled RSs to uncover shopping concerns that ‘eluded [participants’] self-awareness’ (P1-1) and identified emerging trends that ‘extended beyond [participants’] current shopping scope’ (P3-1). With these insights, RSs can push the boundaries of participants’ planned shopping experiences, creating opportunities for participants to have expected discovery of the familiar and the expected identification of the novel.

More in detail, according to participants, RSs excelled in discerning participants’ preferences and current living statuses, subsequently tailoring personalised offerings to align with these insights. By doing so, RSs can foster ‘a sense of being served and catered to’ (P3-2) among

participants. This, in turn, bolstered participants' belief in the usefulness and worthiness of the surprises offered by the RSs. Also, RSs were agile and capable of swiftly updating their personalised offerings in line with the latest market dynamics. These timely updates kept the surprises offered by RSs 'fresh and novel' (P2-7), preventing 'stagnation' (P4-2) and maintaining 'a sense of niche and interestingness' (P4-2). Faced with such an ever-evolving array of surprises, participants may feel that their 'shopping scopes were genuinely being expanded' (P1-2) and became 'more curious' (P1-2) to explore these recommended surprises.

Apart from the benefit they brought, RSs could also lead participants into uncertainty and ambiguity. This is because that RSs were inherently designed to serve the 'maximise profits for the platforms and vendors they serve' (P4-7), thus, RSs may not always prioritise the best interests of participants. Consequently, while RSs can guide participants towards good surprises, they may also provide unplanned bait, enticing participants to 'willingly sacrifice [their] own interests for the profits of third parties' (P3-9). However, this underlying agenda of RSs was not known by participants, as indicated in the following statement:

P3-9 I4 – After being duped by recommendation systems a few times, most of us become a bit more cautious. Even if you are slow to realise the issues with recommendation systems after being deceived, the numerous news reports about big data surveillance and AI-based fraud these days serve as a warning.

This awareness introduced a level of caution and scepticism when participants bumping into the 'recommended surprises' (P3-5). To guide participants to venture into an unplanned shopping route, third parties might also adopt marketing strategies as a means of persuasion.

4.3.2.2.2 The design of marketing strategy

Marketing strategies, acting as the 'interpreter' (P4-2) that explains the value of recommended surprises, also played a dual role in participants' serendipitous experiences. On the one hand, marketing strategy can be 'the hero' (P4-2), guiding participants towards unplanned yet rewarding opportunities.

P4-2 I4 – While some might view a platform's marketing design as secondary to its recommendation systems, I believe that these so-called complementary designs are equally crucial for shaping my serendipitous experience. An enticing marketing description serves as the interpreter of the surprises I have come across. Without this interpreter, that surprising recommendation might appear unappealing to me. [...] Good marketing descriptions are like heroes that remind me not to overlook a promising surprise.

Alternatively, they could become 'accomplices of the [third parties]' (P2-6), steering the participants into bad serendipity.

P2-6 S1 – Logically speaking, a rational consumer like me would not waste my precious lunch break on a recommendation. However, this time, the marketing rhetoric used in this recommendation was so powerful that it completely got me. [...] The reason why I had such a bad experience was entirely caused by the marketing strategy, which acted as an accomplice of Taobao.

Specifically, upon their initial meeting with a recommended surprise, participants were not introduced to ‘the actual content’ of that surprise (P3-5). Instead, participants were only exposed to its’ snapshots of the surprise, which had been ‘crafted through marketing means’ (P3-5), as expressed in the following statement:

P3-5 I3 – On Taobao or any other shopping-related platforms, the recommended products I see at first glance are definitely not the actual content of the product. After all, these platforms do not have enough space to display the detailed content of all the products directly. Instead, I was exposed to snapshots about the product, and these snapshots are often crafted through marketing means.

An effective marketing design had the dual ability to ‘ease any doubts [participants] might have about the value of a surprise’ (P2-7) and spark their curiosity to explore the serendipitous path. Often, these ‘skilfully crafted’ (P2-7) marketing designs highlighted the ‘most captivating snippets’ (P3-5) from the recommended surprise and showcased these elements in an engaging way. By steering clear of ‘industry jargons’ (P2-8) but incorporating ‘everyday descriptions’ (P2-8) along with various ‘multimedia elements’ (P4-2), participants can quickly visualise how they ‘might apply the recommended surprise in their everyday lives’ (P4-2). This sense of immersion can strengthen the participants’ appreciation of the recommended surprises, increasing their willingness to explore surprises that do not seem immediately relevant to their daily concerns:

P1-5 S2 – [...] Although wedding photography seems less relevant to me, I am still curious about this encountered recommendation [of wedding photography] and want to further explore it. [...] One of the main reasons for my curiosity is the immersive nature of the content within the recommendation. This recommendation is presented as a video, with cinematic filming techniques akin to a TV drama and well-matched background music. All this makes it hard for me not to imagine how wonderful it would be if my boyfriend and I had a similar wedding photoshoot experience.

Conversely, ill-conceived marketing designs tended to intensify participants’ concerns, leading them to view the recommended surprise as merely a commercial trap. In response, participants were inclined to steer clear of these surprises and were reluctant to follow the unplanned pathways suggested.

Often, such poorly crafted marketing information included descriptions that were either overly ‘exaggerated’ (P3-8) or excessively ‘targeted to [a single participant]’ (P2-6). Elements that

were exaggerated can instil doubts among participants about the quality of the product, as P3-8 explained:

P3-8 I3 – Whenever a recommendation includes overly exaggerated language, such as ‘lose ten pounds in three days’ or ‘biggest discount ever’, I tend to view the product or the marketing campaign negatively. These words give me the impression that they are trying too hard to mask some undisclosed flaws or issues with the product or the campaign. As the saying goes, ‘The more insecure you are, the more you tend to overcompensate.’

Highly targeted descriptions, particularly those that overemphasised the connection between the recommendations and participants’ everyday lives, could raise privacy concerns. Some participants may question whether the recommendation was crafted on the basis of inappropriate data acquisition, as P2-6 suggested:

P2-6 I2 – If a recommendation appears overly targeted, for instance, telling me that my friends have also viewed it, I will definitely avoid it. This is because I would worry whether the recommendation was made after infringing on my privacy.

Given ‘the importance of first impression in shopping’ (P2-4), the initial perceptions formed under the guidance of marketing strategies kept play an important role for participants when they embarked on serendipitous routes. These first impressions can potentially become the foundation for participants’ subsequent decisions, and sometimes, inadvertently led participants towards making suboptimal decisions.

P2-4 I2 – Shopping is very much about first glance. The first impression of a product can sway whether or not I purchase it, although this first attraction does not always lead to satisfying shopping.

The ultimate goal of marketing designs is to amplify the commercial value. Therefore, even ‘the most seemingly genuine marketing information’ (P2-4) invariably had its hidden pitfalls, which led participants to form misconceptions about the recommended surprises and even guided them to impulsive decision-making.

4.3.2.2.3 The design of interface

Finally, interface designs also influenced participants’ e-commerce serendipity experiences. The interface design was crucial in ensuring that participants could promptly notice the surprises carefully designed by third parties. With the abundance of online information and limited attention of participants, lacking a user-friendly interface might lead to these surprises being overlooked. According to participants, the primary interface design elements influencing their noticing of the designed surprise included the *colour schemes* and *the layout*.

Colour scheme refers to ‘the selection and arrangement of colours used in an online marketplace’ (P4-2). For participants, a well-chosen colour scheme can be a serendipity propeller. However, when it came to explaining what constitutes a good colour scheme, participants held two distinct perspectives. Some participants noted that a good colour scheme is one that ‘prioritises simplicity and uniformity’ (P4-2) in its use of colours. This design approach, as exemplified by Lifease,¹ has two key benefits in enhancing e-commerce serendipity: First, a consistent choice of colours made the online marketplaces ‘visually harmonious’ (P3-2), preventing participants from being distracted by ‘discordant elements’ (P3-2) and allowing for a flow-liked visits. Entering the flow status, in turn, enhanced the chances of discovering hidden surprises in unusual places.

P3-2 I4 – For me, a simple colour scheme is the best. Simple means harmonious; it prevents distracting and discordant elements from suddenly interfering with my view. This allows me to concentrate on what I am looking at, making it easier for me to discover hidden gems ducking in unplanned places.

Moreover, a simple colour scheme also fostered an atmosphere of ‘sophistication and refinement’ (P4-2). This feeling often led participants to view the discovered surprises as being of ‘high quality’ (P4-2), which encouraged them to delve deeper into these findings.

P4-2 I4 – Although it may sound a bit pretentious, I believe that a simple colour scheme exudes an air of sophistication and refinement. It can give me the impression that everything in the store is of high quality. High-quality items naturally inspire curiosity and a desire to explore further.

Interestingly, some participants held a contrasting view, stating that a good colour scheme should be ‘rich and diverse’ (P2-10) in its use of colours. This design approach, as exemplified by platforms such as Taobao and Pinduoduo, also offers two key benefits in enhancing e-commerce serendipity. First, a diverse colour scheme effectively ‘showcased the unique attributes of each item’ (P1-4), in turn, allowing unique surprises to quickly stand out from the crowd and capture participants’ attention. Also, such a colour scheme created a ‘visually captivating and stimulating environment’ (P3-9) that piqued participants’ curiosity, encouraging them to explore the marketplaces more deeply and enhancing their likelihood of coming across the unknown.

Layout refers to ‘the way in which information is presented in a platform or a store’ (P3-6). A well-designed layout can ‘efficiently assist [participants] in noticing unplanned surprises’ (P3-

¹ Lifease (网易严选) is an e-commerce platform known for its focus on offering high-quality, cost-effective products across various categories such as home goods, apparel, kitchenware, and personal care items. It is part of NetEase (网易), a large Chinese internet technology company that is famous for its diverse services, including gaming and education.

6). The participants' opinions on what constituted a good layout for enhancing serendipity also diverged. One perspective asserted that 'a single-column' (P4-2) or 'one-information-per-screen' (P3-7) layout promoted serendipity. This 'simplified layout' (P4-2) can reduce visual clutter and distractions, making it easier for participants to spot 'unknown surprises that [they] might overlook' (P3-7).

P3-7 I4 – I think a layout like the one used by Douyin, which features one-information-per-screen, is most conducive to promoting serendipity. This layout allows me to concentrate on a single piece of information, reducing the chances of missing unknown surprises that I might overlook.

Conversely, the second perspective argued that 'a double-column' layout (P3-6) or a layout that displayed 'a diverse range of information objects on a single screen' (P2-2) can foster more serendipity. According to proponents of this view, the simultaneous presentation of various information types 'sparks heightened curiosity' (P2-10). This curiosity motivated the participants to explore the information more intensively, significantly increasing the chances of coming across unplanned surprises.

4.3.3 Conditional factors

The conditional factors referred to a specific set of elements that made up the surroundings in which participants find themselves immediately before and during the unfolding of e-commerce serendipity. These contextual factors, which were multifaceted and comprised *the natural surroundings*, *the planned task at hand*, and *the social environment*, had a direct impact on participants' need status, emotions, and available resources, subsequently influencing their serendipitous experiences.

4.3.3.1 The natural surroundings

The natural surroundings denoted 'the seasons of the year' (P4-2) and 'the time of the day' (P2-10). These two natural elements influenced how often participants experienced the serendipitous moment within the context, and their decision-making upon embarking on a serendipitous route. The participants observed that e-commerce serendipity tended to 'occur more frequently at the turn of the seasons' (P4-2). This is because 'needs to shopping are often introduced' as seasons change (P4-3); also, these needs can sometimes be deemed 'important and urgent' (P3-4), as the change in seasons is 'an objective and irreversible reality' (P3-4).

P1-1 S4 – Summer is approaching; it is time to buy sunscreen!

P3-3 S13 – Because summer is coming soon, I need to buy sunscreen – this is an important and urgent need, as the change in seasons is an objective and irreversible reality. If I do not get the right sunscreen before the coming of summer, I might suffer in summer, as my skin is super sensitive to sunlight.

P4-3 S4 – Since the season is now gradually transiting from spring to summer, I am thinking of buying new summer clothes. Every time the season changes, I find myself unconsciously introduced to shopping needs.

Driven by these (potentially urgent) needs, even participants who ‘usually paid little attention to shopping’ (P4-3) found themselves visiting online marketplaces more frequently. These increased visits, in turn, amplified participants exposure to potential shopping surprises.

Another moment conducive to the occurrence of e-commerce serendipity was the evening hours, when participants had ‘completed [their] daily work and had ample time for leisure activities’ (P3-10). Having more time allowed participants to ‘explore a vast amount of shopping information carefully’ (P2-1). The thorough exploration, in turn, increased the likelihood of them uncovering ‘the intricately concealed surprises’ (P2-1). In addition, serendipities that arose during the evening hours were more prone to unfold in ‘an impulsive manner’ (P2-8). This was primarily because, after a day filled with work and learning, participants’ ‘mental energy is depleted’ (P2-8), akin to ‘a battery running out of charge’ (P3-9). In these circumstances, the participants had a natural inclination to ‘forego rationality’ (P3-9), while allowing emotions to steer their serendipitous experience.

4.3.3.2 The planned task at hand

The planned task at hand, varying in type and holding different degrees of importance and urgency for the participants, affected participants’ likelihood of engaging in an e-commerce serendipitous experience.

When a planned task was deemed *important* and *urgent*,¹ participants seldom abandoned it for an experience of serendipity. The pressure associated with the planned tasks compelled participants to prioritise these tasks exclusively. As such, for some participants, any occurrences ‘not entirely aligned with the planned task’ (P3-10) were likely to be viewed as negative distractions rather than pleasant surprises, leading them to be intentionally overlooked. This sentiment was echoed by P4-1:

P4-1 I2 – If the task at hand is significant and demands immediate attention, it consumes all my focus and effort. Any other matter is intentionally overlooked; everything else must yield to this task.

In addition, some participants were not so hasty to disregard the surprises they noticed, as they believed that:

P2-3 I4 – It is pie in the sky; giving it up is being sorry for the luck God gave you.

¹ Examples of tasks that are important and urgent are purchasing flowers for an upcoming meeting (P4-1) or preparing a presentation for an afternoon conference (P3-9).

These participants often opted to ‘rely on [their] memory to recall the noticed surprise’ (P2-3), intending to explore it after completing the planned tasks. However, such intentions often did not materialise. On the one hand, due to the rapid changes in the online marketplace, the surprises might have either disappeared from their view or become unavailable by the time participants finally found time to explore them, as the experience of P3-10 showed:

P4-3 I2 – I remember one time, when I was doing the administrative proficiency test simulation questions on my computer, Ele.me’s¹ discount information popped up on my phone. This was a discount from McDonald’s. Since I love McDonald’s, I decided to not to let the discount go and get the discount as soon as I completed the test. But when I finished and clicked on an offer, I discovered it had already been sold out.

On the other hand, the completion of the planned task might leave these participants feeling exhausted. They might either ‘forget about the noticed surprises’ (P4-1) or simply ‘lack the energy to further investigate the surprises’ (P3-2). This could lead to the loss of serendipity in online marketplaces.

When the planned task was deemed *urgent* but *non-important* – often simple routines such as shopping for daily necessities or handling printing tasks – participants might still prioritise these planned tasks. Whereas after completing these simple routines, participants still had the possibility of experiencing e-commerce serendipity, as:

P2-2 I2 – Buying things like toilet paper does not require much mental effort; I still have plenty of energy to continue exploring!

At this juncture, the likelihood of participants experiencing e-commerce serendipity was more closely associated with the *type* of the task at hand.

According to participants, they were more likely to encounter serendipity after completing a shopping-related routine. This is because, on the one hand, vendors and their associated platforms often make immediate, tailored recommendations upon the conclusion of a purchase. In addition, the recommended surprises in this timeframe tended to be ‘particularly appealing’ (P2-7); thus, they were more capable of sparking serendipity. On the other hand, the participants’ ‘mental state remained shopping-oriented’ (P3-8) at this time, rendering them more receptive to potential shopping-related surprises.

¹ Ele.me (饿了么) is a popular Chinese online food delivery and local service platform. It allows users to order food from nearby restaurants and have it delivered to their doorstep.

When the planned task was deemed either *important* but *not-urgent*,¹ or *non-important* and *not-urgent*,² occurrences of e-commerce serendipity were more frequent. The reason e-commerce serendipity was more likely to occur in the aforementioned two task contexts was because, when a task was not deemed urgent, participants ‘did not feel the immediate pressure to complete it’ (P2-3). The lack of pressure granted them ‘the freedom to allocate [their] time and energy more freely’ (P2-3) towards shopping. The abundance of time afforded participants the opportunity to investigate a wider range of shopping information, while surplus energy increased their alertness to the surprises concealed within such information. Notably, participants’ alertness to shopping-related surprises was especially pronounced when they were engaged in tasks that were *important* but *not-urgent*. This phenomenon can be attributed to a form of procrastination or a proclivity towards escapism, as vividly encapsulated by the experiences of P4-4 and P2-4:

P4-4 I3 – Personally, I tend to procrastinate when handling important tasks such as preparing lessons. The more time you give me, the more I dawdle and focus on things unrelated to the tasks that should be completed.

P2-4 S2 – This story unfolded while I was preparing for a final exam scheduled for the following week. [...] I found myself more attuned to shopping-related surprises while studying, although I know that study is important. After all, studying can be so dull that at the outset; everything else seems more interesting and warrants closer attention.

4.3.3.3 The social environment

The social environment, constituted by elements such as *social norms* and *interpersonal relationships*, impacted both the likelihood of participants experiencing e-commerce serendipity and the course these experiences may take.

4.3.3.3.1 The impact of social norms

Social norms refer to the ‘behaviours and value standards acknowledged by the majority of members within a social environment’ (P3-3). When situated in work or study environments, where ‘non-leisure activities are deemed the focal of all behaviours’ (P2-4), participants were less likely to experience e-commerce serendipity. This was because, in such environments, conducting leisure activities such as shopping was perceived as ‘inappropriate’ (P2-4), thereby ‘inviting social pressure’ (P3-10). This atmosphere fostered a reluctance among participants to engage in ‘nearly all’ (P2-3) shopping-related activities.

¹ Examples of tasks that are important but not-urgent include: preparing for final exams scheduled for the following week (P2-4), or arranging a birthday gift for an aunt whose birthday is a month away (P1-2).

² Examples of tasks that are non-important and not-urgent include: watching short videos to kill time (P2-8), or aimlessly browsing Taobao to kill time (P3-6).

However, when the participants overcame social pressure and initiated e-commerce serendipity within an office or classroom, they found the experience ‘exceptionally delightful’ (P3-10). This heightened sense of enjoyment was likely attributed to the thrill derived from ‘engaging in prohibited activities’ (P3-10), as in the story told by P3-10:

P3-10 S2 – This encounter occurred while I was in the midst of a faculty meeting. [...] For me, browsing Taobao on such a solemn occasion was exceptionally delightful – after all, partaking in prohibited activities is always particularly thrilling. [...] Maybe it is because I touched the boundary [of the social environment] that I found this encounter to be extremely surprising, exciting, fun, and awesome!

However, such emotional gratification can seldom transform into a tangible purchase. This might be because making a purchase decision demanded ‘adequate time and effort’ (P3-10), while when constrained by social norms, participants often found themselves in short of these two resources, as reported by P4-5:

P4-5 I3 – I have indeed experienced discovering some surprisingly good products while slacking off in the office, but seldom do I decide to purchase these items. After all, being in the office, I have to be mindful of my boss and colleagues, which means that I cannot spend a lot of time searching for various shopping guides. The lack of an adequate shopping guide can hinder me from making what I deem to be rational purchasing decisions. When I am not confident about the rationality of my purchasing decision, I often choose to prudently forgo purchasing, as opting out at least ensures that I will not be duped.

Conversely, when situated in leisure-centric social environments, such as family or friend gatherings, or in settings ‘devoid of social norms’ (P4-3), particularly when alone, the participants were more likely to stumble upon e-commerce serendipity. This enhanced likelihood for e-commerce serendipity was due to the ‘freedom’ (P4-3) the participants had in such environments, as reflected in the following statement:

P4-3 I3 – In the absence of social norms, I have the freedom to adjust my behavioural plan according to my mood and engage in any activities I prefer. During such times, I might browse through a myriad of information, clicking on what I find intriguing, thereby increasing the chances of stumbling upon delightful consumer surprises.

However, a surge in serendipitous experiences does not necessarily translate into an increase in the enjoyment derived from such experiences. On the one hand, indulging in exploring shopping-related surprises could lead to prolonged screen time for participants, potentially resulting in a sense of fatigue once serendipity concludes. On the other hand, when participants

allowed emotions to overshadow logic, they could become more susceptible to impulsive behaviour, potentially leading to suboptimal behavioural decisions.

P3-1 S1 – To be honest, if it was not for the fact that it's Friday night and I am home alone, free to do as I please, I would not spend an hour on Taobao looking at clothes [...] After an hour of browsing, I felt aesthetically fatigued; for me, this experience was utterly exhausting.

4.3.3.3.2 The impact of interpersonal relationships

Interpersonal relationships refer to the ‘social bonds participants form and sustain with others’ (P2-2). At times, these very bonds can compel participants to embark on a serendipitous route. In other words, participants might have ventured into a serendipitous e-commerce experience because of others’ needs.

The narrative from P1-2 provided a clear illustration of e-commerce serendipity stemming from attending to ‘the needs of those close to us’ (P1-2). According to P1-2, her attention to an advertisement for a massager while browsing Weibo was not random; it was driven by her aunt’s expressed need for this product. Mindful of her aunt’s requirements, P1-2 shifted her focus from the ongoing social media scroll to exploring whether the massager in the advertisement would meet her aunt’s needs. Similarly, the needs of her son played a pivotal role in P4-1’s encountering experience. While shopping for herself, P4-1’s concern about her son’s need for baby formula led her to notice a pop-up ad for formula. This observation led P4-1 to realign her shopping plan, choosing to secure baby formula over shopping for herself.

However, sometimes, the concerns about their social bonds could make participants hesitant to embark on a potential serendipitous route. Specifically, the participants might be disinclined to accept shopping-related surprises that are ‘disseminated through social bonds’ (P4-3) or those ‘overly emphasis social bonds’ (P3-9). Receiving recommendations that emphasised their ‘intimate social bonds’ (P4-2) may make the participants feel that they were being ‘overly surveilled by the [third parties]’ (P4-2). This is because that information about social bonds was not an issue that the participants ‘preferred to share with shopping-related [third parties]’ (P4-2).

Thus, when the shopping-related surprises were disseminated through social networks, participants may regard them as intrusive disruptions rather than positive opportunities. This can be linked to the viewpoint of P4-3:

P4-3 I2 – I profoundly dislike Pinduoduo’s surprising discount events. They constantly permeate my social circle through messages sent by my friends on WeChat. This exploitation of my social network by Pinduoduo feels like a blatant invasion of my private sphere, and I find it deeply objectionable.

Meeting these unplanned disruptions often left the participants feeling that their everyday lives were ‘unjustly invaded’ (P3-4). Subsequently, the surprises could be discarded, and the third parties causing these disruptions tended to be ‘disliked’ (P3-5) by the participants.

When a shopping-related surprise was advertised as ‘having also been viewed by someone familiar’ (P3-9) to the participant, it can invoke participants’ sense that their ‘actions are being monitored by third parties’ (P3-9). This feeling, in turn, can lead to the participants’ concerns about their privacy, subsequently resulting in their reluctance to explore the presented surprise.

Beyond influencing the likelihood of serendipity occurring, interpersonal relationships also played a role in affecting the development of an already unfolded serendipitous experience – and they do so in a dual manner. In some instances, social bonds served as a safeguard, preventing participants from succumbing to bad serendipity. Advice from family and friends can remind participants to realise commercial traps that may not have been recognised on their own, thereby protecting participants from making regrettable decisions.

P3-8 S1 – Fortunately, I consulted my friend and discovered that the so-called TMall¹ overseas store was actually a store selling counterfeit products. Had it not been for my friend, I might have been deceived by this store.

Conversely, there were instances where the involvement of close relations can hinder the continuation of a potentially fruitful serendipitous experience. This dynamic is illustrated by P4-3’s experience:

P4-3 I1 – I remember once encountering a newly launched razor on JD.COM. [...] Just as I started reading the user reviews, I received a message from my girlfriend on WeChat, saying that she was feeling down and wanted a video call. Since my girlfriend is definitely more important than a razor, I closed JD.COM to video call her, and subsequently, the idea of purchasing the razor was forgotten.

Such interruptions arose because the deep intimacy within social relationships may sometimes compel participants to prioritise others’ needs, potentially side-lining their own serendipitous pursuits.

4.3.4 Summary

This section explored the factors that influenced the participants’ experiences of serendipity in online marketplaces, revealing e-commerce serendipity as a collaborative creation of participants and third parties under specific conditions.

¹ TMall (天貓), also known as Taobao Mall, is a popular Chinese online shopping platform owned and operated directly by the Alibaba Group. Different from Taobao, TMall is a B2C platform with a focus on brand authenticity and quality.

Third parties, endowed with unique qualities, crafted serendipity-prone designs designed to offer various serendipitous routes to participants, who, by leveraging their personal characteristics and acquired insights, decided whether and which serendipitous route to embark on, on the basis of specific conditions. Once the participants began their journey on a path designed by third parties, they often found themselves more deeply influenced by these well-prepared entities. This increased influence swayed the participants' decision-making, steering them towards a thrilling experience. The interaction between the participants' choices and the third parties' strategic designs thus culminates in dynamic serendipity routes.

In summary, e-commerce serendipity is not merely a stroke of luck; instead, it is more of a meticulously crafted experience shaped by consistent preparation and thoughtful evolution over time.

4.4 Summary

This chapter presents the main findings of this research, which address the three research objectives: (1) to explore and understand online consumers' interpretations of e-commerce serendipity; (2) to identify the routes that direct consumers to experience e-commerce serendipity; (3) to reveal the factors influencing e-consumers' experiences of e-commerce serendipity.

Section 4.1 addressed the first research objective. The participants interpreted e-commerce serendipity as an *artificially-facilitated unplanned experience*, shaped collaboratively by themselves and third parties. With third parties playing an active role, the participants often found themselves relinquishing full control over e-commerce serendipity. Thus, for the participants, e-commerce serendipity unfolded in an unplanned manner, filled with changes beyond their control and intentions. As they embarked on this thrilling journey, the participants underwent a dynamic exploration, leaving a lasting impact, be it good or bad, on their cognitive, emotional, and practical realms.

Section 4.2 delved into the distinct routes through which the participants experienced e-commerce serendipity: coincidence, encountering, and unexpected discovery. In *coincidence*, with the altruistic support of third parties, the participants acquired their long-desired product when it seemed least likely, resulting in a good end. In *unexpected discovery*, knowledgeable third parties guided the participants outside their expertise boundaries, initiating a learning process that strengthened the participants' shopping expertise or even professional and social knowledge base, leading to a good end. In *encountering*, third parties, with a commercial interest-focused nudge, steered the participants towards surprising treasures or potential traps, eliciting good ends with satisfaction or bad ends with disappointment.

Section 4.3 explored the factors behind the varied development modes of e-commerce serendipity, examining it from three perspectives: the participants, the third parties, and the surrounding context of their interactions. The participants' personal characteristics and acquired insights dictated their reactions to unplanned happenings, which third parties curated with their unique general qualities and serendipity-prone designs. Among these unplanned occurrences, the evolution into a distinct e-commerce serendipity was contingent on the immediate interactive blend of environment, society, and task specifics.

Despite the participants sometimes sensing the onset of e-commerce serendipity, the development route remained beyond their full control. The involvement of third parties, which curtailed the participants' ability to steer the experience solely towards good outcomes, added to this complexity. This nuanced perspective on serendipity is at odds with the dominant narrative in the existing literature. In current theories, serendipity is viewed as an unexpected yet valuable happening that occurs from natural randomness and develops primarily within serendipitists' sagacious control. This notable divergence necessitates a comprehensive Discussion in Chapter 5.

Chapter 5 Discussion

The previous chapter delved into participants' experiences of serendipity within online marketplaces (i.e. e-commerce serendipity), exploring its characteristics, how it unfolds, and the factors influencing it. This chapter re-interprets the findings, connecting them to existing literature in the realm of serendipity-focused research (particularly those roots back to information science) and consumer behaviour studies. The aim here is to understand how these new insights about serendipity contribute to and fit within the broader scope of serendipity-focused research and practices.

This chapter begins (Section 5.1) by with a re-examination of the relationship between conscious design and serendipity and argues that even conscious design facilitated by AI can lead to serendipity. This is then followed by the discussion of the characteristics of conscious design facilitated serendipity (i.e. the artificial serendipity) and its distinctiveness with the natural serendipity – the type of serendipity that attracts more attention of serendipity-focused studies, especially information science. In the third section (Section 5.3), the distinctiveness of the development routes of artificial serendipity is revealed and discussed in comparison to those of the natural serendipity.

All these theoretical discussions lead to a critical reconsideration of prevailing serendipity-prone design strategies, which is the focus of Section 5.4. The chapter concludes with Section 5.5, which synthesises the discussion into a comprehensive elaboration of artificial serendipity.

5.1 Reconsidering serendipity by design

This section investigates the relationship between conscious design choices, particularly those that incorporate AI techniques, and serendipitists' experiences of serendipity.

In the Findings chapter, the participants unanimously acknowledged that conscious designs contributed to their experience of serendipity: 'without the proactive design and conscious intervention of third parties, there would be no serendipity in the online marketplace' (P2-9). This acknowledgement resolves the criticism surrounding the idea that conscious design might destroy the essence of serendipity and brings to light a previously overlooked type of serendipity: *artificial serendipity*, namely, serendipity whose happening and evolution depend on an agent's (human or non-human) conscious design (de Melo, 2018; Reviglio, 2019).

Before elaborating on the characteristics of artificial serendipity, this section first explains why artificial serendipity exists.

5.1.1 Conscious designs spark genuine pleasant surprises

The literature review highlighted scepticism around serendipity-prone design, a primary criticism being that such designs rely heavily on serendipitists' online footprints. This reliance limits their ability to introduce genuine novelty (Erdelez et al., 2019) – one that should ideally extend beyond what serendipitists already know (Busch, 2022). In turn, this limitation hinders the conscious design in introducing genuine surprise that can trigger serendipity.

In existing theories, a genuinely pleasant surprise is central to triggering serendipity (Maloney & Conrad, 2016). Often, a genuine surprise introduces novel content, specifically content that serendipitists have little expectation of finding independently (Erdelez, 1997; Jiang et al., 2015). For such a novel content to be genuinely pleasant, it is usually presented as should-known-unknowns with a certain amount of innovative potential (Copeland, 2019; Cunha et al., 2010, 2015). This innovative potential makes serendipitists perceive such a surprise as beneficial, which makes them feel pleased to have identified it.

By contrast, the Findings chapter offered a different perspective. For serendipitists, although curated serendipity is rooted in the tracing and analysis of their online footprints, it still yields long-lasting pleasant surprises, or, in their own words, 'good surprises' (P3-3), which is the core feature of serendipity (Kim et al., 2021; Smets, 2023). To understand why serendipitists maintain an attitude that differs from theoretical expectations, it is important to first reflect on the nature of surprises, more specifically, pleasant surprises.

Indeed, associating surprise with novelty seems reasonable since a surprise is often something beyond a serendipitist's expectations, and novel ideas inherently possess unexpected characteristics. However, this overlooks the fact that surprise extends beyond novel content. Essentially, not every surprise necessarily leads serendipitists to a novel idea, as suggested by the existing theory. Surprise is a multi-dimensional term (Kefalidou & Sharples, 2016), stemming either from the astonishing content of an event or the unusualness of its occurrence (Foster & Ford, 2003; Murayama et al., 2015). Specifically, the sense of surprise engendered by serendipity is rooted both in unknown content and the infrequent arrangement of conventional knowledge (Fan & Niu, 2018). In other words, serendipity does not always attract us to novel ideas (Cunha et al., 2010). Therefore, equating genuine surprise and serendipity solely with novel ideas seems overly simplistic.

Furthermore, a pleasant surprise often aligns more with serendipitists' past experiences than with innovative ideas. At its core, a surprise is essentially a neutral event (Shilbly & Chatterjee, 2020). Its classification as pleasant and good or disruptive and bad is subject to serendipitists' personal interpretations (Heilman et al., 2002). Given that human beings are inherently path-dependent (Björneborn, 2023), serendipitists naturally use their past experiences as a

benchmark to evaluate new findings. Moreover, during such evaluations, serendipitists tend to heavily trust their existing knowledge (Hodkinson et al., 2000), frequently considering it reliable, particularly in uncertain and unexpected situations (Cutright & Wu, 2023). As a result, surprises that resonate with or modestly extend serendipitists' past experiences are generally viewed as valuable. Conversely, those who significantly diverge from or radically innovate upon these experiences are often perceived as disruptive and are likely to be disregarded.

Notably, the preference of serendipitists for surprises that echo their past experiences has also been acknowledged in information science studies questioning serendipity-prone designs. These studies emphasise that past experiences are pivotal to fostering serendipity (e.g. Erdelez, 2004; McBirnie, 2008). Additionally, they often argue that serendipitous findings that assist serendipitists in solving their past and current problems are deemed more valuable (e.g. Erdelez, 1995; Jiang et al., 2015). Therefore, the following question arises: Why do these studies view consciously curated surprises as less effective in triggering serendipity than random surprises despite both being relevant to serendipitists' past experiences?

The central argument presented by these studies is that conscious designs diminish the deeper fulfilment serendipitists could gain from discovering a relevant surprise from natural randomness (Erdelez et al., 2019; McCay-Peet, 2013). According to these studies (e.g. Erdelez et al., 2019; Schmidt, 2021), by directly presenting relevant surprises to serendipitists, conscious designs lead to a discovery process that is more predictable and, consequently, less exciting. By contrast, when more uncertainty and unpredictability are associated with natural random events, this enhances the feeling of fortune when a relevant surprise is identified. To honour the serendipitists' right to enjoy discovering something fortuitously, these curated surprises are not considered the gateway to serendipity.

Indeed, this argument is reasonable. According to the expectation disconfirmation theory, when a surprise occurs more randomly, it tends to elicit a stronger sense of luck and pleasure in the experiencer (Grange et al., 2019; Kim et al., 2021). However, this argument is flawed in the sense that it primarily reflects researchers' perspectives on what constitutes pleasure without adequately considering the serendipitists' subjective viewpoints. Pleasure, much like serendipity, is a subjective experience (Helm, 2002; Makri & Blandford, 2012 a, b). Therefore, to fully understand the nature of pleasure in the context of serendipity, it is crucial to hear from the serendipitists themselves directly.

For serendipitists, particularly those operating online, effortlessly bumping into a relevant surprise can be more gratifying than discovering one through a laborious search. After all, in the context of online platforms, randomness is abundant (Anaya et al., 2022). If serendipitists excessively indulge in exploring every piece of information online, they may become

overwhelmed before finding the relevant surprise (Chane & Durant, 2022). Therefore, for online serendipitists, the surprises they yearn for might be those more tailored for them than those requiring extensive effort to uncover (Potins et al., 2016). The preference for a tailored surprise is reflected in observations that serendipitists experience heightened feelings of luck and fortune following ‘an easy and effortless discovery’ (P1-2), namely, a coincidence.

To avoid burnout before coming across pleasant and relevant surprises, some serendipitists even create their own filter bubbles. They intentionally set their preferences in serendipity-prone systems, often recommendation systems, to more ‘conveniently find these beloved surprises’ (P4-2). Interestingly, contrary to some theories (e.g. McCay-Peet, 2013; Pariser, 2011; Schmidt, 2021), this immersion in familiar content does not narrow serendipitists’ exposure to new insights. Instead, it provides serendipitists with ‘the time and peace’ (P3-9) to reflect on their true needs and desires, thereby enhancing their chances of finding the most valuable pleasant surprises. This finding also aligns with the outcomes of McKay et al.’s (2020) study. By contrast, forcing serendipitists out of their comfort zones to explore more content might inadvertently infringe upon their sense of autonomy. This, in turn, may foster resistance to exploration, hindering their access to new surprises (Bruns, 2019).

Given the subjective nature of serendipity, it is imperative to fully respect serendipitists’ inclination towards easily discovered relevant surprises. This approach allows researchers to comprehend the essence of serendipity and, in turn, create serendipity-prone contexts for more meaningful and fulfilling experiences – a primary objective in many studies on serendipity (e.g. Makri et al., 2014; Reviglio, 2023; Smets, 2023).

5.1.2 Conscious designs preserve serendipitists’ decision-making autonomy

Another criticism of conscious designs, especially those with integrated AI techniques, is that they might become overly intelligent. These intelligent designs may affect the serendipitists’ autonomy in choosing surprises they wish to engage with, consequently preventing serendipitists from perceiving pleasure from being involved in serendipitous experiences (Krotoski, 2011; Schmidt, 2021).

To expound further, when AI-driven systems pre-emptively predict the desires and movements of serendipities, the surprise serendipities identified as good are not the result of personal choice; instead, they are choices pre-manipulated and selectively curated by the systems (Carr, 2015). Thus, these curated surprises can only be seemingly pleasant and good superficially but cannot offer substantial pleasure to serendipitists. As a result, with the involvement of conscious designs, serendipitists could only embrace an illusion of pleasure and an illusion of serendipity (Erdelez et al., 2019).

While this criticism has some validity – two serendipitists in this research felt manipulated by the AI-facilitated designs – it does not encapsulate the entirety of serendipitists’ interactions with AI. This research also uncovered that these two serendipitists, despite initial feelings of manipulation, were able to overcome AI’s influence. Moreover, similar to most of their peers, they were able to effectively harness AI as a tool to experience ‘more enjoyable’ (P4-2) serendipity.

The gap between theoretical assumptions and practical realities could be attributed to the theories’ underestimation of serendipitists’ sagacity. According to the serendipitists, the theory ‘underestimated the dynamics of [their] cognitive processes and [their] ability to contend with AI’ (P3-4).

Most current models depict serendipitists’ cognitive processes as linear and task-centric (e.g. Erdelez, 2004; McCay-Peet & Toms. 2015). Consequently, by strategically providing guidance at critical moments, AI systems could easily lead serendipitists along their predetermined path, thus shaping serendipitists’ serendipitous experiences. More in detail, according to existing theories, before coming across the surprise moments, serendipitists often concentrate on one specific foreground task (Erdelez, 2004; Jiang et al., 2015). The intense focus can produce significant online footprints, making serendipitists’ activities easily understood by AI systems. Once the AI systems have comprehended the serendipitists’ activities, they can introduce different and seemingly more intriguing triggers to disrupt it. This strategic intervention can, in turn, encourage serendipitists to follow the serendipitous path designed by the AI. This approach leverages the tendency of serendipitists to be caught off guard by sudden surprises during the intense focus on their primary task (McCay-Peet, 2013). Upon embarking on the curated serendipitous route, the serendipitous findings become the sole central focus of serendipitists (Rubin et al., 2011), leading serendipitists to be unable to escape the influence and even control of AI systems.

In reality, however, serendipitists’ cognitive processes are often more dynamic than theoretical models suggest. This fluidity in serendipitists’ cognitive processes poses a challenge for AI. While AI can be programmed to recommend content based on observed online footprints, it may fall short of aligning with the constantly evolving mental states of serendipitists. This limitation hinders AI’s ability to fully manipulate or shape their experiences of serendipity.

Specifically, before serendipity, serendipitists might focus on a particular task, but their minds could simultaneously ponder one or several other tasks. As a result, AI systems cannot always accurately conceive strategies to attract serendipitists’ attention to their pre-manipulated routes. Moreover, once on the serendipitous route, serendipitists do not solely focus on a single serendipitous finding. For them, the initial finding is ‘not the be-all and end-all’ (P3-5) of the

serendipitous experience but rather a stepping stone to broader exploration. Serendipitists may shift their focus away from this initial discovery, turning their attention to other matters. An example was P1-3, who initially expressed excitement about a recommended joystick but quickly lost interest, leading to the immediate closure of the recommendation upon opening it.

In fact, the dynamic nature of serendipitists' cognitive processes could enable them to stay a step ahead of AI-facilitated systems that actively attempt to manipulate serendipitists for their own benefit. Serendipitists may employ strategies to outwit AI, as evidenced by instances in which they deliberately feed incorrect preference data to AI systems. This tactic aims to mislead AI, prompting it to generate a broader set of surprises that might align more closely with their actual, albeit unexpressed, interests or simply to explore a broader range of possibilities.

This tactic also underscores that serendipitists have far more robust context adaptability than existing theories suggest. Beyond understanding where potential pleasant surprises reside in a given context (Cunha et al., 2015; Ma, 2002), serendipitists are also skilled at detecting and mitigating risks in a given context. These skills are informed by a range of past serendipitous experiences, which include not only the positive and enjoyable occurrences, as often portrayed in current theories (Ma, 2002; Makri & Blandford, 2012a), but also instances of bad serendipity or those that initially appear promising but ultimately lead to unfavourable outcomes.

Consequently, past experiences teach serendipitists not only how to cherish fleeting serendipitous opportunities (Denrell et al., 2003) but also how to be more cautious about seemingly abrupt fortunes. Additionally, serendipitists' learning is not confined to their own past experiences, as suggested by current theories (e.g., Cunha et al., 2015). They often draw insights from others' past experiences as well. For instance, P2-4's grandfather, having learned from his granddaughter's (i.e. P2-4) experience of being deceived online, realised that not all online surprises should be trusted. As a result, even though he 'might appear vulnerable to various AI-facilitated persuasive recommendations' (P2-4), this old gentleman has managed to avoid falling into any of the traps set by AI systems.

Notably, the sagacity displayed by serendipitists in the process of serendipity, as discussed above, is not an isolated finding unique to this research. A study conducted by Makri and Buckley (2019) also identified similar patterns in which serendipitists judiciously decided whether to continue engaging in a serendipitous route instead of rigidly adhering to the guidance of online platforms. However, such findings are relatively rare in the serendipity literature. The reason for this neglect is that many of the existing serendipity-focused studies have tended to concentrate on well-structured business and academic contexts rather than the everyday life context explored in studies like this one and Makri and Buckley (2019).

When operating within highly structured contexts governed by strict norms, serendipitists may find their actions and choices somewhat constrained (Copeland, 2019; Murayama et al., 2015). Thus, their experiences, including serendipitous ones, would align more closely with the established rules of the context in which they are embedded, becoming standardised and predictable (Napolitano, 2013). Additionally, in business and academic settings, there is often a strong focus on outcomes, which means that only serendipitous discoveries with tangible and valuable outcomes can be given due importance (Napolitano, 2013). As a result, the diversity of serendipitous experiences and the varied behaviours of serendipitists may be undervalued by current theories.

By contrast, everyday life contexts provide serendipitists with greater freedom to act and explore, allowing them to respond to changing situations without the pressure of achieving specific outcomes (McKenzie, 2003; Ocepek, 2018). This relaxed environment fosters a wider range of serendipitous routes and further underscores the inherent unpredictability of serendipity (Bogers & Björneborn, 2013; Napolitano, 2013). Given that most human activities occur within the realm of everyday life (Bogers & Björneborn, 2013; Ocepek, 2018), it is plausible that the essence of serendipity can be better understood through everyday experiences. Therefore, researchers conducting serendipity-focused studies should consider shifting their focus to everyday life. By doing so, they can gain deeper insights into the nuanced ways in which serendipity manifests, thereby enhancing our overall understanding of this complex phenomenon.

5.1.3 Conscious designs afford all types of serendipity

The final criticism of conscious, serendipity-prone designs is that they primarily cater to the benefits of the designers and, thus, cannot provide valuable experiential outcomes to serendipitists (Krotoski, 2011; Oh et al., 2022).

This criticism has some validity. As noted in the Findings, a number of serendipitists have experienced what can be termed ‘bad serendipity’ (P2-2) within contexts that have been consciously designed as serendipity-prone. However, asserting that instances of bad serendipity are not serendipity or claiming that the presence of conscious design fundamentally undermines the authenticity of serendipitous experiences may be an overgeneralisation.

On the one hand, a bad result should not diminish an experience’s serendipitous nature. In practice, serendipitists often consider these bad experiences to be part of a broader spectrum of serendipity, similar to those of good and valuable serendipities. In theory, serendipity is not inherently valuable (Cunha et al., 2015; McBirnie, 2008). In Walpole’s original definition, serendipity is merely seen as an accidental discovery made under the influence of serendipitists’ sagacity:

“[...] always making discoveries, by accidents and sagacity, of things which they were not in quest of [...] This discovery, indeed, is almost of that kind which I call Serendipity [...]”. (Walpole, 1754, as cited in Merton & Barber, 2011)

The characteristic of valuableness was gradually ascribed to serendipity by subsequent studies; after all, as discussed in Section 5.1.2, within business and research contexts, which prioritise results, only those accidents that are deemed valuable are likely to be noted and recorded. Given that serendipity is not confined to business professionals and researchers, especially as contexts become adept at equalising differences among serendipitists, continuously considering serendipity as universally valuable may lead to misconceptions. Such a perspective may indeed restrict the practical applicability of serendipity-related research (Kotkov et al., 2023). For a fruitful exploration of serendipity, current studies should return to their original, broader definition.

On the other hand, the occurrence of what is identified as natural and valuable serendipity in existing research may not be devoid of conscious design. In addition, these natural serendipitous experiences may also serve the interests of parties other than the serendipitists. After all, society is inevitably affected by human designs and constructs (Gerber, 1997). In light of this, all contexts, even those considered to promote the public good, are not entirely neutral and possess distinct value orientations (Smets, 2023). Libraries, for instance, may seem to inherently and altruistically afford readers’ experiences of serendipity, but their underlying motive is often to increase their usage rates. As Smets (2023) points out, if libraries find alternative methods to enhance their usage, they might shift their focus, potentially hindering serendipity.

Given this social reality, the existing understanding of serendipity, defined as a fortunate and unexpected correspondence between a serendipitist and a random event, roots back to a natural and neutral context, might be more theoretical than practical (de Melo, 2018). In reality, what often occurs is a form of artificial serendipity, in which pleasant surprises are somewhat shaped by human intervention or design (de Melo, 2018; Reviglio, 2017).

The tendency of current studies to focus only on natural serendipity, predominantly existing at a theoretical level, may indeed be driven by a desire to establish a unified and universally applicable definition of serendipity (e.g. Erdelez & Makri, 2020; Kotkov et al., 2023). The pursuit of a unified definition often involves streamlining various perspectives into a single cohesive narrative. This approach, while aiming for clarity and universality, might inadvertently side-line diverse viewpoints and experiences that do not align with the established framework. However, these studies risk overlooking the multifaceted nature of

serendipity as it occurs in real-world settings by focusing too narrowly on a specific conceptualisation.

This oversight is problematic. After all, the reason these studies seek a unified definition is to enhance the practical applicability and reach of the concept of serendipity (Erdelez & Makri, 2020). However, a definition detached from the practicalities of everyday life may struggle to guide real-world applications effectively. Therefore, before striving to establish a unified definition, it would be beneficial for serendipity-focused studies to refocus on understanding and incorporating social reality into their research. Such an approach would not only enrich the theoretical understanding of serendipity but also ensure that its conceptualisation remains relevant and resonant with the diverse experiences of serendipitists in their everyday lives.

5.1.4 Summary

This section reconsidered the relationship between conscious, serendipity-prone design and serendipity. Through a review of the real-life experiences of serendipitists and the relevant literature, it has become apparent that serendipity is not solely the product of random natural occurrences; instead, it can also stem from conscious design.

While consciously curated serendipity may occasionally lead to undesirable outcomes, as some existing theories caution, it can still provide serendipitists with a sense of astonishment and delight. Additionally, serendipitists often possess a high level of sagacity to deal with bad serendipity; that is, they have the capacity to learn from the bad experience and subsequently elevate their ability to locate more pleasant serendipitous opportunities in a given context.

Overall, conscious designs should not be seen as ‘killers of serendipity’ (P4-1); instead, they can act as ‘propellers of serendipity’ (P4-1). The next two sections delve deeper into the characteristics and development routes of artificial serendipity. This exploration sheds light on our understanding of serendipity in the modern, technologically mediated world.

5.2 Reconsidering the characteristics of serendipity

This section discusses the characteristics of artificial serendipity in contrast to those of natural serendipity, as outlined in Section 2.2.1.1.

Artificial serendipity is not an entirely novel phenomenon. Several studies have already acknowledged its existence using different terms, such as *automated serendipity* (Fletcher & Nielsen, 2018), *computer-mediated serendipity* (Krotoski, 2011) and *designed serendipity* (Erdelez et al., 2019). Despite the recognition of its existence, it remains a relatively underexamined area in serendipity-focused studies, particularly in information science. This lack of comprehensive exploration leads to a potential research gap in understanding how

artificial serendipity operates, particularly in contrast to natural serendipity, which serves as the current focus of studies on serendipity.

Figure 5.1 presents a conceptual space for artificial serendipity, detailing its main characteristics, developmental route and influencing factors. This section (Section 5.2) focuses on explaining the three core characteristics that distinctly differentiate artificial serendipity from natural serendipity. These characteristics are as follows: (1) artificial serendipity stems from collective sagacity, (2) hinges on serendipitists' expectations, and (3) can trigger varied outcomes with potential harm to serendipitists. The other aspects of artificial serendipity presented in Figure 5.1– including its affordance of a thrilling ride, its developmental routes and factors influencing artificial serendipity – are elaborated on in subsequent Section 5.3.

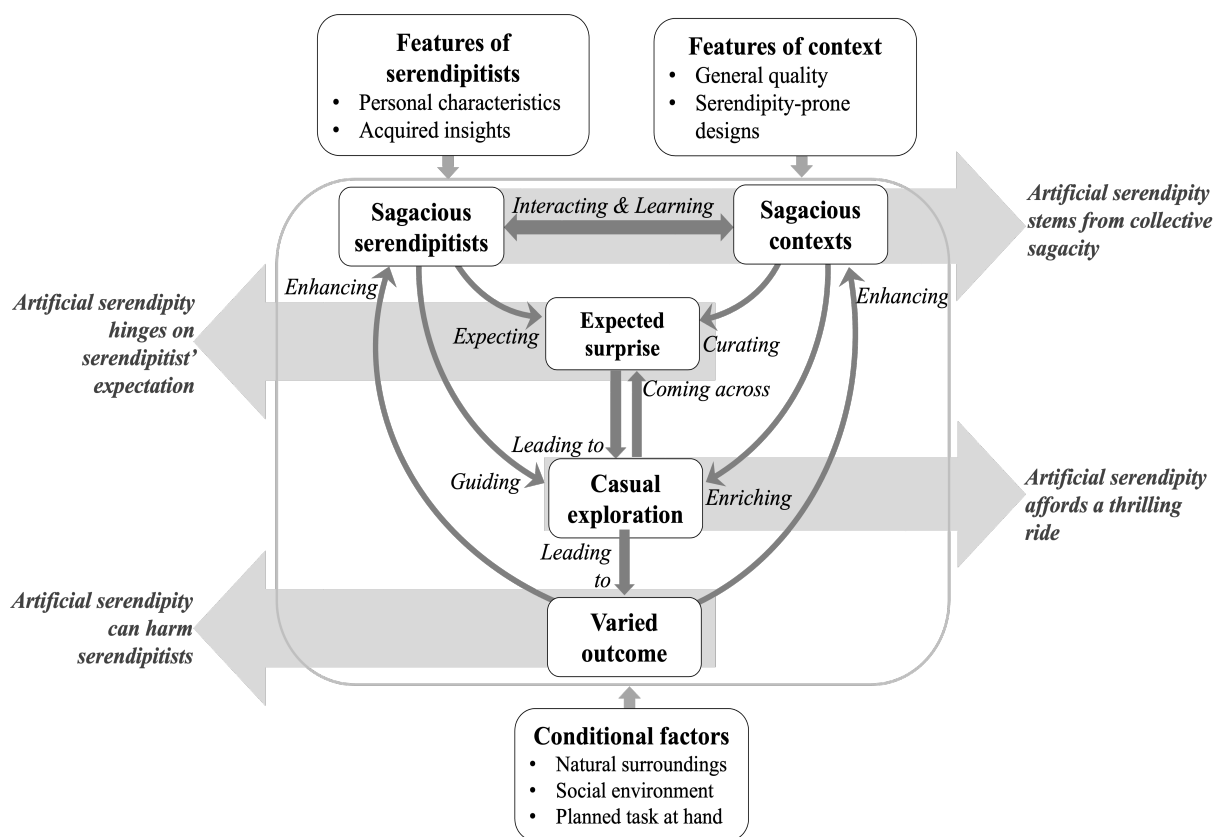


Figure 5.1 The conceptual space of artificial serendipity

5.2.1 Serendipity stems from collective sagacity

The integration of conscious design redefines the concept of sagacity within serendipitous experiences. In existing theories, sagacity is perceived as an individual serendipitist's unique wisdom and insights (Copeland, 2019; McCay-Peet & Toms, 2017), which are crucial for recognising and exploiting unexpected opportunities. With conscious design, the notion of sagacity evolves from an individual attribute to a collective one. It no longer concerns only the

serendipitist's personal insights, but also the intelligence embedded within the designed context itself. This context is not only a passive backup, but also an active facilitator of serendipitous experiences, crafted by the collective intelligence of its designers.

In the realm of natural serendipity, the context that serendipitists confront is often characterised by randomness (Boden, 2004; de Melo, 2018). This randomness of context does not position it as an intelligent actor capable of actively facilitating serendipity; instead, it functions as a backdrop against which multiple possibilities can unfold without a specific direction (Darbellay et al., 2014; Erdelez, 1999). To uncover pleasant surprises amid the diverse array of contextual possibilities, serendipitists need to be sagacious. More specifically, serendipitists should equip themselves with openness and alertness to subtle cues that emerge from the context (Erdelez, 1999; Heinström, 2006), as these cues could lead to pleasant surprises that may vanish quickly amid the context's random changes. Additionally, once serendipitists capture these fleeting moments, they must act promptly to investigate them. Delay in exploring these moments could result in the loss of unexpected value within the random context, leading to a loss of serendipity (Barber & Fox, 1958). Overall, only sagacious individuals can enjoy natural serendipity, as an unexpected pleasure only favours prepared sagacious minds (Copeland, 2019).

In the realm of artificial serendipity, serendipitists have acknowledged that their serendipitous experiences are inextricably linked to the collective intelligence residing within the context (i.e. the *sagacious context* in Figure 5.1). For example, P4-7 mentioned that without repeated prompts from the platform, he might have missed out on discovering an intriguing magic toy set. Similarly, P4-1 expressed that without timely assistance from the platform, she would not have persevered in exploring a product she initially doubted and would not have had the chance to overcome her biases towards it.

These intelligent contexts, powered by AI and machine learning techniques, have transformed the landscape of serendipitous experiences. In these AI-powered contexts, the discovery of serendipitous opportunities is no longer solely reliant on serendipitists' ability to perceive them. Instead, AI systems, capable of sifting through vast amounts of data, play a crucial role in unveiling potential pleasant surprises that may not be immediately apparent (Reviglio, 2023). Upon identifying the surprise, AI systems actively engage with serendipitists, nudging them towards potential discoveries and thereby mitigating the risk of missed serendipitous moments.

In this new landscape of serendipity, a pleasant surprise is no longer a rare event only accessible by the sagacious few (Reviglio, 2019). Instead, serendipity becomes accessible to nearly everyone. Thus, some of the traditional serendipity-prone personal characteristics, such as openness to experience (Heinström, 2006; McCay-Peet & Toms, 2015) and perseverance (McKinnon, 2014; Mirvahedi & Morrish, 2017), no longer play a pivotal role in determining

who experiences serendipity. This change was evident in this research, as serendipitists did not view these characteristics as critical to coming across serendipitous moments. For serendipitists, intelligent online contexts have become the most powerful serendipity engines in history (Johnson, 2006).

Nevertheless, the presence of AI and other forms of conscious facilitation in creating serendipitous experiences does not diminish serendipitists' own sagacity (see *sagacious serendipitists* in Figure 5.1). Serendipitists, with their inherent adaptability and learning abilities, can navigate AI-facilitated serendipitous experiences effectively. In addition, interacting with AI-facilitated contexts has led to the enhancement of specific skills among serendipitists. These enhanced types of sagacity encompass *cautious reception*, *reflective learning* and *selective engagement*.

The first type of enhanced sagacity is the *cautious reception of pleasant surprises*. Unlike serendipitous discoveries that arise through personal exploration, those facilitated by conscious designs are often met with scepticism. This scepticism stems from AI's potential limitations and biases in comprehending the 'real preferences and needs' of serendipitists (P3-10). Thus, before fully embracing the curated surprises, serendipitists may question their 'relevance' (P2-3) and 'reliability' (P3-10). They critically assess the content of these surprises, seeking positive signs of *direct utility* (e.g. P2-8 S3), *knowledge gain* (e.g. P3-3 S10) or *emotional pleasure* (e.g. P1-5 S2). Only upon finding such positive signs might serendipitists embark on the serendipitous route.

P2-8 S3 – The picture in this message showed that [the Absolute] had one more brush than the original one, which was supposed to guarantee greater power. Therefore, I decided to conduct a more detailed exploration of the Absolute version.

P3-3 S10 – I noticed the headline 'Common Misunderstandings in Purchasing Headphones: Semi-In-Ear Headphones Also Perform Well in Noise Reduction'. This headline seemed to be a new knowledge point, as I used to believe that semi-in-ear headphones did not have noise-reduction capabilities. This new knowledge point prompted me to click to read the entire recommendation line by line.

P1-5 S2 – I wanted to spend time reading this promotional information, as its romantic atmosphere helped ease my anxiety about the upcoming exams. The good-looking and loving bride and groom in this information made me feel romantic and made me recall the sweet moments between me and my boyfriend.

To ensure the effectiveness of this critical assessment, serendipitists consciously engage in *reflective learning* from each artificial serendipitous experience, which is identified as the second type of enhanced sagacity. Often, serendipitists reflect on how well curated serendipity

aligns with their preferences and the value it adds, both immediately after the experience and after the outcomes have taken effect. This reflective process helps serendipitists develop a deeper understanding of their ‘preferences’ (P4-2), ‘the trustworthiness of the AI system and how to interact more effectively with these systems in the future’ (P3-2).

The final aspect of enhanced sagacity is that serendipitists engage more *selectively with serendipitous opportunities*. Aware that conscious design can ‘always help [them] find pleasant surprises’ (P2-8), serendipitists do not fixate on experiencing a single serendipity. They make more selective decisions based on their actual circumstances and may even choose to exit the serendipitous route midway. This selective engagement allows serendipitists to better balance the planned with the unplanned, enjoying the artificial serendipitous process without much concerns about the urgency of the planned task.

Overall, in the realm of artificial serendipity, conscious designs can afford serendipitists an array of pleasant surprises. Serendipitists, ‘being freed from searching for good surprises’ (P4-2), can focus on whether to pursue a serendipitous opportunity and to what extent. This concentrated selection process allows serendipitists to choose opportunities that resonate with their desires more effectively, leading to a more tailored experience.

5.2.2 Serendipity hinges on expectations

With the introduction of conscious design, serendipity is no longer purely a matter of unexpected luck, as some information science studies have suggested (e.g. Foster & Ford, 2003; Makri et al., 2014). Artificial serendipity has become a happening that serendipitists can, to some extent, expect (i.e. the *expected surprise* in Figure 5.1). This was evident in this research, as nearly all serendipitous incidents occurred when serendipitists had some expectations.

The expectedness of artificial serendipity arises from the fact that conscious designs bring ‘structure and regularity’ to the serendipitous context (P4-7). In natural serendipity, the context is boundless, with randomness at its core, resulting in countless variables and entirely unexpected events (de Melo, 2018). However, under conscious design, contexts are bounded and evolve according to discernible patterns. As serendipitists engage with a designed context over time, they gradually understand some of its operating mode and begin to form certain expectations about what surprises this context can offer. These expectations are diverse and can be categorised into three types:

- 1) **Explicit expectations:** In this case, serendipitists understand the operational principles of the context and actively manipulate these principles, allowing the context to help them find surprises within a defined scope. For example, P1-4 informed Taobao about her desire to purchase jeans without specifying the type, which allowed Taobao to find the best fit

for her.

- 2) Mild expectation: Serendipitists trust the context based on its history of offering things that align with their preferences. Based on this trust, serendipitists comfortably do nothing, leaving the task of finding pleasant surprises entirely to the context. For example, P4-3 opened Douyin to relax, trusting the platform to recommend content based on his past preferences.
- 3) Faint expectations: In this situation, although serendipitists might know that fulfilling a particular desire is challenging, they still opt to take a chance on the context. This choice stems from their past experiences in which the context has shown the potential to meet such desires. For example, P2-4, aware of the difficulty in purchasing trendy sneakers, still sought them on Poizon. P2-4's decision to make this attempt was due to Poizon's proficiency in alerting users to sneaker releases, which she had learned from past interactions with the platform.

Indeed, having expectations about potential surprises does not mean that serendipitists can fully predict every aspect of the surprise. This is because AI and other intelligent designs have a degree of autonomy; also, they do not operate solely based on '[serendipitists'] orders' (P1-2). The context, aided by AI and intelligent techniques, can offer surprises that exceed serendipitists' expectations in two distinct ways:

- 1) Surprises with content beyond expectations: For example, P2-1 explicitly asked Taobao to recommend makeup brushes, but instead, the platform ended up suggesting a variety of beauty blenders.
- 2) Surprises whose appearance or timing lies beyond expectations: For example, P1-2 discovered an ideal birthday gift for her aunt through a Weibo recommendation. This was particularly surprising because Weibo was not typically a platform that would offer P1-2 shopping recommendations.

Overall, conscious design can make contextual surprises more transparent to serendipitists. Yet, it also possesses the ability to defy serendipitists' expectations, providing them with a sense of astonishment. These curated and pleasant surprises create a balance between predictability and the element of wonder in serendipitists' serendipitous experiences.

5.2.3 Serendipity can harm serendipitists

When conscious design is integrated, serendipity no longer remains an invariably valuable experience for serendipitists. Instead, artificial serendipity can sometimes harm serendipitists, leading to bad outcomes like negative emotions and a loss of resources. In the realm of natural

serendipity, the contexts are neutral, and the only actor capable of making decisions during the serendipitous process is the serendipitist. Therefore, as long as serendipitists maintain sufficient sagacity, serendipity can always bring them value (Cunha et al., 2015). The worst harm that serendipitists may experience in natural serendipity is the sense of loss due to not seizing a serendipitous opportunity (Barnard & Fox, 1958; Copeland, 2019).

Nevertheless, in artificial serendipity, contexts are seldom neutral. More often, contexts are crafted to serve the interests of their designers, which usually do not align with the interests of serendipitists (Smets, 2023). As the findings of this research show, AI systems in online marketplaces tend to shape serendipity to aid vendors in boosting traffic and sales (Kim et al., 2021) rather than to ‘authentically enhance the shopping enjoyment of [participants]’ (P3-4). Consequently, during interactions with these contexts, serendipitists may sometimes be guided to experience bad serendipity. The darksides of artificial experiences often arises from the following ‘annoying’ (P3-10) factors inherent in conscious design:

- 1) Addictiveness: Conscious designs, through their adept analysis of serendipitists’ preferences, can continually offer attractive surprises to serendipitists. Drawn to the attractiveness of these surprises, serendipitists may become addicted to continually interacting with a given context. This addiction can be either short- or long-term. Short-term addiction can lead serendipitists to extend their single visit to a given context, trapping them in exploration loops that offer immediate interestingness but risk belated fatigue. Long-term addiction can lead serendipitists to rely overly on AI systems’ recommendations to find what they need in the designed context. Consequently, serendipitists may perceive artificial serendipity as a necessity rather than a discretionary choice, becoming ‘slaves’ (P2-8) to artificial serendipity.
- 2) Unrealistic expectations of surprises: By predicting serendipitists’ behavioural intentions and offering relevant surprises at opportunistic moments, conscious designs can elevate serendipitists’ perceptions of some surprises to unrealistically high levels. These surprises might be viewed as highly valued or even as ‘almost divine gifts’ (P1-2). However, the higher the expectations, the more challenging they are to fulfil. Failing to meet these heightened expectations can lead to disappointment, even when the surprises would typically be deemed valuable.
- 3) Surprise–needs misalignments: Given the ever-changing nature of human minds, conscious designs may not always keep pace with serendipitists’ interests or needs. This can sometimes lead to these systems curating misaligned or outdated surprises that may not be perceived as pleasant or valuable; instead, they might be seen as interruptions to serendipitists’ thought processes, causing feelings of disruption or resentment.

- 4) **Inducement to unwise money spending:** With their inherent designer alignment, conscious designs may sometimes tend to persuade serendipitists to spend money unwisely, as direct monetary income is a straightforward way for designers to reap benefits.

Notably, these ‘annoying’ (P2-3) design factors extend beyond online and commercial settings; they also exist in physical environments known for their public service missions. For example, in public libraries, specific designs intended to promote serendipitous discoveries can occasionally disrupt serendipitists’ targeted searches, leading to seeking–encountering tension (Carr, 2015; Waugh et al., 2017).

Despite the potential harm that artificial serendipity can bring, serendipitists still view it as serendipitous. This is because artificial serendipity, like its natural counterparts, can still bring serendipitists a pleasant surprise – the core of serendipitous experience (Kim et al., 2021). In addition, returning to its root, serendipity is interpreted more as a neutral phenomenon than a beneficial one (Cunha et al., 2015; McBirnie, 2008). This means that serendipity, whether natural or artificial, can sometimes lack value or even be harmful. However, the darksides of serendipity is often overlooked in most studies in serendipity due to their brief duration.

In more detail, the outcomes of serendipitous events are not always immediate and may evolve over time (Makri & Blandford, 2012a; Pontis et al., 2016). Long-term observation is required to fully understand these outcomes (Pontis et al., 2016). However, common research designs in current studies on serendipity often involve snapshot-like approaches. For example, in the diary studies conducted by Jiang et al. (2019) and Zhou et al. (2018), participants were only prompted to note their immediate reactions to serendipitous encounters. Such an approach can miss the potential negative developments that may follow an initially good serendipity.

Given the concerns raised, it might be time for studies on serendipity to reconsider their research designs and interpretations of serendipity. To better understand the essence of serendipity, these studies should consider extending their durations. This approach would allow for a more comprehensive examination of serendipity, encompassing not only the immediate, positive impacts but also the longer-term, bad consequences. By acknowledging and investigating the full range of serendipitous experiences, researchers can gain a deeper, more nuanced understanding of serendipity in its various forms.

5.2.4 Serendipity is a forward-looking adventure

Considering the characteristics discussed, serendipity facilitated by conscious designs marks the evolution of its predominant interpretation. More in detail, artificial serendipity is more of a forward-looking adventure, in contrast to natural serendipity, which is traditionally viewed

as a retrospective fortune (McCay-Peet & Toms, 2015; Rubin et al., 2011). Table 5.1 outlines the distinctions between these two types of serendipity.

Table 5.1 Distinctions between artificial and natural serendipity

<i>Artificial serendipity: A forward-looking adventure</i>	<i>Natural serendipity: A retrospective fortune</i>
Sagacious serendipitists and sagacious contexts	Sagacious serendipitists and random contexts
Expected	Unexpected
Good or bad outcomes that benefit or harm the serendipitists	Good outcomes that benefit the serendipitists

In retrospective fortunes, serendipitists navigate contexts characterised by randomness. To uncover pleasant surprises amid this randomness, serendipitists need to be wise and attentive, meticulously examining and swiftly exploring various occurrences. By contrast, forward-looking adventures involve interactions with intelligent contexts shaped by conscious designs. These contexts operate in a more rule-based, constrained manner, guided by principles set by their designers. This constrained operation allows serendipitists to expect potential occurrences, facilitating the easier discovery of pleasant surprises.

However, in forward-looking adventures, the ease of finding surprises does not always guarantee their ultimate benefit to serendipitists. The contexts, which are governed by their design, may sometimes mislead serendipitists for the sake of benefitting their designers. In this case, serendipitists may realise that surprises that initially seem favourable can turn out to be less advantageous. Thus, the experience of serendipity in such scenarios is both engaging and risky, as the outcomes are uncertain and varied, embodying the essence of an adventure.

By contrast, in retrospective fortunes, the complicated process of finding surprises often leads to discoveries that are beneficial for serendipitists, as these surprises are identified via their own exploration and judgement. It is the eventual benefit of these discovered surprises that reinforces the belief in their serendipitous nature (McCay-Peet & Toms, 2015), hence the term retrospective fortunes.

5.3 Reconsidering the route to serendipity

In order to further explore artificial serendipity – a forward-looking adventure – it is helpful to examine the core moments that lead to such experience, especially in contrast to those that lead to natural serendipity, which were outlined in Section 2.2.2.

5.3.1 The root: mutual understanding

To experience natural serendipity, serendipitists need to adopt a sagacious mindset that enables them to recognise hidden surprises and seize the moment (Lawley & Tompkins, 2008; Rubin et al., 2011). By contrast, embracing artificial serendipity involves a slightly different approach. Here, serendipitists need to cautiously build a mutual understanding with intelligent contexts and guide the contexts to ensure the continuous provision of pleasant surprises.

For serendipitists, forming a sagacious mindset is an independent effort involving two main tasks (Rubin et al., 2011). First, serendipitists need to cultivate their domain expertise and develop context adaptability by engaging with various workings tasks in different contexts (Lawley & Tompkins, 2008; Makri & Blandford, 2012a). Through this task, serendipitists gain an understanding of where to search for the pleasant surprises within a context. Second, serendipitists need to engage in reflective thinking about the problems and tasks at hand, as well as consider potential solutions (Rubin et al., 2011). This reflective practice further sharpens serendipitists' alertness to hidden pleasant surprises (de Melo, 2018), preparing them to act on the surprise once it appears, avoiding loss of serendipity (Cunha et al., 2015).

Nevertheless, building mutual understanding is indeed a cooperative effort involving both serendipitists and intelligent contexts. In this collaborative task, serendipitists foster trust and adaptability to intelligent contexts, that are capable of providing reliable and consistent services (i.e. the *general quality* in Figure 5.1), learning their operational nuances better to expect the content and timing of potential surprises (i.e. one of the *acquired insights* in Figure 5.1). This requires serendipitists to maintain their curiosity and sensitivity to changes in their contexts (i.e. the *personal characteristics* in Figure 5.1), and also reflect on and provide feedback about their interactions with the contexts.

The contexts themselves, powered by AI and intelligent technologies (i.e. the *serendipity-prone designs* in Figure 5.1), also adapt their offerings to the serendipitists. This adaptation is achieved by analysing serendipitists' behaviours and feedback to create detailed, personalised profiles. By utilising these profiles, contexts can tailor their offerings to align closely with serendipitists' thoughts and needs, curating more pleasant surprises for serendipitists.

Due to the contexts' adaptability to serendipitists' shifting preferences and needs, serendipitists are no longer required to constantly reflect on their problems and potential solutions to uncover surprises (Rubin et al., 2011). In artificial serendipity, the context can take a more active role in filtering through vast information to select what might interest the serendipitists and present it in a timely manner. This means that despite mild and even faint expectations, serendipitists can still come across pleasant surprises that align with their desires.

For serendipitists, the energy saved by not having to search for surprises can be redirected to engaging with and evaluating more surprises curated by intelligent contexts. This process enables a deeper understanding of serendipitists' preferences within a specific domain (i.e. one of the *acquired insights* in Figure 5.1), further refining the types of surprises in which they should invest their time.

As serendipitists fine-tune their preferences, the contexts also learn and adapt, updating the personal profiles of serendipitists to ensure that the surprises they offer remain relevant and appealing to serendipitists. Such a learning and adaptive process by contexts is not only acknowledged by serendipitists but is also constantly wary of them. Serendipitists are cautious about not letting the context pry too deeply into their preferences to prevent any undue manipulation of the context during artificial serendipity.

To protect their preferences from being overly exposed, serendipitists often reveal just enough about their needs and preferences to guide the contexts without fully exposing themselves to potential manipulation. Simultaneously, the contexts themselves also engage in a form of concealment, withholding details about their operational algorithms. This dual approach of selective disclosure and concealed operations ensures that both the contexts' understanding of serendipitists and the serendipitists' expectations of the contexts' curated surprises remain imperfect. This imperfection is critical to preserving the element of astonishment in artificial serendipity, as it guarantees that surprises continue to be thrilling and pleasant.

Overall, artificial serendipity represents a departure from the roots of natural serendipity. Natural serendipity is primarily grounded in the independent efforts of serendipitists' independent effort. Serendipitists engage in introspection and navigate through randomness to explore and waiting for capture surprises that resonate with their needs. This personal attempt is fraught with uncertainties and contingent on numerous variables, thus, often making natural serendipity a rare and elusive experience.

By contrast, artificial serendipity is characterised by its collaborative nature, arising from the synergy between serendipitists and intelligent contexts, especially contexts powered by AI and other intelligent technologies. Intelligent contexts adapt dynamically to the evolving preferences and needs of serendipitists and thus offer them relevant surprises more consistently.

5.3.2 The beginning: an expected surprise

The initial stage of both natural and artificial serendipity depicts the same scene – serendipitists' coming across surprises that are characterised by either novel content or novel presentation methods (Foster & Ford, 2003). However, the way in which serendipitists react to these surprises varies between the two types of serendipity.

In natural serendipity, serendipitists come across surprises unexpectedly, often while focusing on an unrelated foreground activity (Erdelez, 1995; Jiang et al., 2015). In this case, the abrupt appearance of surprises can sometimes feel disruptive rather than as a serendipitous opportunity. The feeling of disruption might discourage immediate engagement with these surprises (Makri & Buckley, 2019). Combined with the inherent randomness of the context, this hesitation could lead to the loss of potential serendipitous experiences (Barber & Fox, 1958).

If serendipitists manage to divert their attention from foreground tasks to unexpectedly found surprises, another challenge may arise: recognising the value of these surprises (Makri et al., 2017; McCay-Peet & Toms, 2015). In cases where surprises fail to effectively communicate their value, serendipitists might disengage, foregoing further exploration (Makri et al., 2017; McCay-Peet & Toms, 2015). Serendipitists may fully accept an unexpected surprise only when its value is clear and compelling (Dantonio et al., 2012; Jiang et al., 2019).

By contrast, in artificial serendipity, serendipitists come across surprises with certain expectations regarding their content or/and presence in a given context. This expectation enables serendipitists to immediately perceive these surprises as gateways to potential serendipity, making them more inclined to check surprises without hesitation.

Nevertheless, an immediate check of these surprises does not imply that serendipitists will blindly embark on the serendipitous route. Instead, serendipitists often have reservations about the true intentions behind the context's curation of these surprises. They are concerned that these surprises might be more for the benefit of the designers of the contexts rather than for themselves, fearing that what appears to be an attractive opportunity could actually be a well-disguised trap.

In this case, the decision to embrace these surprises is usually made after serendipitists identify clues that suggest these surprises are 'good and safe' (P2-5). These indicators might include evidence of *direct utility*, *potential for knowledge acquisition* or *emotional pleasure*, identified based on serendipitists' past experiences and interactions with the context. If none of these indicators are identified, serendipitists may opt out of engaging with artificial serendipity. However, this decision to opt out does not necessarily mean a permanent loss of serendipity, as the context might present it again in the future.

Overall, in natural serendipity, the experience begins unexpectedly. Serendipitists may not initially be aware that they are embarking on a serendipitous route; they are simply drawn to an intriguing or attractive element that appears in the course of their concentrated foreground activities.

By contrast, artificial serendipity involves a more conscious beginning. After being convinced that a given surprise contains no deceptive intent of its provider, serendipitists embark on artificial serendipitous routes with full awareness of their artificial and serendipitous natures. This awareness is largely due to serendipitists' previous interactions with the contexts, usually intelligent ones powered by AI. Through these previous interactions, serendipitists have learned about how contexts operate and can expect what kinds of offerings they can provide.

Based on these preconceived expectations, serendipitists are able to determine the type of serendipitous experience they are entering. There are three types of artificial serendipity:

- 1) **Coincidence:** This type of artificial serendipity occurs when serendipitists come across a surprise with known content, but its occurrence is highly unexpected. Specifically, before noticing it, serendipitists have a clear idea about what the surprise entails but only hold a faint expectation of finding it during their interaction with a specific context.
- 2) **Unexpected discovery:** This type of artificial serendipity occurs when serendipitists come across a surprise with unknown content while interacting with a context they know is likely to provide novel things. This creates a scenario in which the timing and location of the surprise are expected, but its content remains a revelation.
- 3) **Encountering:** This type of artificial serendipity manifests in two distinct ways. The first type begins when serendipitists have a general expectation of bumping into a surprise in a given context, but only have a vague notion of what its content might entail. The second type begins when serendipitists are well aware of what surprises a context might provide but have only a mild expectation of finding it in a specific setting.

As for which route of artificial serendipity serendipitists will take, it depends on their natural surroundings, social environment and the planned tasks at hand (i.e. the *conditional factors* in Figure 5.1) when they interact with an intelligent context.

To sum up, the way serendipitists embark on artificial serendipity routes is more informed and deliberate than the more spontaneous and unexpected engagement of natural serendipity.

5.3.3 The middle: casual exploration that affords a thrilling ride

Once serendipitists embark on a serendipitous route, whether natural or artificial, their interests are piqued, which results in them exploring the identified surprise. This exploration often involves reflecting on past experiences (Lawley & Tompkins, 2008), searching for additional information on the spot (McCay-Peet & Toms, 2015), comparing the acquired information and possibly seeking timely assistance from trusted individuals (Dantonio et al., 2012). However,

during this exploration process, serendipitists' attitudes towards the identified surprise can differ significantly between natural and artificial serendipity.

In natural serendipity, serendipitists engage wholeheartedly in exploring the identified surprise. The concentrated focus is triggered for two main reasons: (1) First, serendipitists are aware that if they do not concentrate on exploring the surprise, this rare 'luckiness' may vanish amid the randomness of the context (Carr, 2016). Therefore, focused exploration becomes crucial to capitalise on these transient moments of potential insight or value (Barber & Fox, 1958). (2) Second, due to the unexpected nature of surprises, serendipitists need to invest significant time and effort in fully exploring them (Waugh et al., 2017). Thus, there is little room for attention to other things.

Because of this concentrated focus, serendipitists often view any findings unrelated to the identified surprise as disruptions and tend to ignore them (Makri & Buckley, 2019). If unavoidable disruptions occur, particularly those related to completing foreground tasks, serendipitists will often save the identified surprise for later exploration (McCay-Peet & Toms, 2015). This approach ensures that they can return to exploration with full attention when they have the time and space to do so, thus capturing the value of serendipity.

By contrast, in artificial serendipity, serendipitists' exploration may not be limited to the initially identified surprise. Instead, they can either deeply engage with several pleasant surprises or not delve deeply into any of them – even including the initial one. This more casual exploration approach is shaped by the actively involved intelligent context, which impacts serendipitists in two main ways:

- 1) Intelligent contexts can offer additional pleasant surprises to serendipitists during their exploration process. Powered by AI and other techniques, the intelligent context can continuously analyse and adapt to serendipitists' real-time online behaviours, adjusting its offerings accordingly. This dynamic process can lead to serendipitists bumping into a series of additional, potentially more attractive, pleasant surprises. This expands their exploration scope, allowing them to traverse through multiple surprises.
- 2) Intelligent contexts also make serendipitists more cautious and risk-sensitive during exploration. As the context serves more of its designers' benefits, the involvement of the context can often increase serendipitists' caution during exploration. This cautious approach allows them to navigate the serendipitous journey while being mindful of possible pitfalls or misleading paths. If serendipitists perceive potential risks or discrepancies in the identified surprises, they can promptly disengage from exploration.

A change in serendipitists' exploration focus can indeed result in two distinct types of twists in the development of artificial serendipity:

- 1) The first is a redirected and exciting twist that introduces additional surprises that offer greater utility rewards or deeper knowledge engagement. These additional surprises may come in the form of new insights, novel connections, or unexpected opportunities that align with the serendipitists' evolving interests and needs. This positive shift in the exploration focus amplifies the serendipity experience, making it more rewarding and engaging.
- 2) The second is a disappointing twist, which can occur when hidden flaws in the identified surprise are revealed, or when an unforeseen external force disrupts the exploration process. These twists can lessen the attractiveness of the exploration, sometimes leading to a premature end to a serendipitous experience.

Both types of twists – good and bad – add a dynamic element to the artificial serendipity journey. It is this essence of the 'dynamics of the exploration path' (P3-3) that infuses the serendipitists' journey in artificial serendipity with 'a sense of thrill' (P3-3). Such a *thrilling ride* also constitutes the fourth characteristic of an artificial serendipity (see Figure 5.1).

Overall, while natural serendipity typically involves the concentrated exploration of a single surprise, artificial serendipity offers a more diversified exploration process that can provide serendipitists with a continuous stream of pleasant stimuli or expose them to potential risks. Consequently, compared to natural serendipity, the unfolding of artificial serendipity often brings a stronger sense of thrilling to serendipitists, as they navigate a dynamic journey.

5.3.4 The end: varied outcomes

By the end of a natural serendipity experience, serendipitists typically enjoy a valuable outcome. This value stems from the fact that most crucial decisions made during the experience are made solely by the serendipitists themselves. Because individuals are best acquainted with their own needs and preferences, serendipitists naturally make decisions aligned with their benefits.

The value gained from natural serendipity can manifest on both individual and organisational levels (McCay-Peet & Toms, 2015), ranging from emotional enjoyment to concrete solutions to persistent problems or pathways and innovative opportunities (Erdelez, 1995; 1999; Busch, 2022). The realisation of this valuable outcome ultimately allows serendipitists to recognise that they have seized a pleasant surprise at the outset of the experience, thereby retrospectively acknowledging that they have undergone a serendipity (McCay-Peet & Toms, 2015).

By contrast, the end of an artificial serendipity experience often presents serendipitists with more varied outcomes. These outcomes may be good and valuable or even bad and harmful. The multifaceted nature of these results is influenced by the interactive dynamics between serendipitists and the intelligent context that guides their experiences.

In artificial serendipity, decision-making is a collaborative task involving the collective intelligence of both the serendipitists and the context. In this collaborative dynamic, the context may sometimes mislead serendipitists into making decisions that favour their designers' objectives rather than their own interests.

If serendipitists fail to resist this misleading influence – a plausible scenario given the abilities of AI and other intelligent techniques – their journey through artificial serendipity can culminate in a bad outcome. Such bad and unfavourable endings might include *emotional dissatisfaction*, a *waste of resources* or even a *loss of decision-making autonomy*. Experiences of these so-called bad serendipities can serve as cautionary lessons, prompting serendipitists to approach future serendipity more warily in the same context. Moreover, repeated bad serendipities within the same context could erode the serendipitists' trust entirely, leading them to disengage from that context in the future.

However, if serendipitists resist or even reverse the misleading tendencies of the context – which is possible due to their strong adaptability and dynamic mindset – they can conclude their artificial serendipity as good, just as one would in natural serendipity. Unlike natural serendipity, the good outcomes of artificial serendipity are not regarded as proof of its occurrence. Serendipitists are often aware from the outset that they are embarking on an artificial serendipity journey. Instead, these successful outcomes serve a different purpose: they reinforce the serendipitists' trust in the context, thereby fostering a more symbiotic relationship between serendipitists and the intelligent context in their continued pursuit of more artificial serendipitous experiences.

For serendipitists, assessing whether they have resisted the inappropriate influence of the context is a process that unfolds over time. This assessment requires a period of reflection, distanced from the immediate interaction and influence of the context. As a result of this reflection, serendipitists' final understanding of their experience with artificial serendipity may differ from their initial impressions at the end of their interaction with the context. This shift occurs because their decisions and insights during the reflection period are more independent and less influenced by the context.

5.3.5 Summary

Artificial serendipity and natural serendipity, though distinct, follow unique yet comparable developmental trajectories. A comparative analysis, as detailed in Table 5.2, provides insights into their distinctive modes of development.

Table 5.2 Distinctions between the development routes of artificial and natural serendipity

<i>Artificial serendipity: A forward-looking adventure</i>	<i>Natural serendipity: A retrospective fortune</i>
Mutual understanding between sagacious serendipitists and the intelligent contexts	Sagacious mindset of the serendipitists
Expected surprise and the perception of serendipity	Unexpected happening
Casual exploration of one, multiple or no surprises	Focused exploration of the initially identified surprise
Bad or good outcome that is yet to be determined	Valuable outcome and a perception of serendipity

To initiate *natural serendipity*, serendipitists equip themselves with a sagacious mindset. This involves an independent learning process in which serendipitists learn how to spot and work on hidden surprises within the randomness of a context. On the other hand, cultivating *artificial serendipity* alongside an intelligent context requires serendipitists to focus on developing mutual understanding. This involves a reciprocal learning dynamic between the serendipitists and the context, where the context learns about the serendipitists' preferences and needs, while the serendipitists learn about the context's operational patterns.

This two-way learning helps align the context's offerings with the serendipitists' expectations. Therefore, the onset of *artificial serendipity* is often marked by an expected surprise that allows serendipitists to clearly perceive the advent of a serendipitous experience right from the start. By contrast, the beginning of *natural serendipity* is often marked by an unexpected happening, a result of the inherent unexpectedness of a random context. This element of unexpectedness can lead to hesitation among serendipitists to embrace the random surprise, potentially causing them to miss out on opportunities. This is why natural serendipity is often seen as a rare and valuable event.

Due to the rarity of unexpected yet seemingly pleasant surprises, serendipitists tend to focus intensely on exploring them after embarking on the route of *natural serendipity*. They dedicate themselves to thoroughly investigating and understanding the surprise and recognising its potential value and impact. By contrast, in *artificial serendipity*, knowing that the context will continue to offer various surprises allows serendipitists to explore the identified surprise more

casually. That is, serendipitists may sometimes give up the identified surprise to explore other things or even discard the identified surprise and leave the serendipitous route.

At the end of *artificial serendipity*, the casual exploration and the influence of the intelligent context often lead to a range of outcomes, including some bad ones, whereas in independent and focused exploration, *natural serendipity* often leads serendipitists to a valuable outcome. The value realised at the end of this process solidifies the pleasant nature of the identified surprise, reinforcing serendipitists' perception of natural serendipity as a retrospective and valuable discovery.

5.4 Reconsidering design for serendipity

By reflecting on the serendipitists' experiences of artificial serendipity and their interactions with the context, insights can be gleaned into what they consider effective serendipity-prone designs. These preferred designs, characterised by *a high-level of personalisation*, *adequate personal control*, and *modest propagation*, diverge from the prevailing design strategies. This section aims to explore why serendipitists value these alternative design approaches.

5.4.1 Effective design promises a high-level of personalisation

According to current theories, introducing novel offerings into serendipitists' information feeds is widely recognised as an effective strategy for fostering serendipity (Kotkov et al., 2016), as it can help create a more unexpected and innovative information landscape (McCay-Peet & Toms, 2017). However, personalised offerings are often viewed as elements that should be minimised in a serendipity-prone design (Nugroho et al., 2021), as they may lead to filter bubbles (Matt et al., 2014). Such bubbles confine serendipitists to repetitive and familiar perspectives, hindering them from coming across valuable unknowns (Maloney & Conrad, 2016).

For serendipitists, novel offerings are appreciated as they can indeed provide pleasant surprises. However, serendipitists express a stronger preference for more personalised offerings, suggesting that such personalised offerings can enhance the pleasure and enjoyment of artificial serendipity significantly more than novel ones. The reasons for this discrepancy between serendipitists' preferences and designers' strategies are twofold:

The first reason is the human inclination towards familiarity. As outlined in Section 5.1.1, humans have a natural path dependency, meaning they often prefer known and familiar elements to those that are unfamiliar and unknown (Björneborn, 2023). Thus, for serendipitists, the pleasure of serendipity is primarily derived from coming across elements that align with their everyday experiences and interests, rather than something entirely unfamiliar or novel. Familiar content tends to be immediately applicable and beneficial in their everyday life and

work. In contrast, novel content may not only be less immediately useful but may also be contrary to their existing preferences and interests, potentially leading to discomfort or displeasure (Liang, 2012). For instance, P2-3 mentioned that while horror comics are ‘definitely a novel and unknown area’ for her (P2-3), she would never buy and read them due to her ‘fear of ghosts and terror’ (P2-3).

The second reason is that novelty is already widespread in contemporary society. Modern society, particularly in online environments enriched by AI and other intelligent technologies, bombards serendipitists with abundant novel information (Fan & Niu, 2018; Oh et al., 2022). Being human beings with limited cognitive capacities, the constant influx of novel content can create more of a problem than benefits. First, continuous exposure to novel information can disrupt serendipitists’ planned tasks, which may have more tangible and immediate benefits. This frequent interruption could enhance their aversion to novel information (Makri & Buckley, 2019). Moreover, exploring novel content demands significant time and cognitive effort. When considering the costs of this exploration, serendipitists may deem the engagement with novel elements as not worth their time and effort (Waugh et al., 2017). Given the above concerns, serendipitists believe they do not lack novelty; instead, they lack a personalised filtering that could help them identify ‘relevance from the chaotic’ (P3-10).

It is worth noting that this link between personalisation and compelling surprises extends beyond just this study. Various studies, including laboratory research and comprehensive surveys with consumers (e.g., Anaya et al., 2022; Chen et al., 2019; Hertz et al., 2023), have found that the more customised the surprise, the greater the openness of serendipitists’ willingness to engage with it. Furthermore, this preference for familiar surprises is not confined to everyday life. Studies with business professionals and academic researchers (e.g., Maloney & Conrad, 2016; Pontis et al., 2016), who are generally keen on innovation, also suggest that the most fulfilling serendipitous experiences are those pertinent to their pre-existing knowledge and spheres of interest.

Given that a serendipity-prone design aims to generate surprises that serendipitists prefer (Qin et al., 2022; Reviglio, 2023), personalisation is still vital. Despite some mainstream design trends that may downplay its importance, designers should still prioritise personalisation as a critical factor in developing artificial serendipity.

5.4.2 Effective design ensures adequate serendipitists’ control

Another design strategy designers advocate is to incorporate more interactive supportive tools into the context (Qin et al., 2022; Reviglio, 2023). These tools are thought to help serendipitists quickly discern the value of identified surprises, thereby reducing cognitive load and enhancing enjoyment during their serendipitous experiences (Makri et al., 2014).

However, this research found that such tools have not always met the expectations of designers, as they are sometimes viewed with resistance or disapproval from serendipitists. The root of serendipitists' aversion is that these tools can diminish their perceived sense of personal control over their experiences.

For serendipitists, the perception of personal control – the belief that they have some influence over the outcomes of their behaviours (Cutright & Wu, 2022) – is vital for a pleasant artificial serendipity experience. This sense of control gives serendipitists the assurance that they are not serving the interests of the context's designers at their own expense. This assurance, in turn, gives serendipitists the confidence and willingness to continue the serendipitous experience. However, the integration of interactive decision-making supports destroyed this assurance. Specifically, these tools make the serendipitist feel that their movements 'are actually being overly constrained by the [designer's] intentions' (P3-4). This perception of constraint is rooted in four main reasons.

First, the operation principles of some supportive tools are often obscure, which disrupts the mutual understanding between the serendipitists and the context. Designers, viewing these serendipity-enhancing tools as having competitive advantage, often choose not to disclose their technical workings (Kim & Mattila, 2013; Wang, 2023). This deliberate secrecy, combined with the inherent conflict of interest between designers and serendipitists (Smets, 2023), fosters suspicion among serendipitists. Serendipitists may worry that their 'every action is already transparent to [designers]' (P1-5), leaving them without control over what they will come across next. After all, confronting uncertainty can intensify negative thoughts and fears (Cutright & Wu, 2022).

Second, some supportive tools appear to be 'overly helpful' (P2-7), leading to concerns among serendipitists about the excessive surveillance of their behaviours. While these tools aim to provide comfort, their accuracy in identifying serendipitists' concerns and solutions can feel intrusive. The most criticised tools here are social tools – those offering advice based on friends' preferences in moments of uncertainty (Grange et al., 2018). Their accuracy in identifying personal relationships appears annoying. This annoyance arises from the fact that serendipitists typically do not disclose social relationships accurately with online platforms, as the information is 'overly private' (P2-7). An example is P3-7, who received a recommendation from a food delivery app based on her boyfriend's lunch choices. This precise recommendation caused unease due to its perceived invasive tracking of her online behaviour, as she 'never explicitly disclosing [her] boyfriend's identity to the app' (P3-7).

A third issue with some supportive tools is their tendency to provide excessive explanations, which can impair serendipitists' ability to independently interpret an identified surprise. These

tools, while offering vivid multi-media explanations, may overly direct serendipitists towards the designers' perspectives or intentions, thereby compromising their autonomous judgement. For instance, P4-6's decision to purchase crayfish was swayed by a persuasive introductory video, overriding her awareness of negative reviews. This example demonstrates how visual explanations, especially videos, can influence serendipitists' decisions, leading them towards choices they might not have made independently. Moreover, these detailed explanations, particularly video-based ones, have practical downsides like consuming significant data allowances (P1-1), adding an unwanted practical burden to the serendipity experience.

Finally, most supportive tools only guide serendipitists through the experience without offering them a clear option to withdraw. The absence of an exit strategy can make serendipitists feel trapped in a path that might lead to dead ends or unfulfilling outcomes. Such a scenario can shift the serendipitists' emotional response from pleasure to worry, as they navigate through the artificially serendipitous journey with an underlying fear of negative outcomes.

Given that enjoyable artificial serendipity should afford for 'a thrilling but safe' (P3-10) exploration process, designers should enable serendipitists to feel in control. This sense of control can empower serendipitists with the confidence to engage with the unplanned and perceive pleasure from the uncertainty.

5.4.3 Effective design requires modest propagation

Since serendipitous findings often fall outside of the scope of serendipitists' immediate attention, serendipitists may not always immediately notice these surprises. To prevent serendipitists from overlooking these surprises, designers are advised to highlight them through appealing marketing designs such as eye-catching pop-ups and attractive propagations (Kim et al., 2021; Smets et al., 2022).

In practice, an attractive marketing strategy does capture serendipitists' attention to the curated surprise. However, it also runs a higher risk of leading serendipitists to experience disappointing artificial serendipity. This is firstly due to eye-catching alerts which can sometimes interfere with serendipitists' planned tasks, leading to 'an annoying meeting' (P3-4) with the curated surprise. This is because that AI and other intelligent technologies are not always accurate in predicting serendipitists' immediate needs or focus (Oh et al., 2022). Highlighting less relevant surprises can cause annoyance if it does not align with the serendipitists' current interests or intentions.

A second reason is that constant notifications to draw attention to a curated surprise can convey to serendipitists that this surprise is presented to address the designers' transaction-oriented desires – that is, their aim to profit from serendipitists' engagement with artificial serendipity

(Shibly & Chatterjee, 2020). When it becomes clear that profit drives the design, serendipitists might no longer perceive the identified surprise as a delightful surprise (Kim et al., 2021), but rather as a trap that should be avoided.

Third, attractive marketing promotions may sometimes unwittingly inflate serendipitists' expectations about the value of an artificial serendipity. When expectations are set excessively high, they become difficult to meet, leading to a gap between anticipation and reality. This gap, in turn, can result in even 'typically rewarding experiences falling short of their appeal' (P3-3). For instance, P3-3 found her enjoyment of an 'ordinary yet elegantly designed' animation figure (P3-3) was lessened by Taobao's portrayal of the animation figure as 'rare and exclusive' (P3-3). Even when designers sometimes satisfy serendipitists' unrealistic expectations, the risk of disappointing serendipitists still exists. Such instances of success may lead serendipitists to set even higher expectations for future serendipitous experiences (Kim & Mattila, 2013; Lindgreen & Vanhamme, 2003). This escalating cycle of expectations can, in turn, lead to even greater disappointment in the future.

Given that the existing strategy of highlighting serendipitous findings carries 'equal measures of risk and success' (P4-2), designers of artificial serendipity might consider revising this approach. Adopting a modest introduction of the crafted surprises – a method that encourages serendipitists' natural curiosity without overwhelming them with intrusive alerts – may be more effective. This approach would align with the preferences of serendipitists, who often favour a harmonious mix of 'self-discovery and external prompting' (P4-2).

5.5 Summary

This chapter discussed the findings of this PhD research, providing thorough insights into a type of serendipity often neglected in the literature, especially in the realm of information science – artificial serendipity.

The discussion of serendipity by design highlights the fact that conscious designs can create genuine pleasant surprises in triggering serendipity. The designability of surprise stems from the fact that serendipitists have more dynamic cognitive processes and a lower threshold for what constitutes a pleasant surprise than what current theories suggest. They tend to find pleasure in subtle, yet pleasant, changes within familiar realms rather than from unknown novelty. Also, serendipitists themselves determine the standard for what constitutes an eye-attractive good surprise based on flexible and conditional subjective standards rather than fixed objective criteria. Thus, serendipitists are not trapped in limiting filter bubbles that limit their eyesight when interacting with conscious designs, even those equipped with AI. Instead, they can effectively collaborate with these designs, using them as tools to discover diverse pleasant

surprises. In this scenario, serendipity becomes an expected surprise, whose essence is evident to serendipitists at the beginning of the experience. Such an expected surprise that stems from active collaboration between serendipitists and the consciously designed context is artificial serendipity.

The identified characteristics and development routes of artificial serendipity are the most important findings of this research. In artificial serendipity, the roles of serendipitists and contexts remain central; nevertheless, the identified surprise (i.e. the serendipitous finding in natural serendipity), previously pivotal in natural serendipity, diminishes in prominence. With the aid of conscious design, contexts become more sagacious and do not merely wait passively for serendipitists to explore but actively nudge them towards various surprises. Consequently, in a single artificial serendipity experience, serendipitists can come across multiple pleasant surprises, leading to a more casual treatment of each individual surprise. Thus, the central role of individual serendipitous findings may no longer exist.

The active and sagacious engagement of contexts, however, also means that artificial serendipity is not entirely under the serendipitists' control and may not always serve their interests. Sometimes, artificial serendipity may prioritise the contexts and their designers' interests at the expense of the serendipitists' benefits. Experiencing bad outcomes from artificial serendipity can lead serendipitists to approach subsequent artificial serendipity more cautiously. Serendipitists may explore identified surprises less deeply and even discard them once some risks are perceived – this disposal of the surprise further diminishes the role of serendipitous findings in artificial serendipity.

In practice, the manner in which serendipitists interact with contexts and the outcomes they achieve in artificial serendipity depend on the specific conditions of each experience, including natural, social and task-related conditions. This dynamic interplay between serendipitists and contexts in artificial serendipity highlights a complex and evolving relationship that balances expectation and surprise with gains and losses.

The discussions of serendipity by design and the characteristics and development routes of artificial serendipity reveal key insights into what serendipitists perceive as effective design features for facilitating serendipitous experiences. These features include high-level personalisation, ensuring adequate user control and modest propagation of curated surprises. Such preferences demonstrate a divergence from existing mainstream design strategies and underscore the importance of considering serendipitists' perspectives to better facilitate artificial serendipity.

The discussions presented in this chapter bring fresh perspectives to current serendipity-focused research and practices, especially for information science and consumer behaviour

studies. The next chapter presents the implications of better integrating artificial serendipity into research frameworks and refining existing serendipity-focused designs. The insights provided will contribute to the expansion of knowledge and advance future studies on serendipity.

Chapter 6 Conclusion

This chapter concludes this PhD research, one that explored serendipity in online marketplaces (i.e. e-commerce serendipity) – an underresearched phenomenon that affects both the development of serendipity theories and e-commerce practice.

Section 6.1 summarises the research and its findings. Section 6.2 assesses the contributions of this thesis within the broader scope of serendipity-focused studies and practices. Section 6.3 elaborates on the implications of this research for serendipity research and practice, especially for those with a background in information science and consumer behaviour. This chapter ends with suggestions of potential avenues for future research in Section 6.4.

6.1 Summary of the research

This research focused on developing a comprehensive understanding of serendipity in online marketplaces in order to answer the following core research question:

- *What constitutes consumers' serendipitous experiences in online marketplaces?*

This research focus and question emerged from a notable gap identified in the literature review regarding serendipity, particularly in consumer behaviour and information science. Although serendipity is increasingly gaining attention from online consumers and e-commerce practitioners, systematic theoretical research is lacking in understanding the phenomenon's essence, characteristics, and developmental trajectories.

More concretely, the extant literature on consumer behaviour highlights the importance of serendipity in online marketplaces and attempts to curate more of it through conscious design(s). However, the design attempts made by these studies often needed a theoretical grounding, leading to criticisms from serendipity-focused theories, particularly those rooted in information science. In particular, these theories argued that attempts to consciously design for serendipity without a deep understanding of its nature in online marketplaces may inhibit rather than foster serendipitous experiences. Nevertheless, these theories do not provide sufficient insights into the dynamics of serendipity in online marketplaces. This is because these theories have not understood the issues of serendipity by design and/or focused on online marketplaces as a subject of study (Chapter 2).

By addressing these gaps, this research aimed to provide a richer, more nuanced understanding of how serendipity manifests and evolves in online marketplaces. Four research objectives were proposed in guiding this research:

- 1) *To explore and understand online consumers' interpretation of e-commerce serendipity;*

- 2) *To identify the routes that direct consumers to experience e-commerce serendipity;*
- 3) *To reveal the factors influencing consumers' experiences of e-commerce serendipity;*
- 4) *To propose a conceptual space to illustrating the features of e-commerce serendipity.*

To address these research objectives, this research was designed as an abductive narrative inquiry, seeking to understand e-commerce serendipity through real-life stories told by online consumers. This strategic choice acknowledged the inherent subjectivity of serendipity, emphasising that its true essence can best be understood through the perspectives of those who experience it. To capture online consumers' perspectives faithfully, a pilot study was conducted to select the appropriate research methods, design research materials, and arrange the research processes. Based on insights from the pilot study, this research adopted diaries and semi-structured interviews as the primary methods for data collection. The collected data was subsequently analysed collectively by both the researcher and the participants; this collaborative approach ensured a faithful interpretation of the data and helped build a stronger rapport between the researcher and the participants. A total of 32 Chinese online consumer participants contributed to the formal study, sharing 123 real-life stories about their experiences of serendipity in online marketplaces. From these stories, a comprehensive picture of serendipity in the realm of online marketplaces was determined (Chapter 3).

In more detail, this research found that e-commerce serendipity, in essence, is *an artificially-facilitated unplanned experience*, one collaboratively shaped by serendipitists and an intelligent context under conscious design. This form of artificially-designed serendipity, known as artificial serendipity, exhibits the following characteristics:

- 1) It begins as an *expected surprise*. Serendipitists are aware of the occurrence of artificial serendipity but cannot fully predict when, where, or in what form it will manifest. Even though these expectations are not entirely precise, they provide a sense of preparedness and readiness, informing serendipitists from the onset that they are about to embark on a serendipitous journey.
- 2) It unfolds a *thrilling ride*. The journey of artificial serendipity is thrilling, marked as it is by dynamic changes. The changes can be positive, leading serendipitists to greater utility or knowledge rewards. The changes can also be negative, revealing that time and effort have been spent on a concealed trap. This dynamic nature of artificial serendipity adds an element of excitement but also carries the risk of disappointment.
- 3) It results in *varied outcomes*, bringing not only good outcomes and gains, but also bad outcomes and losses for serendipitists. Since the contexts actively influence artificial serendipity, serendipitists do not have absolute control over its outcomes. Sometimes, the context might mislead serendipitists into bad experiences, resulting in wasted resources,

negative emotions, or loss of decision-making autonomy. In other instances, serendipitists might still benefit from good serendipity, gaining emotional pleasure, knowledge enhancement, or practical rewards. In practice, the true nature of these outcomes may take time to fully reveal themselves.

These insights into the nature and characteristics of e-commerce serendipity, as presented in Section 4.1, responded to the *first research objective*. They revealed how serendipitists perceive and experience serendipity in online marketplaces.

Delving deeper into artificial serendipity, this research found that this phenomenon unfolds via three routes:

- 1) Coincidence, which arises from the interaction of serendipitists and an altruistic context. The supportiveness of the context may lead serendipitists on a journey where all their desires are met with ease, ultimately guiding serendipitists to a fulfilling serendipitous outcome that offers satisfaction. Thus, a coincidence is often termed a good serendipity.
- 2) Unexpected discovery, which occurs when a knowledgeable context offers surprises that challenge or revolutionise serendipitists' existing knowledge. By cautiously engaging with the insightful context, serendipitists can gain new insights, broadening their horizons and potentially transforming aspects of their everyday and professional endeavours. Thus, an unexpected discovery is often termed a good serendipity.
- 3) Encountering, which stems from dynamic interactions between serendipitists and a context that actively pursue its own interests. In these scenarios, the context recommended good surprises primarily to advance its own interests. Thus, as the serendipitists navigated the encountering route, the situation they identified is often more uncertain and dynamic, leading them toward either a good or a bad outcome. Thus, encountering is often termed either as a good or a bad serendipity.

The aforementioned development routes of artificial serendipity, as revealed in Section 4.2, addressed the *second research objective*.

Factors that contribute to these dynamic development routes of artificial serendipity were detailed in Section 4.3. These factors fell into three main categories:

- 1) Serendipitist-related factors. These factors include *personal characteristics* of the serendipitists, such as curiosity and sensitivity, as well as *acquired insights* like lifestyle, shopping expertise, privacy awareness and professional identity. These factors influence how serendipitists interact with the context and make their decisions during the serendipitous experience.

- 2) Third party-related factors. These factors are related to the context and its design. They encompass *general qualities* such as business positioning, reputation, resource status, system stability and sales management, as well as *serendipity-prone designs*, including recommendation systems, marketing strategies and interface design. These factors affect the capability of the context to curate opportunities for artificial serendipity and to persuade the serendipitists during the serendipitous experience.
- 3) Conditional factors. These are the environmental factors that create the interactive surroundings of the serendipitists and the context. They include aspects of the *natural surroundings* and *social environments*, as well as factors related to the serendipitists' *planned tasks*. These factors affect the real-time interactive status between the serendipitists and the context.

The identification of these factors addresses the *third research objective* by providing a comprehensive understanding of the factors that influence the unfolding of serendipity in online marketplaces.

All these findings were reinterpreted and connected with the extant literature in Chapter 5. Their discussion was multifaceted, covering three areas: serendipity by design, the distinctions between artificial and natural serendipity, and the reconsideration of current serendipity-prone designs. The discussion challenged prevailing theories by demonstrating that conscious designs, even those that use AI and intelligent techniques, do not diminish the ability of serendipitists to experience serendipity. In fact, these designs have been shown to curate more serendipitous experiences (Section 5.1).

The serendipitous experiences triggered by these conscious designs are forms of artificial serendipity – a new type of serendipity that is distinct from the natural serendipity that has been the primary focus of past studies, especially those in the field of information science. In contrast to natural serendipity, which occurs from natural randomness and is fully controlled by serendipitists, artificial serendipity involves a degree of predesigned external influences. Thus, artificial serendipity differs from natural serendipity in terms of its actors, characteristics, development routes and outcomes (Sections 5.2 and 5.3). Based on the earlier-presented comparative discussion of natural and artificial serendipity, a conceptual space for artificial serendipity was proposed, which addressed the *fourth research objective*.

To facilitate serendipitists to find more pleasure from artificial serendipity, current serendipity-prone design strategies were revisited and critically evaluated. The revisiting led to the realisation that current designers need to pay greater attention to serendipitists' perspectives and preferences in the design process (Section 5.4).

Overall, the discussion shed light on overlooked aspects of serendipity by design in serendipity-focused research, particularly, in information science. It also underscored the need to more thoroughly consider serendipitists' viewpoints in the practical design of serendipity-related experiences. This holistic approach provides a more nuanced understanding of serendipity in the digital age that recognises the complexity of interactions between individuals and consciously designed online environments.

6.2 Contributions

This research took a special interest in the serendipity that happens within contexts equipped with conscious serendipity-prone designs. Its findings contribute to three broad areas in serendipity-focused studies – theory, methodology and practice – especially in the fields of information science and consumer behaviour.

6.2.1 Contributions to theory

The theoretical contributions of this research are threefold: (1) The research topic on its own contributes to the current body of knowledge, since it focuses on an underresearched yet important context; (2) This research confirms that serendipity can indeed be designed, settling a long-standing debate within the sphere of serendipity-focused theories, especially in the field of information science. By addressing this key debate, this research establishes a theoretical foundation for serendipity-focused studies to embrace new technologies such as AI. Moreover, the resolution of the central debate quells several related smaller disputes, thereby refining and augmenting the existing theoretical framework related to serendipity; and (3) This research enriches and expands the theoretical boundary of serendipity, providing a theoretical base for exploring serendipity in a well-designed digital context.

6.2.1.1 Expanding research focus and incubating theoretical innovation

This research plays a crucial role in highlighting the benefits of expanding the research focus serendipity-focused studies to everyday life context, as these contexts are rich with previously unknown insights about serendipity.

Most current serendipity-focused studies concentrate on innovative contexts, such as business and academic settings, attracted by their inherent potential for producing innovative ideas and ground-breaking theories. This research, in contrast, ventures into the realm of everyday life, specifically online shopping, which is often perceived as too mundane for yielding significant theoretical insights. Indeed, the focus on ordinary everyday contexts in this research has led to a more in-depth understanding of artificial serendipity, offering fresh insights into serendipity-related theories. This emphasises the rich potential of everyday settings for theoretical

innovation in serendipity studies. The rationale behind this assertion can be broken down into three key points:

- 1) First, in everyday life contexts, serendipitists are less constrained by formal rules and protocols than in structured environments, such as business or academia. This enhanced freedom, on the one hand, allows for the emergence of new behavioural patterns and possibilities, which can catalyse theoretical innovations. On the other hand, the spontaneity of serendipitists in daily life provides a fertile ground for observing and understanding unique and underresearched aspects of serendipity.
- 2) Second, many foundational theories in the field of serendipity studies are rooted in the observation of everyday activities. For instance, Erdelez's (1995) information encountering theories and Rubin et al.'s (2011) theories on everyday chance encounters were developed from close observations of everyday life. These theories highlight the importance of mundane activities and routines in offering insights into serendipity, proving that significant theoretical developments can stem from the study of ordinary and everyday experiences.
- 3) Third, everyday life is where people form and cultivate their mindsets, learning how to navigate and interpret various happenings (Chaney, 2002; Ocepek, 2018). The experiences and interactions that occur in everyday contexts shape how individuals perceive and engage with the world around them. By understanding phenomena within the realm of everyday life, we can enhance our comprehension of similar occurrences in more formal settings like businesses and academia. This implies that insights gleaned from everyday life have broader applicability and can inform our understanding of serendipity in various contexts.

Overall, this research advocates expanding the scope of serendipity-focused studies to encompass a wider range of contexts. This includes not only traditional settings but also the myriad of everyday contexts, especially in the digital and online realms. By doing so, serendipity-focused studies could not only deepen their understanding of serendipity, but also remain relevant and in tune with the changing dynamics of modern life.

6.2.1.2 Validating designability of serendipity and enhancing practical impacts of the studies

Another theoretical contribution of this research is its validation of the designability of serendipity. This validation effectively resolves the long-standing debate within serendipity-focused theories regarding the issue of serendipity by design. This resolution, in turn, enables

current serendipity-focused studies to better align with and embrace the rapid evolution of technology and societal changes.

As discussed in Chapter 2, there has been a persistent controversy in serendipity-focused theories over whether conscious design can facilitate serendipity. On one side of the debate, some studies have argued that conscious design diminishes serendipitists' perception of surprise and restricts their decision-making autonomy (e.g. Erdelez & Jahnke, 2018; Erdelez et al., 2019), ultimately depriving them of the opportunity to experience serendipity. On the other side of the debate, other studies have posited that conscious design, particularly, when enhanced by AI, could leverage AI's computational prowess to afford more surprising moments, thus leading to more serendipitous experiences (e.g. Makri et al., 2014; Reviglio, 2023). However, neither side has been able to persuade the other conclusively, resulting in a stalemate that has hindered the full embrace of technological advancements in serendipity-focused research and theories.

This research, rather than entangling itself in these controversies, adopted a unique approach that directly addressed the root of this debate. In other words, this research focuses on an empirical exploration of serendipitists' actual experiences with conscious design. This methodological choice is crucial, as serendipity's inherent subjectivity means that its true essence can only be fully understood by those who experience it.

By engaging with serendipitists directly and examining their interactions with consciously designed environments, this research has provided tangible evidence to end the debate. This research revealed that conscious design does not eliminate serendipity; instead, it gives rise to a new form of serendipity. This critical contribution lays a theoretical foundation for serendipity-focused studies to embrace the advancements of AI and other new technologies. The integration of these intelligent techniques in serendipity-focused research enhances the alignment of these studies with societal developments, thereby boosting their practical impact.

Moreover, by validating the designability of serendipity, this research also tackled why certain traits of serendipitists impact offline and online experiences differently. For example, openness significantly influences serendipity in the physical world but appears to be irrelevant in digital spaces (McCay-Peet & Toms, 2017). This research clarified this point by explaining that sagacious online contexts often act as equalisers. They bridge gaps in serendipitists' abilities and personal traits, which means that a serendipitist's distinct qualities become less crucial in enabling serendipity. With increasingly intelligent contexts, serendipity is no longer a gem reserved for a sagacious few but rather a frequent delight for the masses.

6.2.1.3 Addressing novel research possibility and prompting the development of the realm

By thoroughly revealing the characteristics, development routes and influencing factors of artificial serendipity, this research has expanded the scope and understanding of serendipity in the field of information science. Here are the key contributions, which cover two main areas.

First, the exploration of artificial serendipity contributes to serendipity-focused studies by liberating them from the conventional view that serendipity must be unexpected, valuable, and reliant solely on individual sagacity. The findings suggest that serendipity is much more dynamic and complex than previously understood. It can present itself as an anticipated surprise and a thrilling ride influenced by the wisdom of both the serendipitists and the context in which they operate. It can even result in less-than-positive outcomes. Acknowledging this multifaceted nature of serendipity can inspire more open-minded serendipity studies, which, in turn, can propel the field forward.

Second, the exploration of artificial serendipity underscores the crucial influence of an intelligent context in shaping serendipity, which leads to two further significant contributions:

- 1) This emphasis on the role of context fosters a more inclusive research approach to serendipity. Future studies in this area should delve into the interactive relationship between serendipitists and their contexts during serendipitous experiences. This broader approach addresses a critical limitation in current serendipity-focused studies, their neglect of the active role of context, as they focus only on how serendipitists manipulate context. By exploring the dynamics between serendipitists and intelligent contexts, we can understand serendipity more holistically. After all, serendipity occurs at the intersection of interactions between the context and serendipitists (Ford & Ellis, 2014).
- 2) This focus also serves as a call for serendipity-focused studies to adapt their theoretical frameworks in response to modern technological advancements, notably, AI. The heightened role of context in this research is attributed to the emergence of AI, which has granted contexts an intelligence that mirrors the cognitive abilities of serendipitists. Classic serendipity theories, which were primarily developed in the late 20th and early 21st centuries, do not fully encapsulate AI's transformative influence. Considering the inevitability of AI's integration into society, it is imperative for existing serendipity-related studies to update and refine these traditional theories to remain current and relevant.

6.2.2 Contributions to research method

This research claims five methodological contributions to serendipity-focused studies, especially in consumer behaviour and information science. All five contributions focus on

enlightening these studies on how to faithfully draw insights from serendipitists – that is, how to conduct a robust serendipitist-centric study in which the voice of serendipitists can be effectively heard. By hearing the voice of serendipitists – those who have directly experienced serendipity – a deeper understanding of the essence of serendipity can be gained.

Specifically, a robust serendipitist-centric design should strive for flexibility and inclusivity to accommodate serendipitists' diverse range of experiences and perspectives related to serendipity. This research pinpoints five general design insights for such an effective serendipitist-centric study:

- 1) A robust serendipitist-centric study should empower serendipitists to share their perceptions of serendipity instead of constraining them with so-called researchers-proposed academic definitions. This research found that serendipitists are more perceptive and capable of interpreting serendipity than researchers might anticipate. In addition, serendipitists who are unbound by academic constraints display greater openness to understanding serendipity. Engaging with their fresh perspectives can yield a more profound comprehension of serendipity across different settings, particularly in artificially designed environments where traditional research sees serendipity as less likely.
- 2) A robust serendipitist-centric study should employ designs that encourage free expression. Narrative strategies, as used in this research, may be particularly suitable. Specifically, storytelling is an inherent human skill (Eckerdal, 2013), and leveraging this approach enables the participants to convey their perspectives on serendipity authentically, free from researcher bias (Bronstein, 2019). Gaining access to genuine experiences through storytelling offers deeper insights into the nature of serendipity than other methods could. Moreover, serendipitists should participate in the data analysis. Since serendipity is a subjective experience, serendipitists are best equipped to understand and interpret their own stories.
- 3) A robust serendipitist-centric study should allocate ample time for engagement with serendipitists. Some consequences of serendipity are not immediate, and rushing the research process can lead to overlooking these latent outcomes. This may be partly why existing theories mistakenly assume that serendipity is always beneficial. Moreover, a hasty conclusion can prevent the development of a strong collaborative relationship between the researcher and serendipitists, without which serendipitists could regard the study as trivial and thus, respond without due consideration. In contrast, the researcher's sustained interaction with serendipitists fosters a productive partnership that could uncover a wealth of hidden narratives and deeper insights into the nature of serendipitous experiences.

- 4) A robust serendipitist-centric study should honour the contributions of serendipitists throughout the research process. Researchers must consistently recognise serendipitists as core knowledge contributors and thus, whenever possible, grant them appropriate monetary rewards for their inputs. This practice should encourage serendipitists to share their genuine experiences and insights into serendipity, including its artificial manifestations.
- 5) A robust serendipitist-centric study should consider the impact of the serendipitists' cultural background and the nuances of translation. As the concept of serendipity is deeply rooted in Western culture, it may not have a direct or equivalent term in other cultures. Inadequate or imprecise translations might limit the scope of the research and thus, lead to a partial or skewed understanding of serendipity. To thoroughly explore the diverse interpretations and nuances of serendipity across different cultural backgrounds, researchers should not confine themselves to a single translation standard. Instead, employing a variety of translations could prove more effective. This approach should encourage the study participants to reflect more deeply on the essence of serendipity, thereby providing a richer and more nuanced understanding of the concept.

6.2.3 Contributions to practice

This research and its findings also contribute to practice, particularly to the curation of artificial serendipity experiences that are mutually beneficial to consumers and e-commerce practitioners in online marketplaces.

6.2.3.1 Listening to serendipitists' voices

For e-commerce practitioners, the main lesson they can learn is listening to serendipitists' (often online consumers) desires before embarking on designing for serendipity in online marketplaces.

In practice, disregarding the desires of serendipitists can result in ineffective design strategies that would lead to significant setbacks for e-commerce practitioners. Often, ineffective design can impose a dual penalty on such practitioners: (1) The first penalty arises from the resources – financial, time and effort – invested in conscious serendipity-prone designs that fail to resonate with serendipitists, and (2) The second penalty is more consequential in terms of customer relationships. Ineffective serendipity-prone designs can lead to bad serendipity for consumers, which can result in their loss of satisfaction and trust in the practitioner. Dissatisfaction affects not only immediate sales but can also have long-term negative repercussions on customer loyalty and the practitioner's reputation. This research witnessed

instances in which serendipitists, after experiencing bad serendipity, chose to uninstall an e-commerce platform altogether.

Conversely, e-commerce practitioners who pay attention to serendipitists' desires enjoy significant advantages in terms of customer satisfaction and operational efficiency:

- 1) First, respecting serendipitists' desires leads to effective serendipity-prone designs. Given the subjective nature of serendipity, serendipitists are often best positioned to define what constitutes a satisfying serendipitous experience for them. By aligning with these insights, e-commerce practitioners can create positive artificial serendipity experiences that resonate with their customers. These experiences can boost customer satisfaction and trust that would lead to higher return rates and long-term loyalty, which is essential for enduring success in online marketplaces (Kim & Mattila, 2013).
- 2) Second, listening to serendipitists can also enable practitioners to streamline their design expenses. This is because serendipitists' preferred design features are already integral to existing online marketplace designs. In particular, serendipitists generally favour personalisation, a need that existing accurate and relevance-focused recommendation systems can meet. Furthermore, serendipitists value maintaining their control over their choices. This, in turn, reduces the need to introduce overly intelligent supportive tools in the marketplace. Moreover, serendipitists prefer to have realistic expectations at the outset of an experience, which suggests that practitioners do not need to invest heavily in elaborate marketing campaigns.

Overall, listening to serendipitists' voices allows e-commerce practitioners to optimise their existing designs instead of inventing costly new features or systems. Thus, this approach not only meets the needs of customers but also reduces practitioners' design costs, thereby benefitting both the practitioner and the consumer.

6.2.3.2 Enhancing serendipitous skills

To curate mutually benefit artificial serendipity, serendipitists (often online consumers) also need to enhance their serendipitous skills. That is, serendipitists need to improve their ability to effectively find, evaluate, utilise, share and create content using information technologies and the internet (Bawden, 2008; Dobson & Willinsky, 2009). There are two main reasons for the need for serendipitists to improve their serendipitous skills.

First, serendipitists with enhanced serendipitous skills do not have to depend excessively on the guidance of e-commerce practitioners during artificial serendipity experiences. This research identified instances when serendipitists became 'slaves' (P2-8) to e-commerce practitioners' guidance, in turn, losing their decision-making autonomy. Discussions with these

slaves of artificial serendipity revealed that this situation often stems from their lack of skills in reasonably using information technologies and the internet. Thus, to avoid becoming slaves of artificial serendipity, serendipitists must learn to evaluate and use online information critically.

Second, serendipitists with enhanced serendipitous skills can be more alert to efforts of e-commerce practitioners to manipulate them during their artificial serendipity experiences, and can thus counter such efforts. Due to the conflict of interest between e-commerce practitioners and consumers, serendipitists cannot always trust practitioners' designs for a good artificial serendipity experience. For serendipitists to truly enjoy and benefit from artificial serendipity, they must be able to identify and resist potential manipulations by practitioners. Serendipitous skills are a key tool in this regard, as shown in the experience of P3-3, who successfully navigated 16 cases of good artificial serendipity due to what she called her 'high Internet surfing skills' (P3-3).

In summary, serendipitous skills can enable serendipitists to discern, evaluate and make informed decisions about the diverse allures in digital environments, which assures them of more enjoyable experiences of artificial serendipity.

6.3 Implications

The research question which this research answered has drawn attention to a new type of serendipity: artificial serendipity. The findings from this research suggest that artificial serendipity has changed the landscape of serendipity-focused research and practice. Therefore, this research as a whole and its findings have several implications for research and practice, which are summarised in Table 6.1.

Table 6.1 Summary of the implications

<i>Implication for research</i>	<i>Implication for practice</i>
Embracing serendipity by design	For e-commerce practitioners: Prioritising personalisation; guaranteeing serendipitists' control; and employing modest promotion
Moving beyond a confined defining and researching frame	For online consumers: Learning to embrace uncertainty; engaging in digital literacy training; calling for legislative supervision

6.3.1 Implications for research

This research and its findings have implications for serendipity-focused research, especially in the information science field, the discipline that contributes the most to serendipity-related theories.

6.3.1.1 Embracing serendipity by design

By exploring serendipitists' experiences in online marketplaces, this research has revealed that conscious designs do not hinder, but instead enhance the occurrence of serendipity.

This revelation resolves the ongoing debate about the impact of conscious design on serendipity, demonstrating that the concept of serendipity by design should be embraced by serendipity-focused studies. The acceptance of serendipity as a designable phenomenon will bring about two significant benefits:

First, by acknowledging that serendipity is designable, serendipity-focused studies are encouraged to re-evaluate their theoretical underpinnings. This re-evaluation can lead to a notable refinement of current serendipity theories. Specifically, two critical issues are poised for refinement:

- 1) Unlike what current theories suggest, serendipitists have a lower threshold for pleasant surprises. For them, a pleasant surprise often signifies a slight deviation from routine, not necessarily the discovery of something completely unknown. Consequently, conscious designs that make recommendations based on an individual's online footprint can lead to pleasant surprises.
- 2) Serendipitists exhibit a more dynamic and complex mindset than what current theories explain. This complexity implies that even sophisticated designs, such as AI, cannot consistently decipher serendipitists' immediate thoughts. Hence, even in the presence of conscious design, it remains the serendipitists' responsibility to discern their real-time interests and validate the authenticity of surprises. Thus, serendipitists can still experience serendipity.

By incorporating the aforementioned insights, studies on serendipity can more effectively address the realities perceived by serendipitists and thereby align theoretical frameworks with the nuanced nature of serendipity in the real world. This alignment can, in turn, keep serendipity-focused studies relevant to real-life practices and enhance their practical impact.

Second, by accepting the designability of serendipity, current studies on serendipity can confidently embrace new technologies. This embrace ensures that serendipity-focused studies can stay in step with socio-technological developments. With the progression of AI technology and the shift in human activities to online context, we can anticipate a rise in conscious, serendipity-prone designs and the occurrence of more artificial serendipity.

Recognising that serendipity can be consciously designed is vital for a comprehensive understanding of serendipity in contemporary society. This is particularly pertinent because

artificial serendipity may become the predominant form of serendipity, surpassing natural serendipity. By embracing this concept, serendipity-focused research can maintain its relevance and practical value in an ever-changing societal landscape.

6.3.1.2 Moving beyond a confined defining and research frame

The exploration of serendipity in online marketplaces in this research has led to an in-depth understanding of artificial serendipity, alerting current studies on serendipity to move beyond a confined definition and research frame for serendipity.

First, the introduction of artificial serendipity can alert the serendipity focused to expand the landscape of serendipity. That is, serendipity should no longer be confined to an unexpected and rare occurrence; instead, it should also be embraced as a more expected and frequent experience. Expanding the understanding of serendipity can bring two main benefits:

- 1) First, as human activities increasingly migrate to the online realm – an inherently artificial environment – the concept of artificial serendipity is likely to become a mainstream type of serendipity to be experienced. Therefore, for serendipity-focused studies to stay relevant, they should move from the traditional confined defining frame and embrace this new type of serendipity.
- 2) Second, moving beyond the confined defining frame can lead to a more profound understanding of serendipity. Serendipity is, by nature, a fluid concept. Hence, its comprehension should not be confined to rigid definitions that can hinder the exploration of its true essence (Makri & Blandford, 2012b) but should evolve more from its practical applications (de Melo, 2012; Friedel, 2001).

To effectively break free from the confined defining frame, current serendipity-focused studies also need to shift from a research frame predominantly shaped by researchers' definitions to one that prioritises serendipitists' opinions as the main sources of knowledge. On the one hand, serendipitists, as the actual experiencers of serendipity, often have a deeper understanding of the characteristics of their serendipitous experiences than do researchers. On the other hand, serendipitists' thinking is less constrained by the existing defining frame, making it more dynamic and flexible. Thus, direct learning from serendipitists might reveal more diverse and lesser-known aspects of serendipity.

Overall, the in-detailed exploration of artificial serendipity challenges and broadens the traditional boundaries of serendipity research. It underscores the need to consider how technological advancements influence serendipity and the need to adopt a more open-minded approach to exploring serendipity. Correspondingly, this research has not only contributed a new dimension to the understanding of serendipity, but also paves the way for further

exploration of how serendipity can manifest in contexts, particularly those influenced by digital and technological advancements. Section 6.4 will discuss these future research avenues further.

6.3.2 Implications for practice

This research also has implications for the development of good and pleasant artificial serendipity in online marketplaces, which can benefit both online consumers and e-commerce practitioners.

Specifically, this research offers practical design strategies for e-commerce practitioners' incorporation of serendipity-prone features – aligned with consumer preferences – into their platforms. Additionally, this research underscores the vital skills that online consumers need to extract greater value from their artificial serendipity experiences.

6.3.2.1 For e-commerce practitioners

This research provides enlightening guidelines for e-commerce practitioners on fostering serendipity-prone designs through three key strategies: *prioritising personalisation*, *guaranteeing serendipitists' control*, and *employing modest promotion*.

First, good design for serendipity should still prioritise personalisation, as for online consumers, appealing surprises often stem from subtle routine deviations rather than unfamiliar innovations. To craft these personalised surprises, e-commerce practitioners can consider the following insights:

- 1) Practitioners need to pay closer attention to consumers' recent online footprints. Given the rapid changes in serendipitists' mindsets and living conditions, their current preferences and needs are reflected most in their recent online footprints. Wang et al. (2020) suggested that online footprints within a 15-day window are particularly indicative of and valuable for analysis.
- 2) Practitioners could consider uncovering and prioritising offerings on the periphery of serendipitists' profiles. While related to consumers' stated preferences and needs, these offerings are often overlooked, providing a mix of relevance and novelty. Their unique position makes them adept at drawing consumers' attention and fostering engagement. To comprehensively identify these peripheral offerings, practitioners can employ Natural Language Processing (NLP), machine learning, and graph-based algorithms.
- 3) Practitioners should judiciously intersperse less personalised recommendations among the personalised ones, using a strategy of extended intervals. This strategy not only serves to inject variety and maintain the intrigue of the online platform, it can also bolster consumers' engagement – since an utterly personalised environment can become monotonous (Grange

et al., 2018). This strategy can also mitigate the dissatisfaction caused by inappropriate surprises. Specifically, if less relevant surprises are spaced apart, even if one is off-putting, consumers have the opportunity to process and move past the disappointment (Bischof et al., 2020). Conversely, a stream of frequent, less-tailored recommendations can lead to repeated annoyance, intensifying consumers' irritation.

Second, good design for serendipity should guarantee that consumers retain enough control over their serendipitous experience in online marketplaces. Namely, it is crucial to ensure that consumers feel they have a degree of influence over the outcomes of the artificial serendipity. This empowerment can reduce consumers' perceptions of risk, enabling them to fully enjoy the artificial serendipity. Enhancing consumers' control can be approached by considering the following insights:

- 1) Practitioners need to grant consumers the autonomy to tune the level of surprisingness in recommendations. This means giving consumers autonomy over what data they want to share with designers and promptly reporting and removing unsuitable recommendations. Implementing these options ensures that consumers have more chances to come across those surprises that cater to their preferences and needs, filtering out any that might detract from their enjoyment of the artificial serendipitous journey.
- 2) Practitioners should offer straightforward explanations for the rationale behind each recommended surprise. This enables consumers to better understand why they come across a given surprise, thereby providing consumers with clear insight into their situation. To offer a clear explanation, practitioners could consider the following strategies: (1) They should emphasise that the consumers have guided the design of these surprises, effectively making the consumers the lead in the discovery journey. This not only places consumers at the forefront of the experience, it also reinforces their sense of control (Kim et al., 2021); and (2) When explaining these recommendations, practitioners should use clear, everyday language instead of professional and/or academic jargon (Oh et al., 2022). This approach makes the interaction more relatable and builds trust, conveying a sense of genuine help rather than manipulation.
- 3) Practitioners should establish mechanisms for compensation, providing reassurance that should consumers face any losses during their journey, there will be a responsible entity to address such issues. With such safeguards in place, consumers can feel that they are on an equal footing with the designers, which would foster a sense of certainty along their journey of artificial serendipity.

Third, good design for serendipity should employ a modest promotion of the curated surprise. E-commerce practitioners must first accept that a perfect strategy for consistently delivering

delightful serendipity to every consumer is unattainable (Björneborn, 2017; Smets, 2023). With this realisation, practitioners can calmly showcase their designs without the pressure of guaranteeing universal satisfaction of pleasing every single consumer. When promoting the designed surprise, a detailed and accessible explanation of the full features is advisable rather than solely accentuating the positives. If feasible, incorporating multimedia elements such as animations would be more appreciated, as these elements can offer an immersive preview of the designed surprise, aiding consumers in visualising the practical application of the offering. Implementing these strategies can help consumers form realistic expectations and appreciate the whole charm of the artificial serendipity experience.

6.3.2.2 For online consumers

To experience an enjoyable artificial serendipity, online consumers themselves also need to take some actions. To get themselves ready for an enjoyable artificial serendipity, this research reminds the online consumers to consider the following strategies in cultivating and enhancing their serendipity skills: *learning to embrace uncertainty, engaging in digital literacy training, calling for legislative supervision.*

The first strategy is *learning to embrace uncertainty*. Consumers should acknowledge that not everything in life is controllable; instead, life is full of change. With this mindset, consumers are likely to become more adventurous, venturing beyond their comfort zone with heightened curiosity, and thus more open to exploring a more comprehensive range of surprises. This broadens their serendipity scope and enhances their experience. A greater acceptance of uncertainty also enables consumers to calmly accept additional surprises when navigating a serendipitous path, ensuring they do not forsake the larger picture due to minor uncertainties. Furthermore, embracing uncertainty can equip consumers to handle outcomes that differ from their expectations with composure, avoiding the hasty classification of some partially good artificial serendipity as entirely unfavourable.

The second strategy is *engaging in digital literacy training*. This is where consumers can acquire insightful skills to navigate the intricate informational landscapes of the digital age. For digital literacy training to be effective, training practices should move away from an overly complex academic perspective and instead adopt a more relatable approach (McBirnle, 2008; Reviglio, 2017). After all, an authoritative and distant attitude is often off-putting and unwelcoming (McBirnle, 2008). Moreover, aside from conveying theoretical knowledge, training practices should also focus on guiding consumers in cultivating a critical thinking mindset (Erdelez et al., 2019). This is imperative given that each consumer's interaction with informational contexts is unique, and the ongoing advancement of digital technologies adds complexity to these contexts (Erdelez et al., 2019; Reviglio, 2023). Consequently, translating

theoretical knowledge into practical critical situational awareness and action – be it critical decision-making or effective communication – becomes essential.

The third strategy is to advocate for some *legislative supervision* over the e-commerce practitioners' design practice. This is due to individuals' inherent challenge when combating improper commercial manipulation by powerful corporate entities. These legislative measures include robust privacy protection and stringent market regulations to prevent anti-competitive behaviours. By implementing these practices, e-commerce practitioners can be guided towards designs prioritising consumer rights and fair interactions.

6.4 Suggestions for further research

This research marks an important initial step in understanding artificial serendipity in everyday life, paving the way for numerous potential research paths on serendipity-focused studies, particularly, in the fields of information science and consumer behaviour. In addition, given that consumer activities are conducted through interactions with computer-mediated information systems, this research can also indicate future research avenues for HCI studies.

The conceptual space for artificial serendipity presented in this research (referenced in Figure 5.1 of Section 5.2) provides a foundational platform for advancing our understanding of artificial serendipity in serendipity-focused studies, especially in information science. Future research could build upon this framework in several important ways:

- 1) Future studies could use the identified conceptual space as a basis for further exploring the distinctions between natural and artificial serendipity. Understanding these differences is crucial for a more comprehensive grasp of the phenomenon as a whole, including of its various manifestations and impacts.
- 2) Future studies could expand the conceptual space by applying it to diverse everyday-life scenarios from various international contexts. By extending the space beyond the Chinese online marketplace, researchers could further expand its scope and deepen the understanding of the dynamics of artificial serendipity. This would also enable a more nuanced exploration of the variability and essence of serendipity across diverse cultural and situational settings.
- 3) Future studies could examine the relationships among the three types of artificial serendipity identified in this research. These relationships were not fully explored in this research due to time constraints. Investigating how these types of artificial serendipity interact could provide deeper insights into the phenomenon and the influence of design on serendipitous experiences. This exploration is crucial for refining serendipity-related theories and our understanding of artificial serendipity.

- 4) Future studies could integrate quantitative methodologies to measure the impacts of various factors on artificial serendipity. Quantifying these impacts would not only deepen our theoretical comprehension but also facilitate the application of these theories to practical design guidelines for fostering artificial serendipity.

For studies on consumer behaviour, this research lay the groundwork for two promising directions for future investigation:

- 1) Comprehensive and large-scale surveys of online consumers' perceptions and experiences of artificial serendipity could be conducted, using the conceptual space for artificial serendipity developed in this research. This approach could provide richer and more diverse insights into how different consumer segments perceive and interact with serendipity in online shopping environments. This, in turn, could enrich existing theories about online consumer behaviours.
- 2) Recommendation system prototypes based on the three design principles identified in this study can be created and tested. These experiments would enable e-commerce practitioners to assess the effectiveness of these principles in real-world scenarios and could lead to innovative ideas for integrating serendipity design into online marketplaces. By testing these principles in a controlled environment, researchers can gather empirical data for use in refining and validating the proposed design strategies. This could enable the development of more consumer-friendly online marketplaces.

In the field of HCI and related disciplines, the findings of this research provide a valuable foundation for future HCI studies focused on the development of recommendation systems and the creation of more harmonious digital ecosystems. After all, serendipity has long been a crucial topic in the realms of recommendation system design and prompting of collaborative human and computer interactions (Jiang et al., 2021; Kotkov et al., 2023). By learning from this research, future HCI-related studies can:

- 1) The design principles derived from this research can inform the development of recommendation systems, ensuring that these systems are more aligned with user preferences and behaviour patterns. By incorporating insights from the study into the design of these systems, developers can create more intuitive, user-friendly interfaces that enhance the likelihood of serendipitous discoveries.
- 2) Understanding the dynamics of interactions between serendipitists and their online contexts is crucial for creating digital environments that are engaging and responsive to user needs. This knowledge can be applied to improve the overall user experience and satisfaction in digital spaces, making them more conducive to meaningful and enjoyable

serendipitous experiences.

Overall, the implications of this research extend beyond the immediate field of serendipity-focused studies and studies on consumer behaviour. The exploration of the dynamics of artificial serendipity and its role in shaping consumer experiences opens up new possibilities for enhancing online consumer engagement and satisfaction in digital contexts as a whole.

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APPENDICES

Appendix 1 The preliminary diary template (Chinese version)

记录日期	参与者编号
<p>非常感谢您在百忙之中抽空参与本次研究，在正式开始日记记录前，还望您能仔细阅读下述记录指南：</p> <ol style="list-style-type: none"> 1) 请及时地记录您在使用购物 APP 时所经历的偶遇事件。一旦您在在使用购物 APP 的过程中经历偶遇瞬间，请立刻将此次经历记录至日记中，并及时发送给研究人员。 2) 请根据您的实际经历，如实完成日记记录。在记录时，请尽可能多地提供您觉得重要的细节信息。您所提供的信息对本次研究来说至关重要。 3) 本次日记记录无具体格式及语法要求，您可以使用文字，图片，视频及音频等方式撰写日记内容。请根据您的偏好，选择您觉得最为便利的方式完成日记记录。 4) 下述问题列表将作为提示，引导您完成日记记录，还望您能参考。同时，您可以自由地在日记中添加问题列表中所未涉及的信息内容。如果您觉得某一问题设置不甚合理或者难以理解，或是觉得回答下述问题给您造成了一定的困扰及负担，请及时和研究人员联系。 	
<p>问题列表</p> <p>请详述您在偶遇前正参与的活动，活动的时间、地点，是否有其他人陪同，以及心情。以下问题是给您的提示，您不要依次回答所有问题，但请尽可能地在您的日记记录中涵盖各问题所提及的信息。</p> <ol style="list-style-type: none"> 1. 关于行为：请详述您在经历偶遇前正参与的活动 2. 关于行为目的：请详述您参与该活动的原因 3. 关于心情：请详述您从事偶遇前活动时的心境和情绪 4. 关于他人：请问在参与该活动时您是独自一人还是和他人一起 5. 关于周边环境：请详述该活动发生的时间、地点；若您此刻正在使用购物 APP，请告知我们您所使用的 APP 的名称 <p>请详述是什么触发要素使您不再专注于原本正参与的活动，您发现该触发要素的情境，在发现该触发要素后采取的行动，以及发现该要素时的心情。以下问题是给您的提示，您不要依次回答所有问题，但请尽可能地在您的日记记录中涵盖各问题所提及的信息。</p> <ol style="list-style-type: none"> 1. 关于他人和周边环境：请问是什么要素促使您不再专注于原本正参与的活动，请对该触发要素的类型和具体内容加以描述 2. 关于周边环境：您在发现该要素身处的时间和地点 请告知我们您偶遇该触发要素的网页，同时，烦请您将该网页截图保存 3. 关于心情：请详述您在偶遇该触发要素瞬间的心境和情绪 4. 关于行为：请详述您偶遇该触发要素后所采取的行动 5. 关于行为目的：请问该要素为何吸引了您的注意力，以及您在偶遇该要素后为何开展了上述行动，请分别详述原因 <p>请详述您在上述触发要素的引导下所发现的信息的详细内容，在发现该信息时的心境，以及发现信息后所采取的行动和行动发生的情境。以下问题是给您的提示，您不要依次回答所有问题，但请尽可能地在您的日记记录中涵盖各问题所提及的信息。</p> <ol style="list-style-type: none"> 1. 关于周边环境和他人：请详述在上述触发要素的引导下您发现的信息的详细内容；如有必要，烦请您将该信息截图保存 2. 关于心情：请问您觉得该信息的发现是否是一次意外之喜 如果是，请详述原因；如果不是，请详述原因 3. 关于行为：请详述您获取该信息后所采取的行动 4. 关于周边环境：请详述该行动发生的时间、地点 5. 关于行为目的：请问您为何开展上述行动，请详述原因 <p>请详述您通过偶遇经历所取得的收获，您为取得该收获所花费的时间，以及您在取得该收获后的心情和想法。以下问题是给您的提示，您不要依次回答所有问题，但请尽可能地在您的日记记录中涵盖各问题所提及的信息。</p> <ol style="list-style-type: none"> 1. 关于行为： <ul style="list-style-type: none"> 关于请问您通过此次经历取得了何种收获，请详述 请问您花费了多少时间以创造上述收获 在此过程中您是否遇到了阻碍，如有，请详述，并说明您是如何克服它的 3. 关于周边环境和他人：请问上述收获是在何时、何处、何种情况下被您感知的，请详述 4. 关于心情和行为目的： <ul style="list-style-type: none"> 请问您在获取该收获后的感想如何，请详述 请问您如何评价该收获，是否觉得它很有价值；如您觉得该收获很有价值，请详述原因 	

Appendix 2 The pilot participants recruitment message

Chinese version

研究参与者招募

研究情境和目的

本次研究旨在调查中国消费者对于偶遇和巧合在在线消费情境中的认知。研究所涉及的在线消费情境包括了任何可供您购买实体/虚拟产品和服务的网络平台，包括但不限于淘宝、微信、饿了么、小红书。

研究内容

1. 参与访谈，阐述您对于偶遇和巧合现象的理解。
2. 根据您对于上述两个现象的理解，提交若干与之有关的日记故事，故事以中文撰写即可。
3. 在提交故事后，参与后续访谈，补充故事细节内容。
4. 参与对故事和访谈的分析，指出研究者数据分析中和您想法有出入的地方。

参与报酬

研究完成后您将获得 20 英镑（折合人民币 180 元）的参与经费；同时，研究者将及时向您汇报本次研究的进展信息。

参与要求

1. 年龄为 18 岁-34 岁间，且有一定的在线购物经验。
2. 参与研究前**请务必不要查找**有关本研究的任何资料或者文献。
3. 在参与研究过程中**请务必畅所欲言**，大胆随意地发表您对于研究现象乃至研究设计的看法。

报名方式

如果您有兴趣参与本次研究，还请发送‘消费者研究+姓名’至 xchen158@sheffield.ac.u

English version

The message is a recruitment notice for pilot participants for a PhD research. The research context and purpose, content, compensation, participant requirements, and how to apply are listed below:

Research Context and Purpose:

The study aims to investigate Chinese consumers' perceptions of encountering and coincidences in online marketplaces. The online marketplaces that this study will focus on include any online platforms that facilitates the buying or selling of products and/or services, such as Taobao, WeChat, Eleme.com, and Xiaohongshu, etc.

Research Content:

1. Participate in an interview to discuss your understanding of serendipity and coincidences.
2. Based on your understanding, submit several diary stories related to these phenomena, written in Chinese.
3. Participate in follow-up interviews to provide more details about your stories.
4. Contribute to the analysis of stories and interviews, pointing out any discrepancies between your thoughts and the researcher's data analysis.

Compensation:

Participants will receive £20 (about 180 RMB) upon completion of the study, along with regular updates on the research progress.

Participant Requirements:

1. Aged between 18 and 34 with some online shopping experience.
2. Please do not research any materials or literature related to this study beforehand.
3. Please speak freely and express your opinions boldly during the study.

Application Method:

If interested, send an email with the subject 'Consumer Research + Your Name' to xchen158@sheffield.ac.uk

Appendix 3 Ethical approval



Downloaded: 08/01/2021
Approved: 08/01/2021

Xuanning Chen
Registration number: 190198273
Information School
Programme: PhD in Information Studies

Dear Xuanning

PROJECT TITLE: Exploring consumers serendipitous experience within e-commerce contexts
APPLICATION: Reference Number 037495

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 08/01/2021 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 037495 (form submission date: 14/12/2020); (expected project end date: 01/10/2023).
- Participant information sheet 1085247 version 4 (11/12/2020).
- Participant consent form 1085249 version 2 (11/12/2020).
- Participant consent form 1085248 version 2 (11/12/2020).

If during the course of the project you need to [deviate significantly from the above-approved documentation](#) please inform me since written approval will be required.

Your responsibilities in delivering this research project are set out at the end of this letter.

Yours sincerely

Paul Reilly
Ethics Administrator
Information School

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy: <https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure>
- The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPpolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.

Appendix 4 The refined diary template

Date of recording	
<p>Thank you for agreeing to help us with our study. Before starting to write your diaries, here are some points you might need to bear in mind.</p> <ol style="list-style-type: none"> 1) When serendipity occurs to you at any time while on any e-commerce apps, please make a record of it by answering the following questions <u>as soon as possible</u>. Please do not worry about grammar or any writing style-related issues, <u>daily language like slang and cyberwords could be used freely</u>. You are encouraged to include pictures, videos and any other multimedia elements in your diary if they help you state your ideas and perceptions clearly. 2) Remember, <u>it is your diary</u>. The following list is only presented to help you recount your serendipitous experience. You <u>do not need to answer the questions</u> in the order listed below but do remember to cover all the questions in as much detail as possible. So please feel free to tell us as much as you can about the serendipity you have experienced. If you are unsure whether to tell us about something that has not been mentioned in the question list, please include it as we would rather have too much information than too little. 3) If you cannot answer a particular question or find that the diary writing burdens you too much, please send a message to the researcher directly. 	
<p>Question list</p> <p>Please remember that <u>this list is just a reminder</u>; there are no ‘correct answers’ to the questions presented in this list. Please write complete serendipitous stories according to your own experiences rather than answer the questions one by one.</p> <p>In what situation did you experience the serendipitous moment? The following prompt information will help you recall the relevant details to better structure your story:</p> <ol style="list-style-type: none"> 1. The original activity in which you were involved before the serendipitous moment (for example, browsing the mobile phone alone or chatting with others) 2. The reason for participating in the activity 3. Your emotion and feeling when engaging in the original activity 4. The time and place (e.g. at home or in the office) of the original activity and the mobile app(s) that you were using <p>What factor induced your serendipitous moment? The following prompt information will help you recall the relevant details to better structure your story:</p> <ol style="list-style-type: none"> 1. The factor(s) that induced your serendipitous moment; you can describe it/them in terms of type and content. (For example, a piece of discount information, whose content was <u>xxx</u>; the picture of a new bag, whose brand was <u>xxx</u>) 2. The website where you identified this factor; if it is possible, please take a screenshot of the website. 3. The reason for being attracted by this factor. 4. Your emotion and feeling when identifying this factor. If you believed no changes in your mood are worth recording, please skip this question. <p>What did you do after encountering this inducement? The following prompt information will help you recall the relevant details to better structure your story:</p> <ol style="list-style-type: none"> 1. The action that you have <u>taken immediately</u> after identifying this factor and the reason for this behaviour (For example, I was curious about this product and had adequate free time, hence, I clicked the product link) 2. Your feeling and emotion during this <u>immediate behaviour process</u> 3. The hindrance(s) you encountered during this <u>immediate behaviour process</u> If any hindrances do exist, please describe in detail how you overcome them; Otherwise, please skip this question 4. The outcome of this <u>immediate reaction</u> 5. Based on the immediate reactions, <u>what did you do subsequently</u>, and why did you do so 6. Your feeling and emotion during the <u>subsequent behaviour stage</u> If you believed no changes in your mood are worth recording, please skip this question 7. The hindrance(s) you encountered during this <u>subsequent behaviour process</u> If any hindrances occurred, please describe in detail how you overcome them; Otherwise, please skip this question <p>What is the outcome of the entire serendipitous experience? The following prompt information will help you recall the relevant details to better structure your story:</p> <ol style="list-style-type: none"> 1. Your emotion and feeling after experiencing this serendipitous incident If you believed no changes in your mood are worth recording, please skip this question 2. Whether this experience has brought you certain benefits (For example, this experience enabled me to know a new product; or nothing new had been learned via this experience) If your answer to this question is yes, please describe the benefits in detail; Otherwise, please explain why you did not gain anything from this experience. 3. Your perception and evaluation of the entire experience 	
记录日期	
<p>非常感谢您在百忙之中抽空参与本次研究，在撰写偶遇故事前，还望您能阅读下述指南：</p> <ol style="list-style-type: none"> 1) 请及时记录您在使用购物 APP 时所经历的偶遇事件。一旦您在在使用购物 APP 的过程中经历偶遇，请立刻记录此次经历，并及时将记录的故事发送给研究人员。在记录时，您无需在意语法及格式等问题，请根据自身偏好，选择您觉得最为便利的方式（如语音、视频、图片等）记录偶遇故事。同时，在记录日记时，您可随意使用口语化的表达方式，使用网络用语、口头语等表达您的所思所想。 	

- 2) 请根据您的对于偶遇的理解和自身经历记录偶遇故事。下述问题列表将作为提示,帮助您更好地回想偶遇经历,丰富故事细节。您无需依次回答所有问题,但请尽可能地在记录中涵盖各问题所涉及的信息。同时,您可以随时添加列表中所未涉及的信息内容,并尽可能多地提供您觉得重要的细节信息。
- 3) 如果您觉得本次研究存在设计不合理之处,或是觉得记录偶遇故事给您造成了一定的困扰及负担,请及时和研究人员联系。

再次感谢您的参与,您所提供的信息对于本次研究来说都至关重要,非常感谢!

问题列表

注:下述列表仅为记录参考,并无“正确答案”,故您无需以“回答问题”的方式记录自身经历。您仅需在参考列表内问题的基础上,依据实际情况以及自身写作偏好,尽可能详细地撰写完整的偶遇故事即可。

请问您是在什么样的情境中经历偶遇的?以下提示信息将帮助您回想相关细节,完成故事记录:

1. 您在经历偶遇前正参与的活动(如独自一人玩手机、和他人聊天等)
2. 您参与该活动的原因
3. 您参与该活动时的心境和情绪
4. 该活动发生的时间、地点(如在家中、在办公室等)、正使用的APP

请问是什么因素诱发了您的偶遇经历?以下提示信息将帮助您回想相关细节,完成故事记录:

1. 诱发您偶遇经历的人/事/物(即诱因)是什么,可从其类型和具体内容等入手对之加以说明
(如看到了打折的文字信息,内容为xxx;我发现了从没有看到过的包包的图片,内容为xxx,等)
2. 您发现该诱因的网页,如果可能,烦请您将该网页的全部内容截图保存
3. 该因素为什么吸引了您的注意力
4. 您在发现该诱因瞬间的心境和情绪,如您觉得此时的情绪未有值得记录的变化,请忽略此条信息

请问在发现上述诱发要素后,您采取了哪些行动?以下提示信息将帮助您回想相关细节,完成故事记录:

1. 您在注意到该要素后所立刻采取的行动以及采取该行动的原因
(如对某产品的功能感到好奇且有空余时间,所以立刻点击产品详情页)
2. 在此行为过程中您的心境和情绪,如您觉得此时的情绪未有值得记录的变化,请忽略此条信息
3. 在此行为过程中您是否遇到了阻碍;如有,烦请说明您是如何克服它的;如没有,请忽略此条信息
4. 上述行动的结果为何(如点击产品详情页后获取了产品的详细信息)
5. 在上述行为结果的基础上,您所开展的后续行动以及开展此后续行动的原因
6. 在此后续行为过程中您的心境和情绪
7. 在此后续行为过程中您是否遇到了阻碍;如有,烦请说明您是如何克服它的;如没有,请忽略此条信息

请问此次偶遇经历的最后结果是什么?以下提示信息将帮助您回想相关细节,完成故事记录:

1. 您在此次经历后的心境及情绪,如您觉得此时的情绪未有值得记录的变化,请忽略此条信息
2. 此次经历带给您的结果是什么(如通过这次经历,购买了某产品/知道了某一个新的品牌;或此次经历很普通/没有获取新信息等)
如您觉得该结果可被称为‘收获’,烦请您说明收获的内容;如该结果并不能被称为‘收获’,烦请您说明原因
3. 您对于此次经历的整体感受,以及您如何评价此次经历

Appendix 5 The participants recruitment message

研究参与者招募

研究情境和目的

本研究旨在调查中国消费者对于偶遇、巧合和意外发现在在线消费情境中的认知。研究所涉及的在线消费情境包括了任何可供您购买实体/虚拟产品和服务的网络平台，包括但不限于淘宝、微信、饿了么、小红书。

研究内容

1. 参与访谈，阐述您对于偶遇、巧合和意外发现现象的理解。
2. 根据您对于上述三个现象的理解，提交若干与之有关的日记故事，故事以中文撰写即可。
3. 在提交故事后，参与后续访谈，补充故事细节内容。
4. 参与对故事和访谈的分析，指出研究者数据分析中和您想法有出入的地方。

研究时长

研究时长为1个月，您可根据自身实际情况，在2021年4月至2021年10月间挑选合适的时间参与研究；在研究期间，您可以随时选择退出，退出后您所提交的所有数据都不会被用于后续研究分析。

参与报酬

研究完成后您将获得20英镑（折合人民币180元）的参与经费；同时，研究者将及时向您汇报本次研究的进展信息。

参与要求

1. 年龄为18岁-34岁间，且有一定的在线购物经验。
2. 参与研究前**请务必不要查找**有关本研究的任何资料或者文献。
3. 在参与研究过程中**请务必畅所欲言**，大胆随意地发表您对于研究现象乃至研究设计的看法。

报名方式

如果您有兴趣参与本次研究，还请发送‘消费者研究+姓名’至 xchen158@sheffield.ac.uk

English version

The message is a recruitment notice for pilot participants for a PhD research. The research context and purpose, content, compensation, participant requirements, and how to apply are listed below:

Research Context and Purpose:

The study aims to investigate Chinese consumers' perceptions of encountering and coincidences in online marketplaces. The online marketplaces that this study will focus on include any online platforms that facilitates the buying or selling of products and/or services, such as Taobao, WeChat, Eleme.com, and Xiaohongshu, etc.

Research Content:

4. Participate in interviews to discuss your understanding of serendipity, coincidence, and accidental discoveries.
5. Based on your understanding of these three phenomena, submit several diary stories related to them, written in Chinese.
6. After submitting your stories, participate in follow-up interviews to provide additional details about your stories.
7. Engage in the analysis of the stories and interviews, pointing out any differences between your views and the researcher's data analysis.

Study Duration

The study will last for one month. You can choose a suitable time to participate between April 2021 and October 2021, depending on your schedule. During the study, you can withdraw at any time. If you withdraw, all your submitted data will not be used in subsequent research analysis.

Compensation:

Participants will receive £20 (about 180 RMB) upon completion of the study, along with regular updates on the research progress.

Participant Requirements:

1. Aged between 18 and 34 with some online shopping experience.
2. Please do not research any materials or literature related to this study beforehand.
3. Please speak freely and express your opinions boldly during the study.

Application Method:

If interested, send an email with the subject 'Consumer Research + Your Name' to xchen158@sheffield.ac.uk

Appendix 6 Data management plan

Creator: Xuanning Chen

Affiliation: Information School, The University of Sheffield

Template: The University of Sheffield Postgraduate Research DMP

Project abstract

The purpose of this study is to conduct a bottom-up exploration of online consumers' genuine understanding of what constitutes a serendipitous experience on online marketplaces.

This study will adopt an explanatory position to identify the cognitive and behavioural action stages involved in a typical serendipitous episode within the e-commerce context. The potential factors that might influence or dispute the process will also be investigated to uncover how online consumers create value from chance encounters.

Qualitative methods, including the diary method and semi-structured interviews, will be adopted to collect primary data in semi-natural settings. The collected data will then be analysed thematically to interpret serendipitous experiences in line with lay concepts and everyday language contributed by online consumers. Perspective idealism and social constructionism will be adopted as philosophical guiding principles, ensuring that all the data collection and analysis processes will be strictly based upon abductive reasoning. Accordingly, the study will develop an understanding that faithfully depicts this long under-researched aspect of consumer behaviour.

In fulfilling the proposed research objectives, this study will engender innovative insights into the realm of consumer behaviour and serendipity-related studies. First, it could deepen existing understandings about online consumer behaviour, especially non-goal-driven online episodes. Moreover, the study could serve as a starting point for further research on serendipity within an everyday context by offering an in-detailed understanding of how individuals create value from this unexpected luck. Practically, this study will benefit online consumers by better arranging their in-store sessions and will assist e-retailers in proposing marketing and website construction plans that are more in line with consumers' needs.

1 Defining your data

This chapter will detail the types of data to be used in the research, its collection methods and possible data formats.

1.1 Data type

In this research only qualitative data will be collected to inform and support the research findings. The rationales for this choice include the following.

First, qualitative strategies are closely associated with abduction, the adoption of which could guarantee the methodological consistency of this research. Second, the limited number of related theories make it challenging to set fully rounded data collection and analysis criteria in advance. Most of the factors that enable the development of serendipitous processes are only known to the social actors. Flexibility and openness are,

therefore, required in allowing the lay concepts to evolve. Finally, in consumer studies, some researchers call for the introduction of qualitative strategies to better understand the motivations and processes of consumer behaviour.

The principal research participants that will contribute to the required data will be Chinese online consumers aged between 18 and 34, due to their representativeness and accessibility. At this stage, the number of research participants is initially between 15 and 20. This criterion, however, is tentative as the process of abductive inquiry is flexible and unexpected. Therefore, the specific number of participants in the research can only be determined after the start of this research.

1.2 Data collection and format

The data collection methods used in this research will mainly include self-administrated diaries and semi-structured interviews, leading to the production of diary entries and interview records in various formats. Before conducting the data collection, ethical approval will be gained from the university ethics committee. Also, informed consent will be sent to each participant in advance to inform them of the research content and purposes.

(1) Diary entries

Specifically, the diaries are expected to provide in-depth cross-sectional pictures of the serendipitous stories of participants' everyday surroundings¹. Participants will be asked to record their serendipitous experiences as soon as possible after a chance encounter has been recognised. The timely recording will, accordingly, offset memorial fallibility and contain more extensive and accurate details in unveiling the evolution of e-commerce serendipity.

Based on the considerations of practical issues, such as research duration and funding, as well as the insights learnt from extant studies, the duration of the diary collection period is tentatively planned to be two months. During this period, participants will be asked to record their serendipitous stories in the format that they favour most, such as audio or video recording, so as to ease their recording burden. Also, different diary formats might generate different insights in understanding the research topic. For instance, video recordings can serve as a visual aide providing multisensory clues and enabling the exploration of potential factors that affect participants' serendipitous experiences.

(2) Interview records

Apart from the diaries, semi-structured interviews will also be used to obtain primary data. Interview templates will be designed upon the collected diary entries with an aim of acquiring additional and more convincing details of the recorded events. The specific duration of the interviews might be hard to predict before they begin as it is impossible to determine in advance the level of detail each participant will provide with their diary.

Despite the potentially divergent interview length, audio-recording will be conducted with the permission of the participants throughout each interview to better capture all the emergent themes.

2 Looking after your data

¹ Crosbie, T. (2006). Using activity diaries: Some methodological lessons. *Journal of Research Practice*, 2(1).

Issues that need to be discussed under this theme mainly cluster around two categories, namely, the plan for data reduction and storage.

2.1 Plans for data reduction

The purpose of data reduction is to improve its clarity and analysability in order to draw out meaningful patterns to understand a given social phenomenon¹. The reduction task will run through the whole research period and will continue to improve with new data being collected. Because the data collection has not yet begun the following data reduction plans are tentative and may change following the inquiry process.

In this research, the diaries and interviews will be combined individually to reveal particular serendipitous stories. It is from these integrated serendipitous stories that answers to each research question could be learnt. Hence, the central part of data reduction is creating a holistic and authentic serendipitous record.

Before the integration work begins, all the collected data (i.e. diary entries and interview recordings) needs to be transformed into a more manageable form² For this research, the raw data will be text as for this consumer-centric study it is clear that words will provide much more insight. Data that needs to be converted includes the diaries submitted in non-text forms and audio recordings of interviews. Given the voluminous nature of raw qualitative data, reliable word-processing programs will be used within the scope of the university's research regulations. Subsequently, all the transformed textual records will be integrated. Constant checks with participants will be required at this stage, ensuring the produced records are honest and faithful to participants' experiences.

2.2 Plans for data storage

Throughout this research, all the collected data will be stored within the university's research data storage, which is centrally managed by IT Services, ensuring security. A maximum 10TB storage space can be used, large enough to restore all the diary entries and interview recordings.

However, only hardware support is provided by the university. All security, patching and configuration of the data storage space will still be directly managed by the researcher. To develop a relatively comprehensive data storage plan, three core issues need to be addressed: issues of confidentiality, issues of availability, and the generation of a backup plan.

(1) Issues of confidentiality

First is the issue of confidentiality, which deals with the protection of participants' identities³. This research involves directly collecting participants' real-life stories. Hence, the research must make sure that the privacy of participants will not be harmed. In order to maintain the confidentiality of participants' information, in terms of their identity and shopping stories, two strategies will be adopted.

To begin with, the minimisation strategy will be adopted for data collection. In other words, the researcher will try only to store data and information related to the research questions. On the one hand, the researcher will try to prevent the storing of participants' private information. On the other hand, as this research is constructed upon an

1 Lune, H., & Berg, B. L. (2017). *Qualitative research methods for the social sciences*. Pearson.

2 Milles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: a methods sourcebook*. SAGE.

3 Lune, H., & Berg, B. L. (2017). *Qualitative research methods for the social sciences*. Pearson.

abductive route, the research cannot 100% avoid the storage of some potentially private data. For instance, participants' shopping frequency might be retained. However, a flexible exit mechanism will be set. More specifically, any participant who feels that their privacy has been violated can withdraw from the study at any time after notifying the researcher. This, in turn, could exclude any potentially questionable data from storage in advance.

Furthermore, anonymisation will be conducted before uploading the collected data into the university's research data storage. If some private information is indispensable for answering the research question, the pseudonyms strategy will be used accordingly.

(2) Issues of availability

Another issue that should be highlighted is availability, namely, who should be able to access and use the stored data¹.

Since this research is not funded by any third party and may involve participants' private information only the researcher and supervisors will have the right to access the stored data directly. The access password will be set and only shared with the supervisors to ensure that no one can access the stored data without permission.

Additional access rights will only be partially given to a third party in the following two cases. First, when research participants want to withdraw part of their submitted data, access to the data they are keen on deleting will be given after they have provided reasonable justifications. The researcher will also be on-site when the participant deletes the data to ensure that they will not unintentionally access other stored data. Second, should authorities question the research findings the original data will be referred to prove the reliability of the research.

(3) The backup plans

In order to avoid data loss caused by uncontrollable reasons, such as network attacks, the researcher will also back up data into Google Drive, provided by the university. Password protection will be employed to guard against accidental leakage of research data. Also, the sensitive information in all the uploaded data will be deleted in advance or encrypted with pseudonyms.

Apart from the digital backup plan, a physical copy of the collected data will also be generated. This will be done by printing all the generated serendipitous records and carefully storing them in a locked safe. The safe will be placed in the researcher's office, and the password to it will only be known to the researcher and supervisors so as to guarantee that no third parties can access these documents without the researcher's permission.

3 Archiving your data

Questions about long-term data storage will be answered in this section; indicating what data will still be kept after the end of this research. It should be re-emphasised that, due to the uncertainty involved in qualitative data collection and analysis, only a brief and tentative data archival plan will be provided at this stage.

1 Jones, Beverley; Higman, Rosie (2019): DMP. The University of Sheffield. Collection. <https://doi.org/10.15131/shef.data.c.4676357>

In order to save the data for long-term use, the participants' willingness will be discussed after the research is finished. After the participants' permissions have been acquired, all the anonymised data will be archived into the data repository centrally managed by a reliable organisation, such as the White Rose Alliance.

There are two rationales for this choice. One is the consideration of safety and economic issues since data repositories are both secure and free, and are regarded as the right places for data storage according to the Arts and Humanities Research Council (AHRC) and UK Research and Innovation (UKRI) guidelines. Another is the consideration of the promotion of follow-up research. As e-commerce serendipity is a novel research topic, data collected via pioneer research will contribute a lot to the development of this research field.

The archival length for the collected data is planned to be ten years in line with UKRI guidance.

4 Sharing your data

Since data will be stored long-term in the repositories, these data management platforms will become the main channel for data sharing. Permission for reusing the collected data will be given by the researcher directly rather than by the participants as they will be asked for sharing consent before the data has been archived. Also, data will only be shared for research purposes.

5 Implementing your plan

The researcher will be the main party responsible for the implementation of this plan, frequently updating this plan in accordance with the newly collected data. All the activities of the researcher will be carefully guided by supervisors and the ethics committee of the university.

Appendix 7 Summaries for Collected Stories

<i>Participant Group</i>	<i>Content of story</i>	<i>Type</i>	<i>Outcome</i>
P1-1	After purchasing sunscreen on Vipshop, P1-1 encountered sun-protective clothing recommended by the platform. While exploring these sun-protective clothes, P1-1 once again came across various summer outfits recommended by the platform. Continuously exploring these summer outfits led P1-1 to spend 3 hours on Vipshop.	A good encountering with a reduced satisfaction level	An immediate emotional pleasure but triggered belated fatigue
	While browsing Douyin out of boredom, P1-1 came upon information about a newly launched beverage endorsed by her favourite celebrity. Due to being fond of this star, P1-1 immediately purchased the beverage.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	While watching videos on Bilibili.com, P1-1 came upon a promotional video for a Taobao perfume shop. Due to her interest in perfumes, P1-1 checked out the perfumes sold in this Taobao shop but made no purchases.	A good encountering	An immediate and unchanged emotional pleasure
	When P1-1 searched for sunscreen on Taobao, she encountered a better sunscreen than the one she had originally planned to buy. Moreover, this higher-quality sunscreen was on discount, priced the same as the sunscreen P1-1 had initially intended to purchase. This encounter made P1-1 very happy and ultimately led her to a satisfying purchase.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
P1-2	While browsing Weibo, P1-2 came across a discount event for the massage machine her aunt wanted to buy, so she ultimately purchased it.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	While watching her favourite shopping influencer's live broadcast on Taobao, P1-2 unexpectedly discovered from real-time user feedback that the influencer had been selling counterfeit products. This unexpected revelation led P1-2 to realise the mistakes in her previous purchases, and she decided never to buy from this influencer again, thereby avoiding potential risks in future transactions.	A good unexpected discovery	An immediate and unchanged emotional pleasure and a slight enhancement of knowledge
	When P1-2 was browsing Douyin, she came upon a live shopping broadcast for shampoo. Out of boredom, she started watching the livestream. Despite not being interested in making a purchase at first, her interest in the shampoo spiked when the host mentioned that buying the shampoo would come with a postcard of her favourite idol. She immediately placed an order. However, upon receiving the product, P1-2 found that the promised postcard had not been included and that the product packaging was poor. As a result, she felt that her money was wasted.	A bad encountering	An immediate emotional pleasure and a satisfying purchase that turned out to be a commercial trap
	While purchasing snacks on Pinduoduo and preparing to pay, P1-2 came across a coupon for her chosen products. To obtain this coupon, she spent 15 minutes participating in a discount game offered by Pinduoduo. However, even after spending so much time, P1-2 could still not complete the game and obtain the coupon. As a result, she felt very angry, believing she had been deceived by Pinduoduo, which led her to abandon shopping and uninstall the app.	A bad encountering	An immediate reaching to the dead end and a negative emotion
P1-3	While idly browsing Weibo, P1-3 received a recommendation for a newly launched joystick from the platform. However, due to a lack of trust in the platform's expertise in shopping matters, P1-3 did not immediately access the joystick. Instead, he played a game round before finally deciding to explore the joystick and found it to be really good, but since he did not have the money, he did not purchase the newly launched joystick.	A good encountering	An immediate and unchanged emotional pleasure
	P1-3 planned to buy lipstick as a gift for his girlfriend. While searching on Taobao, he was recommended a beautifully packaged, branded tinted lip balm. Unaware of the difference between lip balm and lipstick, P1-3 purchased the lip balm, believing his girlfriend would love it. However, when he gave it to her, although she liked the lip product, she was somewhat dissatisfied with the colour payoff of the tinted lip balm. As a result, P1-3 felt a slight disappointment with this encountering.	A good encountering with a reduced satisfaction level	An immediate emotional pleasure and a satisfying purchase, despite the satisfaction level decreasing slightly after receiving the product due to the participant's lack of knowledge about beauty products

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		<p>While watching videos on Bilibili.com, P1-3 encountered an advertisement for a newly launched anime character figurine. However, after clicking to view the detailed information about the figurine, P1-3 discovered that the manufacturer was one he strongly disliked. As a result, he felt angry about this encounter.</p>	A bad encountering	An immediate reaching to the dead end and a negative emotion		
		<p>While browsing Weibo to calm himself down after an argument with his girlfriend, P1-3 came upon a promotional message for a newly launched joystick. Out of curiosity, he clicked on the link to the joystick. However, just as the link directed him to the joystick's Taobao store, he suddenly lost interest in the joystick because his girlfriend sent him a WeChat message. Thus, he exited the Taobao store, merely glanced at the appearance of the joystick on the original Weibo post, then started to reply to his girlfriend's WeChat message.</p>	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase		
	P1-4	<p>With the help of Taobao, P1-4 came across a pair of beautiful jeans and made a satisfying purchase.</p>	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase		
		<p>While browsing Douyin, P1-4 came across a cute cup and decided to purchase it. However, when she was about to place the order, she was confused by the multiple purchase links offered by the vendor. Therefore, she decided to ask the vendor which link to choose, but after waiting for 20 minutes without a response, P1-4 felt her time was wasted. Annoyed, she left the Douyin shop without the purchase.</p>	A bad encountering	An immediate reaching to the dead end and a negative emotion		
		<p>With the aid of Taobao, P1-4 identified the desired eyeshadow palette despite having dim hope for doing so.</p>	A good coincidence	An immediate and unchanged emotional pleasure and a satisfying purchase		
		<p>While browsing Douyin, P1-4 came upon a set of attractive make-up brushes. However, when she attempted to make a purchase, she was abruptly informed by the vendors that only customers who had paid a deposit could place an order. The vendors' rude attitude and the shopping restrictions it set left P1-4 feeling very angry.</p>	A bad encountering	An immediate reaching to the dead end and a negative emotion		
	P1-5	<p>While browsing through her WeChat Moments, P1-5 came across a post by a WeChat vendor promoting perfume. Curious about the perfume, she clicked the link to the vendor's Weidian shop. However, just as she was about to look into the details of the perfume, the Weidian system suddenly crashed, and no matter how hard P1-5 tried, she couldn't re-access the Weidian shop. This experience left her feeling very frustrated.</p>	A bad encountering	An immediate reaching to the dead end and a negative emotion		
		<p>While browsing Douyin, P1-5 encountered an advertisement for wedding photography. Although she did not need wedding photography services, she still felt happy about encountering the advertisement because of its beautifully crafted content.</p>	A good encountering	An immediate and unchanged emotional pleasure		
		<p>P1-5 wanted to order a birthday cake for herself on Eleme.com. When she had chosen a particular cake and was ready to make the payment, she came upon another cake with a more attractive design and ultimately changed her shopping choice.</p>	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase		
		<p>While searching for a thermos cup on Taobao, P1-5 encountered information about new arrivals from her favourite clothing brand. Although she ultimately did not purchase any of the clothes, she still found the newly launched clothes beautiful and felt that exploring them brought her some pleasure.</p>	A good encountering	An immediate and unchanged emotional pleasure		
	20-24	1	P2-	<p>P2-1 had planned to buy a Dyson vacuum cleaner on Taobao, but during the search process for the vacuum cleaner, P2-1 came across the Dyson sweeping robot recommended by Taobao, which appeared to be a better choice. Finally, following Taobao's suggestion, P2-1 purchased the encountered sweeping robot and was very satisfied with it.</p>	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
				<p>Originally intending to search for information about hair dye products on Xiaohongshu, P2-1 came across a straightening iron recommended by the platform during the search process. While exploring the straightening iron, Xiaohongshu kept recommending more hair-styling products to P2-1. This series of encounters led P2-1 to ultimately spend 2 hours on Xiaohongshu.</p>	A good encountering with a reduced satisfaction level	An immediate emotional pleasure but triggered belated fatigue
				<p>P2-1 had originally planned to buy make-up brushes on Taobao, but during the search process, she encountered a beauty blender she had always wanted to buy. Moreover, this beauty blender was on sale, so she ultimately decided to purchase it.</p>	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase

		While browsing her WeChat Moments, P2-1 came upon an advertisement video for a stress-relief toy. Although she had no intention of purchasing the toy, she still found watching the advertisement video to be very entertaining.	A good encountering	An immediate and unchanged emotional pleasure
P2-2		With the aid of Taobao, P2-2 identified the desired beauty blender despite having a faint expectation of finding it.	A good coincidence	An immediate and unchanged emotional pleasure and a satisfying purchase
		When P2-2 was actively seeking 618 discount information on Xiaohongshu, she encountered discount information on her favourite tissue recommended by Xiaohongshu. However, when she excitedly began to explore this encountered discount information, she found that the products this information pointed to were counterfeit, which made her very angry.	A bad encountering	An immediate reaching to the dead end and a negative emotion
		After visiting Pinduoduo, intending to purchase daily necessities, P2-2 came upon a promotional event held by the platform. Excitedly exploring the products under promotion, P2-2 was angrily disappointed to discover that most of the products on sale were counterfeit.	A bad encountering	An immediate reaching to the dead end and a negative emotion
		While browsing Xiaohongshu, P2-2 came across promotional information on a perfume blind box. Because the vendor had specified on the detail page that the blind box ¹ would contain two perfumes P2-2 liked, she immediately ordered it. However, upon receiving the product, P2-2 discovered that the promised perfumes had not been included in the blind box and contained only perfumes she did not like, leading her to feel deceived by the vendor.	A bad encountering	An immediate emotional pleasure and a satisfying purchase that turned out to be a commercial trap
		While browsing Weibo, P2-3 encountered an interesting promotional video for a multifunctional cutting board. Although she did not buy the cutting board, she still found watching this promotional video very interesting.	A good encountering	An immediate and unchanged emotional pleasure
P2-3		While browsing Douyin to kill time, P2-3 came upon a recommendation for a book that seemed to be discussing topics she was interested in. However, upon actually exploring the book, she discovered it contained many aspects she disliked, which left her feeling quite angry.	A bad encountering	An immediate reaching to the dead end and a negative emotion
		P2-3 had originally planned to buy black garbage bags on Taobao, but during the search process, she encountered more aesthetically appealing garbage bags recommended by Taobao and ultimately chose to purchase these better-looking bags.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		Upon opening Bilibili.com, P2-3 was surprised to encounter a recommendation for her favourite cereal on this platform, which used to only recommend anime-related products.	A good encountering	An immediate and unchanged emotional pleasure
		With the aid of Poizon, P2-4 identified the desired Converse Chunk 70s despite having only a faint expectation of finding the shoes.	A good coincidence	An immediate and unchanged emotional pleasure and a satisfying purchase
P2-4		To pass the time during tedious exam preparation, P2-4 browsed Taobao, hoping to find something interesting. While browsing, she came across a shoe cover recommended by Taobao. Since she planned to organise her sneakers, she purchased this shoe cover.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		While casually browsing Taobao, P2-4 came upon a Japanese-imported cotton doll. Because she liked cotton dolls, she immediately purchased the doll. However, upon receiving it, she found that the cotton doll, although exquisitely made, was smaller than she had imagined. This was because she had previously only bought domestically produced cotton dolls and had not purchased Japanese-imported ones, leading her to misjudge the size of the cotton doll. Despite the size being different from her expectations, P2-4 was still satisfied with the purchase due to the doll's high quality.	A good encountering with reduced satisfaction	An immediate emotional pleasure and a satisfying purchase, despite the satisfaction level decreasing slightly after receiving the product due to P2-4's lack of knowledge about Japan-imported cotton dolls

¹ Blind box (盲盒) is a type of product packaging and marketing concept, where the contents of the box are unknown to the consumer until it is opened. It typically contains a random item selected by the vendors. Some of the products contained in the blind box would be rarer than others, adding a surprise element and a sense of mystery to the purchase.

		P2-4 had initially planned to buy a Dr.Jart facial mask on Taobao. However, as soon as she opened Taobao, she came across a discount event for Evelom facial masks from the opening screen advertisement. This encountering led P2-4 to change her original shopping plan, ultimately purchasing the higher-quality Evelom facial mask at a very reasonable price.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
P2-5		While browsing Douyin, P2-5 encountered a promotional video for a toy for small dogs. Because the promotional video was very appealing, he immediately placed an order for the toy. However, upon receiving it, he discovered that the toy was completely different from what the video had presented, making him feel deceived.	A bad encountering	An immediate emotional pleasure and a satisfying purchase that turned out to be a commercial trap
		P2-5 had originally planned to buy a phone-charging cable on JD.com, but during the search process, he came upon a wireless charger, which seemed more convenient to use than a wired charger. Therefore, P2-5 immediately purchased the wireless charger and found it very useful after receiving and using it.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
P2-6		While checking the delivery progress of her purchases on Taobao, P2-6 encountered a promotional push for Taobao's 618 sale. Attracted by the products in the promotion, which were all to her liking, she spent half an hour exploring this push. However, she ultimately found that the discounts on the products in the promotion were very limited. As a result, she felt that the recommendation she had encountered was useless and regretted missing lunch because of it.	A bad encountering	An immediate reaching to the dead end and a negative emotion
P2-7		While purchasing a T-shirt on Taobao, P2-7 came upon a discount coupon and ultimately bought the T-shirt he wanted at a price lower than he had planned.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		While browsing Douyin, P2-7 came across a promotional video for a local snack. Watching the video, which introduced how the snack was made and how it should be consumed, he gained great pleasure.	A good encountering	An immediate and unchanged emotional pleasure
		With the aid of Goofish, P2-7 identified the desired animation figurine despite having only a faint expectation of finding it.	A good coincidence with a reduced satisfaction level	An immediate emotional pleasure and a satisfying purchase with a slightly decreasing satisfaction level after receiving the product due to the participant's unrealistic expectations about it
		While buying an anniversary gift for his girlfriend on Taobao, P2-7 encountered a coupon, which allowed him to purchase the desired gift at a lower price than he had planned.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
P2-8		Guided by Taobao, P2-8 came upon coconut milk from an unrecognised brand, but she bought it to make coconut milk lattes.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		While checking her email, P2-8 encountered a message from Sephora ¹ , informing her that the foundation she had once wanted to buy was back in stock. Although she had already purchased another foundation, out of curiosity, she still bought the one she had previously been interested in.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		P2-8 had planned to buy the Dyson V11 Original vacuum cleaner on Taobao, but during the search process, she came across a better Absolute version recommended by Taobao. Ultimately, she chose to purchase this more versatile Absolute version.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase

¹ Sephora (丝芙兰) is a multinational platform that specialises in selling beauty and cosmetic products.

		While browsing Xiaohongshu, P2-8 came upon a very beautiful dress. However, when she was about to purchase it, she discovered that the vendor had a poor reputation on Xiaohongshu, with many consumers reporting that the store often copied others' designs. This made P2-8 feel very angry.	A bad encountering	An immediate reaching to the dead end and a negative emotion
	P2-9	While browsing Taobao to find suitable car interiors, P2-9 came across a cool phone case. However, since his phone model did not match the case, he ultimately did not purchase this cool phone case.	A good encountering	An immediate and unchanged emotional pleasure
		While buying clothes for his parents on Taobao, P2-9 encountered a stepper machine recommended by the platform. Considering that the stepper could help his parents exercise, P2-9 purchased this fitness equipment. However, being unfamiliar with the fitness field, he misjudged the noise it would produce when used, leading to an additional purchase of a soundproof mat. This extra expense made P2-9 slightly disappointed with the purchase.	A good encountering with reduced satisfaction	An immediate emotional pleasure and a satisfying purchase with a slightly decreasing level of satisfaction after receiving the product due to P2-9's lack of knowledge about fitness equipment
		P2-9 opened JD.com to search for a television. During the search, JD.com recommended several models superior to the one P2-9 had initially chosen. After having dinner, P2-9 finally decided to purchase one of these recommended models and was very satisfied with the new television.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		Originally planning to buy medicine for his mother on Taobao, P2-9 came upon a '1+1 medicine set' recommended by the platform during his search. This set included not only the medicine he had intended to buy for his mother but also a medication his father needed. Moreover, the price of this 1+1 set was significantly lower than purchasing the two products separately, leading P2-9 to buy this encountered medicine set.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	P2-10	P2-10 had opened Taobao to participate in the 618 promotional event but was instead captivated by the camping equipment recommended by Taobao, spending about half an hour exploring the recommended camping equipment.	A good encountering	An immediate and unchanged emotional pleasure
		While searching on Xiaohongshu for a birthday gift for her boss, P2-10 unexpectedly discovered a post introducing Chinese gift-giving culture. From this post, P2-10 unexpectedly realised the flaws in her original shopping plan and, guided by the post, eventually learned how to select and send gifts to the seniors.	A good unexpected discovery	An immediate and unchanged emotional pleasure and a slight gain in knowledge
		Looking for a bargain, P2-10 chose to buy socks on Pinduoduo. After 10 minutes of browsing, she encountered a pair of socks with a very cute design recommended by Pinduoduo. However, upon examining the detailed information on these cute socks, P2-10 discovered that the vendor seemed to provide product images that were likely pornographic. This discovery made P2-10 angry, feeling deceived by Pinduoduo for inadvertently directing consumer traffic to a distasteful vendor.	A bad encountering	An immediate reaching to the dead end and a negative emotion
		While browsing Weibo, P2-10 came across a promotional message for Xuanma egg-yolk pastries. Because of this information, she could purchase the snack she had always wanted to try at a very affordable price.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
25–29	P3-1	To pass the time, P3-1 browsed Taobao and continually came upon beautiful clothes throughout the process. This series of continuous encounterings led her to spend an hour browsing Taobao, which far exceeded her average time using Taobao.	A good encountering with a reduced satisfaction level	An immediate emotional pleasure but triggered belated fatigue
		P3-1 had originally planned to go for a barbecue with friends and was searching for group-purchase coupons for barbecue restaurants on Dianping.com ¹ . However, she encountered a promotional message for a Japanese cuisine restaurant. This encounter changed P3-1's dining plan, so she and her friends ultimately decided to dine at this Japanese restaurant.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		While watching videos on Bilibili.com, P3-1 came across an advertisement for HNXD's honey. Due to her trust in HNXD, P3-1 purchased this honey and was very satisfied with the purchase.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase

¹ Dianping.com (大众点评) is a Chinese shopping platform that provides consumer reviews on restaurants, food, shopping, entertainment and other local services and also sells coupons for such services.

P3-2	<p>While purchasing a phone screen protector on Taobao, P3-2 encountered a cute phone case. However, since she did not need a new phone case, she decided not to buy it.</p>	A good encountering	An immediate and unchanged emotional pleasure
	<p>With the aid of Taobao, P3-2 came across the Tsumtsum that she had wanted to buy before even beginning to search for it.</p>	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	<p>With the aid of Taobao, P3-2 identified the desired China-Chic hat despite having only a faint expectation of finding it.</p>	A good coincidence with a reduced satisfaction level	An immediate emotional pleasure and a satisfying purchase with a slightly decreased level of satisfaction after receiving the product due to the participant's unrealistic expectations about it
	<p>While checking the delivery progress of her purchases on JD.com, P3-2 came upon an advertisement for a water bottle that claimed to have constant temperature storage. As she likes to drink hot water, P3-2 immediately looked into this encountered recommendation. However, after reviewing the product details, she realised that the so-called constant temperature was just insulation and that the water bottle was no different from ordinary thermos flasks, let alone being at twice the price. Therefore, P3-2 felt that learning about this water bottle was a waste of time.</p>	A bad encountering	An immediate reaching to the dead end and a negative emotion
P3-3	<p>While idly browsing Weibo, P3-3 unexpectedly discovered that her favourite singer had become the designer of a food product package. Through exploring the package designed by the singer, P3-3 unexpectedly got to know an artist whose style she had never encountered before but greatly admired.</p>	A good unexpected discovery	An unchanged and immediate emotional pleasure and a slight gain in knowledge
	<p>Due to Taobao's repeated recommendations, P3-3 unexpectedly discovered the original novel of a currently popular TV series. Moreover, due to this discovery, P3-3 gained new ideas for her news writing about IP re-engineering. This unexpected discovery, originating in the shopping domain, ultimately brought unanticipated insights for P3-3's work.</p>	A good unexpected discovery	An unchanged and immediate emotional pleasure and a slight gain in knowledge with hidden insights
	<p>While browsing WeChat, P3-3 came across a friend request from a customer service representative of the GDFS shopping website. After adding this customer service contact, P3-3 learned about the upcoming mid-year celebration sale at GDFS. However, since she did not have any immediate shopping plans, this information was not particularly useful to her.</p>	A good encountering	An immediate and unchanged emotional pleasure
	<p>While browsing Douban.com to kill time, P3-4 encountered a very interesting book and purchased it directly via Douban.com.</p>	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	<p>While checking the delivery progress of her purchases on Taobao, P3-3 came across a promotional video for a children's toy. Because the video was well-made, P3-3 enjoyed watching it.</p>	A good encountering	An immediate and unchanged emotional pleasure
	<p>While browsing her WeChat Moments, P3-3 came upon an advertisement for a newly launched cross-border e-commerce platform. She noticed that more cross-border e-commerce platforms have been coming online, which made her feel that the economy was getting better and made her feel happy.</p>	A good encountering	An immediate and unchanged emotional pleasure
	<p>While listening to songs on NetEase Cloud Music¹, P3-3 came upon a uniquely designed mini-Bluetooth speaker recommended by the platform.</p>	A good encountering	An immediate and unchanged emotional pleasure

¹ NetEase Cloud Music (网易云音乐) is a popular music-streaming-service platform in China, known for its vast library of songs, user-friendly interface and social-networking features. Also, this platform has its online stores that sell all music-related products, such as albums, earphones and Bluetooth speakers.

		While buying lipstick at Sephora, P3-3 encountered a coupon, allowing her to purchase the desired lipstick at a lower price than planned.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		Because P3-3 wanted to understand the differences among various hair-perming solutions, she searched Xiaohongshu. During the search process, due to Xiaohongshu's recommendations, she came across a reasonably priced hair salon and made a satisfactory purchase there.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		While purchasing a Bluetooth speaker on Taobao, P3-3 unexpectedly discovered from Taobao's recommendation that semi-in-ear headphones also have noise-cancellation features similar to in-ear headphones. This new discovery enlightened P3-3 with little-known facts about headphones, broadening her perspective for future headphone selections.	A good unexpected discovery	An unchanged and immediate emotional pleasure and a slight gain in knowledge
		While browsing Weibo, P3-3 encountered a shop that sells custom T-shirts and found the shop's business approach very interesting.	A good encountering	An immediate and unchanged emotional pleasure
		While watching videos on Bilibili.com, P3-3 came across a newly launched anime figurine from one of her favourite animated series.	A good encountering	An immediate and unchanged emotional pleasure
		When P3-3 searched for sunscreen on Taobao, she came upon a discount event for summer skincare products. This encountering ultimately allowed P3-3 to purchase the sunscreen she had wanted at a lower price than planned, leaving her very satisfied.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		Due to a pop-up message from Starbucks, P3-3 came upon Starbucks' newly launched summer beverage and enjoyed it.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		While browsing Weibo, P3-3 encountered a cute small animal figurine launched by a museum.	A good encountering	An immediate and unchanged emotional pleasure
		Guided by JD.com, P3-3 came across a mini-iron that perfectly met her need for a convenient ironing solution while travelling.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	P3-4	While P3-4 was searching on Taobao for summer clothes, she encountered a pair of uniquely designed shoes. Driven by curiosity about the design of these shoes, she explored the distinctive Wanwan-style shoes. Although she did not purchase them, as they were not quite suitable for her to wear at work, P3-4 still felt happy about discovering these beautiful shoes.	A good encountering	An immediate and unchanged emotional pleasure
		While browsing Douyin, P3-4 came across a wedding dress that she thought would suit her friend perfectly and recommended it to her. Her friend also loved the dress, which made P3-4 very happy.	A good encountering	An immediate and unchanged emotional pleasure
	P3-5	While browsing Douyin to kill time, P3-5 came upon a cute octopus-shaped pillow. To explore this adorable pillow further, P3-5 switched from Douyin to Taobao. This exploration led to P3-5 discovering even more delightful pillows under Taobao's recommendations, resulting in a joyful browsing period.	A good encountering	An immediate and unchanged emotional pleasure
		While searching for a hand sanitiser on Taobao, P3-5 came upon a celebrity-endorsed hand sanitiser recommended by Taobao, which had a better scent than the one she typically used. Purchasing this hand sanitiser left P3-5 feeling very satisfied.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		While buying socks on Taobao, P3-5 encountered a sock store suspected of selling counterfeit goods due to Taobao's recommendation, which made her feel annoyed.	A bad encountering	An immediate reaching to the dead end and a negative emotion
		Guided by Taobao, P3-5 came across a discreet and easy-to-use snap button for tightening the waistband of pants.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase

P3-6	<p>While searching for sandals on Taobao, P3-6 encountered a pair of Müllers. Because these shoes combined the functions of sandals and leather shoes and looked attractive, P3-6 purchased them. However, 2 days after the purchase, P3-6 realised during a conversation with a colleague that she might have paid too much for the shoes, which led to a slight feeling of regret. But considering the price difference was not substantial, P3-6 still felt that this encountering was a good one overall.</p>	A good encountering with a reduced satisfaction level	An immediate emotional pleasure and a satisfying purchase with a decreasing satisfaction level after P3-6 realising she might have paid too much for the shoes
	<p>While idly browsing Taobao to kill time, P3-6 came across a beautiful hairpin recommended by the platform. During the exploration of the hairpin, P3-6 further came upon more attractive accessories subsequently recommended by the site. This led to P3-6 spending 3 hours on Taobao.</p>	A good encountering with a reduced satisfaction level	An immediate emotional pleasure but triggered belated fatigue
	<p>While idly browsing WeChat, P3-6 unexpectedly found out that a familiar online seller had launched a new kitchen organiser she had never heard of. Driven by curiosity about the new product and trust in the seller, P3-6 purchased this product she had never seen before. Upon receipt, she discovered that although the quality was good, the product did not suit her kitchen due to her misunderstanding of the product's use before the purchase. Eventually, P3-6 gave the product to her mother, who was satisfied with it. Therefore, despite some disappointment, P3-6 still felt that her unexpected discovery was a positive serendipity.</p>	A good unexpected discovery with a reduced satisfaction level	An immediate emotional pleasure, a slight gain in knowledge and a satisfying purchase with a decreased satisfaction level after receiving the product due to P3-6's unfamiliarity with it
	<p>While browsing Taobao out of boredom before going to bed, P3-6 came upon many attractive product recommendations that matched her interests. This led to an impulse purchase of a pair of high heels, which she later realised she had no opportunity to wear.</p>	A bad encountering	An immediate emotional pleasure and a satisfying purchase that turned out to be a commercial trap
P3-7	<p>While browsing Douyin, P3-7 came across a promotional video for a speciality product from her hometown. Having loved this speciality since childhood, she immediately made a purchase. To her surprise, the product turned out to be exceptionally delicious.</p>	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	<p>While browsing Weibo, P3-7 unexpectedly discovered a new product promising quick leg slimming. After purchasing the novel product with high hopes, P3-7 found that although the product's functionality matched the seller's description, it did not meet her expectations. As a result, she felt overall satisfaction with the purchase but still experienced some disappointment.</p>	A good unexpected discovery with a reduced satisfaction level	An immediate emotional pleasure, a slight gain in knowledge and a satisfying purchase with a decreased satisfaction level after receiving the product due to P3-7's unfamiliarity with it
	<p>While browsing Taobao to find some snacks, P3-7 encountered a Japanese snack toy recommended by the platform. Because the Taobao seller described the product in an overly flattering manner, P3-7 bought it without hesitation. However, upon receiving it, she discovered that the product was inedible, which made her realise that she might have fallen into the vendor's commercial trap.</p>	A bad encountering	An immediate emotional pleasure and a satisfying purchase that turned out to be a commercial trap
	<p>While scrolling through Douyin, P3-7 came across a promotional video for lipstick from an unknown brand. Although the brand was not well known, the promotional video was well made, and the seller promised that their product had undergone multiple quality verifications. As a result, P3-7 purchased the encountered lipstick. However, after receiving it, P3-7 found that the lipstick not only significantly differed from what had been advertised but also made her experience allergic reactions. Consequently, she realised she had fallen into the vendor's commercial trap.</p>	A bad encountering	An immediate emotional pleasure and a satisfying purchase that turned out to be a commercial trap
P3-8	<p>While searching for a toy he had wanted to buy for a long time on Taobao, P3-8 came upon a great discount event for it offered by the TMall overseas store of that brand. However, just as he was about to place the order, a friend happened to pass by and informed him that this store was notorious for selling counterfeit goods. This warning made P3-8 realise that the so-called good encountering was just a commercial trap.</p>	A bad encountering	An immediate and unchanged reaching to a dead end and a negative emotion

		With the guidance of Taobao, P3-8 came across a coupon while buying shoes for his father, allowing him to purchase the desired shoes at a cheaper price than planned.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		Under the guidance of Taobao, P3-8 unexpectedly discovered the reverse umbrella, which featured a design completely different from and superior to any ordinary umbrella he had ever known.	A good unexpected discovery	An immediate and unchanged emotional pleasure, a slight gain in knowledge and a satisfying purchase
		With the aid of Taobao, P3-8 identified the desired discount for the looked-for massage chair despite having only a faint expectation of doing so.	A good coincidence	An immediate and unchanged emotional pleasure and a satisfying purchase
	P3-9	While P3-9 was checking her emails, she came upon a marketing e-mail from Damai.com about the ticket sales for a concert by her favourite singer. Upon encountering this marketing information, P3-9 immediately opened Damai.com to buy tickets, but the system kept crashing. As a result, she spent 20 minutes attempting to purchase tickets without success, leaving her feeling very angry.	A bad encountering	An immediate reaching to the dead end and a negative emotion
		Due to a pop-up message from Apple Music, P3-9 came across a discount event for purchasing a compilation album of her favourite singer.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		With the aid of Taobao, P3-9 identified the desired skincare product at a cost-effective price despite having only a faint expectation of finding the product.	A good coincidence with a reduced satisfaction level	An immediate emotional pleasure and a satisfying purchase with a slightly decreased satisfaction level after receiving the product due to the participant's unrealistic expectations about it
		When browsing Taobao to kill time, P3-9 encountered a skincare product prominently recommended by Taobao on its homepage. Trusting Taobao's recommendation, P3-9 checked out the product. However, after exploring the product, P3-9 discovered that it had a poor reputation, leading her to feel that her time and effort were wasted and making her very angry about the encountering.	A bad encountering	An immediate and unchanged reaching to a dead end and a negative emotion
	P3-10	During a meeting, P3-10 secretly browsed Taobao to pass the time and, in the process, came across a promotional event for a snack she has loved since childhood. This encountering ultimately led to a satisfying shopping experience for her.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		While searching for jeans on Taobao, P3-10 encountered a set of well-designed trousers due to Taobao's recommendation. However, when she tried to purchase these trousers, she found that she could not place an order successfully, prompting her to enquire with the vendor. After waiting for 5 minutes, she learned that the trousers were from a designer brand and required a reservation to purchase, so P3-10 could not buy them. The lengthy wait and the vendor's failure to specify the purchase restrictions in advance left P3-10 feeling very dissatisfied.	A bad encountering	An immediate and unchanged reaching to a dead end and a negative emotion
30-34	P4-1	While searching for clothes for herself on Taobao, P4-1 came upon a pop-up advertisement for a formula that her colleague had recommended to her. For her son's sake, P4-1 changed her shopping plan and bought this formula instead of clothes for herself.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
		With the help of Eleme.com, P4-1 came upon a flower store that could deliver fresh flowers to her office within 2 hours, resolving her dilemma of forgetting to buy flowers for her boss, who was soon returning to the office after an overseas trip.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase

P4-2	While scrolling through Douyin to pass the time, P4-2 came across an interesting promotional video for an adorable mini-washing machine.	A good encountering	An immediate and unchanged emotional pleasure
	Although P4-2 intended to search for information about designer brand sofas on Xiaohongshu, she unexpectedly discovered a post that pointed out flaws in these sofas. Discovering this post changed P4-2's plan for purchasing a sofa and also led her to a deeper reflection on her responsibilities as a designer.	A good unexpected discovery	An immediate and unchanged emotional pleasure with hidden insights
	While browsing Taobao to kill time, P4-2 encountered a collection of indoor decoration recommendations promoted by Taobao. Being persuaded by the platform's outstanding marketing strategy, P4-2 ultimately purchased a vase that she later realised she would never use.	A bad encountering	An immediate emotional pleasure and a satisfying purchase that turned out to be a commercial trap
	While browsing Taobao, P4-2 came across a uniquely designed dining table.	A good encountering	An immediate and unchanged emotional pleasure
P4-3	While browsing Weibo, P4-3 encountered a Chinese ring puzzle. Since he has always been fond of such brain-teasing toys, he immediately ordered this puzzle toy.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	While scrolling through WeChat, P4-3 came upon a pop-up message from Pinduoduo announcing the start of their big mid-year promotion. Enticed by the prospect of discounts, P4-3 opened the message and engaged in a mini-game to partake in the promotional event. However, after dedicating 30 minutes to the game, he ended up not receiving the expected product coupon but only some trivial Pinduoduo points. Disappointed by this result, he felt angry and ultimately decided to uninstall the app.	A bad encountering	An immediate reaching to the dead end and a negative emotion
	While idly browsing Douyin, P4-3 came across Weilong's shopping live-streaming show. Because he liked Weilong's snacks, P4-3 watched the livestream and ended up purchasing some snacks.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	While P4-3 was searching for T-shirts on Taobao, he came upon a shop selling exceptionally cheap and good-quality T-shirts. This encountering ultimately led P4-3 to purchase more T-shirts than planned at a lower price, leaving him very satisfied.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
P4-4	While idly browsing Xiaohongshu, P4-4 came across a recommendation for a beautiful skirt and spent 10 minutes exploring the interesting recommendation.	A good encountering	An immediate and unchanged emotional pleasure
	While casually browsing Taobao, P4-4 stumbled upon a well-designed T-shirt. Further exploration led to the discovery of a pair of beautiful sandals and a cute skirt in the T-shirt's related recommendations.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	Through a chat with a Xiaohongshu shop owner while shopping, P4-4 unexpectedly discovered how beauty bloggers and e-commerce merchants collaborate to propagate a product.	A good unexpected discovery	An immediate and unchanged emotional pleasure and a slight gain in knowledge
	With the help of Taobao, P4-4 encountered and purchased a dress she had planned to buy but was unsure about the specific brand.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
P4-5	During the process of purchasing second-hand art supplies on Goofish, P4-5 unexpectedly discovered that one of the vendors selling her desired second-hand art supplies was her middle-school classmate. This unexpected discovery allowed P4-5 to reconnect with this classmate, and since they both shared a passion for painting, they arranged to go out for an exhibition together. This unexpected discovery, originating from the realm of shopping, ultimately brought P4-5 an unexpected enhancement in her social relationships.	A good unexpected discovery	An immediate and unchanged emotional pleasure and a slight gain in knowledge with hidden insights
	When P4-5 was searching for her desired juicer on Goofish, she came upon an exceptionally great deal for it. Despite being tempted, she hesitated to purchase immediately because she felt the vendor's price was too low and ultimately missed out on the deal. Even though she missed out on the deal, P4-5 did not feel sad because, for her, shopping is not always about achieving a set goal.	A good encountering	An immediate and unchanged emotional pleasure

P4-6	While browsing Douyin, P4-6 encountered a promotional video for a joystick.	A good encountering	An immediate and unchanged emotional pleasure
	While killing time on Douyin, P4-6 came across a live shopping broadcast for ERKE. Having a fondness for this brand's sports shoes, he started watching the livestream and purchased a pair of sports shoes from the broadcast room at a price 30% lower than the original.	A good encountering	An immediate and unchanged emotional pleasure and a satisfying purchase
	While idly browsing Douyin, P4-6 came upon a promotional video for crawfish from his hometown. Because the vendor appeared very sincere in the video and the crawfish looked fresh and lively, P4-6 immediately placed an order. However, upon receiving the crawfish, he found that most of them were spoiled and felt he was deceived by the vendor.	A bad encountering	An immediate satisfying purchase that turned out to be a commercial trap
P4-7	While viewing anime-related products on Rennigou, P4-7 came across a Rubik's Cube recommended by the platform. Discovering a Rubik's Cube on a platform that typically does not sell them left P4-7 feeling both surprised and delighted.	A good encountering	An immediate and unchanged emotional pleasure
	While idly browsing Douyin, P4-7 encountered a promotional video for a mini-charger. Being attracted by the video and imagining that the charger would be extremely small, P4-7 made an unplanned purchase. However, upon receiving the product, P4-7 found that although the charger was of good quality, it was larger than expected, leading to a slight disappointment.	A good encountering with a reduced satisfaction level	An immediate emotional pleasure and a satisfying purchase with a slightly decreased satisfaction level after receiving the product due to the participant's unrealistic expectations about it