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## Summary of Doctoral Dissertation

### 博士論文要約

# The Influence of Cognitive Absorption During the Interaction with Short-Form Travel Video on Tourists' Subsequent Behavioral Intentions

(短編観光動画の認知的没入体験が観光客のその後の行動意図に及ぼす影響)

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## Introduction

The effects of social media on the travel and tourism industry and travelers' behavior have been widely researched. Travel-related visual content on social media not only allows individuals to experience travel in an online environment but has also been shown to be effective in arousing individuals' travel desires (Irimiás & Zoltán Mitev, 2023). With the sensory stimulation on social media, destination-related visual cues shape individuals' travel-related decision processes by provoking their emotional and cognitive reactions (Irimiás & Zoltán Mitev, 2023). More specifically, visual cues are most helpful in eliciting mental imagery about the travel and delivering (online) travel experiences by provoking travel imagery and triggering different extents of travel expectations (Irimiás and Zoltán Mitev, 2023).

Benefiting from the development and universalization of Internet Technology, and the reduction of communication costs, short-form videos appear as a novel form of social media (Liu et al., 2022). Amidst the tendency of continuous decrease of internet users' attention duration (Gan et al., 2023), and users' demand for the rapid and fragmented style of content consumption, short-form video platforms have risen and become the primary growth driver of China's increasing internet traffic (Zhao, 2021). In China, short-form video platforms, led by Douyin (TikTok's domestic version) and Kuai, have quickly captured individuals of all ages (Du et al., 2022; Liu et al., 2022). Douyin and Kuai stand out from their peers and form a duopoly in the Chinese short-form video market. Aside from that, in order to compete with these existing short-form video platforms, extant services like social media, e-commerce, and traditional video websites are also releasing similar short-form video services besides their original services. Short-form videos have also received a great quantity of focus from scholars in various fields.

As an effective marketing approach, destination-related promotional videos are widely employed by destination marketers to attract prospective tourists to visit their destinations (Guerrero-Rodríguez et al., 2020). Destination marketers positively influence prospective travelers' decision-making and destination selection through promotional marketing videos (Guerrero-Rodríguez et al., 2020).

Particularly, the three-year pandemic has spawned the rapid development of short-form video in the travel and tourism industry.

The COVID-19 pandemic caused immeasurable destructive consequences on the global tourism industry and individuals' daily lives (Selem et al., 2023; Zenker et al., 2021). During the particular period of the COVID-19 pandemic, strict travel restrictions compelled individuals to reduce non-essential travel (Irimiás & Zoltán Mitev, 2023). Negative emotions associated with health issues such as anxiety and stress caused by the pandemic made it difficult for the tourism industry to return to normal quickly (Novelli et al., 2018), which makes individuals tend to remain reluctant to travel even when the pandemic ended (Shin et al., 2022).

Meanwhile, restrictions during COVID-19 have led to an increase in the amount of available time that individuals hold. The average daily time individuals spent on staring at their smartphone screens increased during the pandemic compared to pre-pandemic (Irimiás & Zoltán Mitev, 2023). Travel-related online content, especially short-form travel videos, has become an alternative to normal travel (Lu & Xu, 2021; Omar & Dequan, 2020), helping to compensate for not being able to have a trip during the pandemic while providing temporary relief from negative real-life pressures (Liu et al., 2021).

In the context of a prolonged and repeated pandemic and the tendency that individuals live with the virus, it becomes more and more necessary to confirm the role short-form travel videos and online destination experiences play in affecting prospective tourists' travel psychology, and consider strategies to alleviate their travel anxiety and to stimulate their intention to travel in the post-COVID era, so as to completely recover the tourism industry as soon as possible.

### **Cognitive Absorption While Interacting with Short-Form Video**

On the other hand, the high addictiveness of short-form videos has been extensively reported by users. Short-form video services are regarded as temporal black holes, where happy moments of watching short-form videos suddenly pass in a flash (Zhao, 2021). Technology addiction is not a new topic, in the past when the Internet was a new technology, the phenomenon of Internet users being addicted to the Internet was under the spotlight for a long period (Venkatesh, 1999). Back to the context of short-form video, as an effective time-killing service, short-form video has created the conditions for users to get deeply involved in the entertainment spiral (Zhao, 2021). Short-form video users tend to devote more time to interacting with videos and generally have difficulty in managing and calculating the amount of time they spend on watching short-form videos (Ghasemaghaei, 2020). The high addictiveness of short-form video is so obvious that developers have had to counteract it by adding "anti-addiction" mechanisms to short-form video platforms, which are usually found in video games (Zhao, 2021).

However, as mentioned above, short-form video is a service based on mobile internet and portable devices with small screens. The information interaction on small screens (smartphones or tablets) is considered to have a negative impact on the users' experience (Jumaan et al., 2020) because the presentation of information on a limited-size screen results in elevated cognitive load (Kim & Kim, 2012). Similarly, it is also mentioned in studies related to mobile applications that the interaction experience on mobile devices is not favorable for users to enter a state of deep engagement (also known as cognitive absorption) (Hou et al., 2018). Yet, the popularity of short-form video services and the tendency for users to easily become addicted during their service use is surprising and noteworthy.

The loss of time awareness and the addictive characteristics caused by short-form videos are very closely related to a concept called temporal dissociation that often occurs in the state of cognitive absorption or flow. Considering that extant research often uses the concepts of cognitive absorption or flow states as antecedents of technology addiction to explain the problematic use of technology (Barnes & Pressey, 2014; Barnes et al., 2019; Bozoglan et al., 2014; Cannito et al., 2022), this study attempts to keep in line with the prior research and to employ the cognitive absorption theory to explain the cognitive engagement process and its outcomes during users' interaction with short-form travel videos.

Cognitive absorption has been defined as a state of deep involvement and engagement in technology use (Agarwal & Karahanna, 2000). Agarwal et al. (1997) made the first conceptualization of cognitive absorption. Subsequently, Agarwal and Karahanna (2000), while preserving and complementing the concept of cognitive absorption, stated that cognitive absorption has five dimensions (or sub-constructs), namely, temporal dissociation, focused immersion, heightened enjoyment, control, and curiosity. These five components have combined both affective and cognitive aspects. That is, enjoyment is the only affective component, and four cognitive components include curiosity, control, temporal dissociation, and focused immersion (Guinaliu-Blasco et al., 2019; Wakefield & Whitten, 2006).

Although cognitive absorption was originally conceptualized as a multidimensional concept by Agarwal and Karahanna (2000), there is still a lack of consensus on the choice of dimensions to measure it (Hou et al., 2018), as well as a lack of consensus in the literature on the dimensions that are essential to this construct. It is argued that the relevance of each dimension needs to be taken into account when deciding which dimensions to include in a study (Mpiganjira, 2019). Additionally, researchers tend to pick up different dimensions depending on the context of their study.

On the other hand, some studies (e.g., Burton-Jones & Straub, 2006) have taken a different point of view on the decision of whether to choose between multi-dimensionality or uni-dimensionality in measuring the concept of cognitive absorption. In particular, Burton-Jones and Straub (2006) argued that although cognitive absorption is generally regarded as a second-order multidimensional structure, focused immersion is the only sub-structure out of five measurement items referring to "being absorbed" (Burton-Jones & Straub, 2006, p. 237). According to them, simplicity and completeness of measurement

cannot be achieved at the same time. In order to maximize the simplicity of measurement, completeness has to be sacrificed, and Burton-Jones & Straub (2006) suggested using five measurements of focused immersion in place of all measurement items of cognitive absorption.

In addition, Weniger and Loebbecke (2011) noted the drawbacks of combining cognitive and affective components in the measurement of a single construct, and they argued that the way of combining these components in one construct might obscure differences characteristic of the various types of dimensions, especially considering affective and cognitive dimensions are distinctly related to behavior (Mpinganjira, 2019). Since heightened enjoyment is the only affective component in cognitive absorption, heightened enjoyment is so special among the five dimensions of cognitive absorption, and Weniger and Loebbecke (2011) suggested that it should be investigated as a stand-alone concept rather than just as a dimension of cognitive absorption (Guinaliu-Blasco et al., 2019). Overall, although multidimensional measures as advocated by Agarwal and Karahanna (2000) are still the dominant approach to measuring cognitive absorption, measurements of cognitive absorption still need to be explored and improved.

In recent years, cognitive absorption theory and flow theory have also been increasingly applied to some studies in the literature on the use of technology in the tourism industry (e.g., Wendy Zhu & Morosan, 2014; Wei et al., 2019). During user interaction with short-form travel videos, viewers' enjoyment experience is triggered more easily by the constant stimulation of the video content, and the user's high satisfaction as well as high expectations make it more accessible to a holistic engagement experience (Liu et al., 2022). Individuals who are involved in a state of cognitive absorption have the tendency to unconsciously intend to travel to the tourist destination shown in videos (Liu et al., 2022).

## **Research Gap**

As aforementioned, cognitive absorption may have a significant effect on user engagement and attitude change during their interaction with short-form videos. Understanding the antecedents and consequences of this deep engagement state is essential for knowing user interactions and psychological changes and important for predicting users' subsequent behaviors. Nonetheless, up to now, while the concept of cognitive absorption has been widely discussed in extant research related to various fields of information systems (IS), the application of cognitive absorption theory in tourism is limited and basically related to the use of innovative technologies in tourism (Wei et al., 2019; Kim & Hall, 2019). Especially in tourism short-form video contexts, the number of studies related to cognitive absorption is very scant. Considering that innovative technologies bring new possibilities to the tourism industry (Lu & Xu, 2021), the value of conducting research on innovative technologies is undeniable. However, compared to the frontier technologies or services that have not yet been popularized worldwide, research on some well-known and broadly used technologies and services (e.g., short-form videos) may be more

practically valuable and need more academic work to focus on them.

Moreover, there is still no agreement on the measurement of cognitive absorption in light of the extant quantitative research. Multidimensional measurement advocated by Agarwal and Karahanna (2000) is still the dominant approach to measuring cognitive absorption. Based on Agarwal and Karahanna's (2000) five-dimensional measurement, most researchers choose the dimension that best suits their particular research context. However, Agarwal and Karahanna's (2000) five-dimensional measurement has also been questioned by a small group of researchers. For example, the five-dimensional measurement contains both cognitive and affective types of components, and the measurement of a single construct by combining these two different types of components might overshadow the unique characteristics of the different kinds of dimensions (Weniger & Loebbecke, 2011). Also, although Agarwal and Karahanna's (2000) five dimensions are well-integrated, the dimensions except focused immersion do not correlate well with the notion of absorption, and the five-dimensional measurement suffers from the lack of measurement simplicity (Burton-Jones & Straub, 2006). Thus, measurements of cognitive absorption still need to be continually explored in empirical studies, especially when applying cognitive absorption theory in new technology-related domains. Due to the lack of discussion on the concept of cognitive absorption in the context of short-form videos, this research also seeks to explore the choice of dimensions for the concept of cognitive absorption in the context of short-form videos.

In addition, existing research related to cognitive absorption has mainly concentrated on its impact on the (continued) technology use, while behavior such as the subsequent travel psychology and travel intentions have rarely been discussed. Especially in the past three years of the pandemic, either the development of short-form videos or the potential travelers' psychological changes could not be separated from the additive impact of the COVID period. In the current post-COVID era, the effects of the continuous build-up of online destination marketing during the pandemic are gradually emerging. It is necessary to analyze the short-term and long-term effects of online destination experiences during the pandemic on potential travelers. Therefore, a discussion of concepts related to traveler psychology in the mid-COVID as well as the post-COVID period has been included in this study.

## **Research Questions**

The empirical part of this research consists of three studies.

Study One mainly focused on the influence process of the holistic experience (i.e., the state of cognitive absorption) during the interaction with destination-related short-form videos on individuals' subsequent behavioral intention. As aforementioned, extant literature related to cognitive absorption scarcely focuses on the process of individuals' interaction with destination-related short-form videos or discusses

the impact of this holistic experience on the potential tourists' behavioral intentions. Study One not only provides an expansion to the cognitive absorption research in these aspects, but also detailed discusses the various roles of sub-constructs of cognitive absorption in influencing the formation of beliefs. This study aims to elucidate the following research questions.

*Do individuals exposed to destination-related short-form videos experience a state of cognitive absorption or not?*

*How do each of the five components (sub-constructs) of this state of deep engagement function in shaping an individual's beliefs about the information contained in a short-form video, and how do they indirectly influence individuals' subsequent behavioral intention ?*

To compensate for part of the limitations and shortcomings of Study One, Study Two was designed and performed. Much of the research on cognitive absorption so far has emphasized its positive effects on individuals' belief formation and usage intention of information technology (Agarwal & Karahanna, 2000). Although individuals in the state of cognitive absorption are believed to be unconsciously motivated to travel to the destination shown in videos (Liu et al., 2022), little attention has been devoted to the ways in which users' interactions with travel-related short-form videos affect their psychological and travel intentions, especially in the post-COVID era. In addition, regarding the behavioral intention influenced by cognitive absorption, Study Two not only discusses individuals' real-time psychological responses to travel (i.e., travel anxiety and travel desire) during the COVID-19 pandemic, but also examines their travel intentions after the end of the pandemic.

Study Two investigates the role of cognitive absorption on individuals' travel anxiety and travel desires during the COVID-19 pandemic and its effect on post-COVID travel intentions. Study Two also analyzes the statistical differences between domestic and international tourism through multi-group analysis. Study Two is designed to respond to the following two research questions.

*Does the state of cognitive absorption which experienced during the short-form video interactions in the middle of the pandemic affect individuals' real-time travel desires and their post-COVID travel intentions by alleviating travel anxiety?*

*Is there a difference between two different situational settings (domestic destinations vs. international destinations)?*

Based on the abovementioned reasons and building on Study Two, Study Three was conducted to further explore the internal hierarchy of cognitive absorption (i.e., the relationships among the sub-constructs of cognitive absorption). Moreover, Study Three also further validated the particular role of the sub-constructs of cognitive absorption in influencing travel anxiety and travel desire, as well as post-COVID travel intention, to complement the results of Study Two. In addition, Study Three attempts to re-confirm the unexpected impact of travel anxiety in Study Two. The present study aimed to figure out

the following three research questions.

*How do sub-constructs of cognitive absorption affect each other? What kind of roles do they play in the whole internal structure of cognitive absorption?*

*How does cognitive absorption while watching short-form travel videos effectively trigger people's post-COVID travel intentions by alleviating travel anxiety and increasing travel desire?*

## **Overview of the Dissertation**

This dissertation consists of four parts.

Chapter 1 introduces the background, significance, and aim of this research.

Chapter 2 provides a detailed literature review. It starts by introducing the cognitive absorption theory, including the definition, sub-constructs, and the application of cognitive absorption in tourism and short-form video literature. Next, it introduces the technology acceptance model (TAM), its key constructs, extensions, and adaption in tourism literature and cognitive absorption literature. Other variables related to the tourists' psychology (including travel anxiety, travel desires, and travel intentions) are also discussed in Chapter 2.

This chapter provides an introduction to the main concepts mentioned in this article, and also explains the connections between the key concepts. This chapter does not include the hypothesis development, hypothesis development will be instead separately included in each study, i.e., Chapter 3 ~ Chapter 5.

Then, Chapters 3 to 5 summarize three studies prepared for this dissertation respectively.

Chapter 6 discusses the key findings of three studies, concludes the theoretical and practical implications and limitations of this research, and also mentions future research directions.

## **Measurement**

**Data Collection.** All of the survey questions included in these three studies are derived and adapted from prior research and used a 7-point Likert scale. The three studies in this research were conducted between the winter of 2021 and the summer of 2022, and the data were collected with the help of Credamo (Credamo, Beijing, China), an online marketing research firm. A total of 480 responses were collected for Study One. After data screening (including checking answers for reverse questions and attention-checking questions and removing logically incoherent responses), 371 were retained as valid samples for Study One. For Study Two, a total of 1,100 samples were collected, of which the answers

to the reverse and attention-checking questions were examined. Answers that did not make logical sense were removed and 869 valid samples remained. Of these, 477 valid samples were from the domestic destination group and 392 valid samples were from the international destination group. For Study Three, a total of 1085 participants were recruited for the data. A total of 905 valid samples were obtained after the screening with reverse questions and attention-filtering questions.

**Data Analysis.** These three studies evaluated measurement models and structural models through Partial Least Squares Structural Equation Modeling (PLS-SEM). There are several reasons for this: the PLS-SEM is recommended for exploratory studies and complex modeling studies (Hair et al., 2011). In addition, most studies related to cognitive absorption have used PLS-SEM, which was initially conceptualized and multidimensionalized by Agarwal and Karahanna (2000), who first introduced the conceptualization of cognitive absorption.

### **General Conclusion and Implication**

In general, this research establishes a series of studies primarily based on cognitive absorption theory in the context of short-form travel videos, with the aim of exploring the impact of individuals' holistic immersive audio-visual experiences (cognitive absorption) during their short-form video interactions on their belief formation, psychological reactions, and subsequent behavioral intentions. These studies resulted in the following three main categories of conclusions: the impact of cognitive absorption, internal hierarchical structures of cognitive absorption, and the unexpected stimulating effects of anxiety on the willingness to travel. For detailed conclusions please refer to the full version of this dissertation.

The three studies in this research are one of the first studies that examine the role of cognitive absorption that individuals enter into during their interactions with short-form travel videos. This research complements and expands the short-form video related research and cognitive absorption research in the field of travel and tourism. The results of these studies provide a more detailed explanation for the impact of cognitive absorption, and also expand and fill the research gaps that exist in existing short-form video-related studies, cognitive absorption theory, and technology acceptance models, and tourists' psychology-related research.

In general, the results of this study help destination practitioners to have a better understanding of tourist psychology when they interact with destination-related short-form video content, which enhances their ability to engage users with destination-related short-form video content. This study suggests that tourism destination practitioners should make full use of the short-form video platform to reach the objective of positively promoting the belief formation of individuals by seizing the cognitive travel

psychology of potential tourists in order to achieve a more efficient implementation of short-form video content marketing for destinations.

### **Limitations and Future Direction**

This research has explored the consequences of cognitive absorption and its sub-structures through three studies, yet there is still a lack of discussion on the antecedents that influence it. Although this research has evidenced that curiosity is a key factor in triggering such holistic immersive experiences, there is still a need for further exploration through future research on topics such as what factors might contribute to the formation of curiosity in cognitive absorption. Cognitive absorption can be affected by a variety of factors related to the system aspect, the personal characteristics aspect, and so on. Especially, considering that marketing experts often develop different marketing campaigns for different marketing segments and demographic differences in order to balance the demands of consumers. Therefore, individual characteristics (e.g., generational and gender differences) as well as environmental factors (e.g., differences between short-form video platforms) may be one of the directions worth additional explorations in future research.

Secondly, this research did not employ the method of experimental stimulation. Cognitive absorption is a state that represents a degree or a process. Although the addictive outcome of cognitive absorption leads to a temporally non-stop and continuous viewing, this state comes to an immediate end as the process of interaction ends. That is to say, cognitive absorption could also be recognized as time conditional. However, in all three of our studies, no actual stimuli were used, but only simple recall questions were used to arouse respondents' memory before they answered the questionnaire, which could not replace the effect of real cognitive absorption and may interfere with some of the findings. In the future, an attempt will be made to explore and validate the impact of cognitive absorption in the context of short-form tourism videos more strictly by conducting stimulus experiments with actual media content.

Furthermore, due to the limitation of the context of this research, the part about the internal structure of cognitive absorption may be closely related to the context of this research. Therefore, this research recommends that future researchers further analyze the relationship between the five sub-constructs of cognitive absorption in different contexts.

Moreover, both the results of Study Two and Study Three show the positive promote effect of travel anxiety on post-COVID travel intention. Although we have made some speculations for this result, further validation is required to support our speculations, which includes expanding the three models in this research. For example, other mediator variables are considered to exist between Travel Anxiety and Desire, as well as between Travel Anxiety and Post-COVID Travel Intention. This will be further

discussed in our future research.

In addition, the concept of control is hard to be perfectly explained in the short-form video context, which is constrained by the characteristics and design of the short-form video platform. Therefore, we have not probed more deeply into the concept of control in Study Two and Study Three, despite the vague mention in Study One. Undeniably, the essential role of the sense of control in the definition of cognitive absorption should not be ignored, and future work needs to be conducted to combine the concept of control in the future.

Last but not least, the design of this research began in the fall of 2021, and the three studies crossed the mid- and late-periods of the COVID-19 pandemic. Although in the current era of "living with COVID-19", the impact of the pandemic on the tourism industry and tourists' psyches still lasts. It is undeniable that the role and function of short-form travel videos may shift imperceptibly in the transition era. As for this change, we will continue to further analyze it in our future research. Additionally, in the current period of rapid recovery of tourism, there has been a considerable study focused on revenge travel, or compensatory travel. However, few studies have mentioned how this fast recovery is associated with short-video tourism marketing during the pandemic, The findings of such an exploration may provide significant insight in the future when the COVID-19 pandemic comes back, or another similar worldwide health crisis happens in the near future unfortunately. This is also one of the limitations of the current research and one of our future research directions.