Factors Affecting Chinese Students Promote Distance Learning On the Telecommunication Platform during the COVID-19 Pandemic

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ABSTRACT: Influenced by the situation of COVID-19, all Chinese students have to follow a self-isolation policy and accept distance education from home. Among telecommunication platforms, the DingTalk platform is the most popular one in China and already has more than 130 million student users. Although DingTalk provides teachers and schools with comprehensive teaching functions, there are numerous negative feedbacks from Chinese students. To analyse related problems and promote distance education successfully, this paper establishes the research model based on the COM-B Behaviour Changing theory and the Hofstede cultural theory, and it analyses specific factors affecting Chinese students' motivation to promote distance learning on telecommunication platform under the situation of COVID-19. The research results will be beneficial to improve the distance learning system, which can attract more and more young students to accept a high-quality distance education during and after the COVID-19 pandemic.

KEYWORDS: Telecommunication platform, COVID-19 pandemic, distance learning, Chinese student, COM-B model

INTRODUCTION

Distance learning is a new type of teaching form that is supported by telecommunication platforms, aiming to break the boundaries of time and space (Yang et al. 2020). DingTalk (Dingding), developed by Alibaba company, is an enterprise telecommunication platform that attracted more than 100 million active users in 2017 (Koetse 2017). Based on improved functions, such as holding a telephone conference, sending messages, and showing the detail of receiving messages, DingTalk has become the most popular and professional enterprise collaboration and management platform in China (Koetse 2017). Influenced by the COVID-19 pandemic, Chinese students must accept distance learning from home. Faced with this situation, the technical team of DingTalk updates the service system and enhances the system's stability. According to the Apple app store statistics, the download rank of the DingTalk app has increased from No. 150 to No. 1 between January 2020 and February 2020, benefiting from the platform's technical support (Wei 2020). In addition to analysing the technical support, the effect of official department support should be focused on. Since the COVID-19 pandemic began to spread, Chinese official departments, including the Ministry of Health and Ministry of Education, have implemented strict epidemic prevention measures. To reduce the impact of the pandemic on education, related departments have proposed a policy entitled "Suspending Classes Without Stopping Learning" and encouraged students to use distance learning platforms. Therefore, the platform technical and official department support dramatically drive Chinese students' motivation to promote distance learning on telecommunication platforms.

However, with the number of users growing, the DingTalk app's score dramatically decreases in the Apple app store, Google play store, and Huawei app gallery (Stephen 2020; Wei 2020). For example, in the Apple app store, the user rating of DingTalk decreased to 1.3 in February 2020 (Wei 2020). Many problems result in low scores, such as students' privacy issues and schools' forced involvement. Specifically, some teachers on the DingTalk platform ask their students to open their cameras and share their locations while attending online courses, which causes dissatisfaction among the students (Lu 2020). Many Chinese student users from middle and high schools do not have enough privacy security awareness, and they might suffer from information fraud while using the telecommunication platform. Although numerous negative feedbacks are provided by Chinese students, the active user number of

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the DingTalk platform has increased dramatically. In light of this, it is significant to analyse what factors influence Chinese students to keep using the telecommunication platform even if the platform is unimproved. Accordingly, the first research aim is to explore what kinds of factors affect Chinese students' motivation to promote distance learning on the DingTalk platform.

To solve this question, this paper analyses the distance learning environment in China and discusses students' distance learning motivation based on the Capability-Opportunity-Motivation-Behaviour theory (COM-B theory) (Michie et al. 2011). Although existing scholars have detailly analysed the distance learning mode on telecommunication platforms, few of them pay much attention to school-aged students' engagement with emergency remote learning and investigate the impact of the COVID1-19 pandemic. According to the COM-B theory, the platform technical support and the official department support can be discussed as *Environmental opportunity* factors, and students' privacy security awareness is designed as a *Personal capability* factor. All of these factors significantly affect individuals' motivation and result in their final behaviour.

Furthermore, unlike prior studies, this paper also focuses on China's social and cultural backgrounds based on the Hofstede cultural theory (Hofstede 2011; Li et al. 2023b). Specifically, the degree of power distance in China is high, which can be reflected in Chinese family culture (Li and Kang 2021; Li et al. 2023a). Compared with Western students, Chinese students prefer to follow their parents' advice when making important decisions (Wang and Guan 2018). Meanwhile, the degree of collectivism is also significant in China, which can be reflected in China's educational philosophy (Hofstede 2011). This means that students should comply with the rule proposed by the school unconditionally, like accepting distance learning on the DingTalk platform. Although existing studies have explored some of these influencing factors, few systematically classify these influences and establish a research model to discover students' distance learning motivation. Thus, the second research aim is to classify these influences and establish a research model based on the COM-B theory (Michie et al. 2011) and the Hofstede cultural theory (Hofstede 2011), which is explained in the literature review part.

LITERATURE REVIEW

Environmental opportunity unit

According to the COM-B Behaviour Changing theory proposed by Michie et al. (2011), both *Environmental opportunity* and *Personal capability* significantly affect *Personal motivation* and lead to *Final behaviour*. Regarding *Environmental opportunity*, the effect of official department support and the platform technical support should be discussed. Firstly, under the condition of COVID-19, official departments propose strict epidemic prevention measures and support students to accept distance learning on telecommunication platforms, aiming to reduce their risk of infection (Ran 2020). Although many previous studies combine distance education with the Chinese educational environment and support the development of distance learning in remote areas (Kaminsky 2018; Xiao 2018), few of them have researched the learning environment on telecommunication platforms and analysed the official department supports during the COVID-19 situation. Hence, the first *Environmental opportunity* factor that should be of concern in this paper is the official department support.

Moreover, because of the primary function of DingTalk focusing on mobile office, most previous studies focus on the relationship between employers and employees, and they focus on how the mechanism in DingTalk could enhance collaboration efficiency and attract employees' using motivation (Liangbin 2018; Mo and Yu 2017). Still, few of them pay much attention to the operation of distance education on the DingTalk platform and explore its technical advantages. As Table 1 shows, there are some similarities and differences in the comparison among the telecommunication platform Zoom, Microsoft Teams, and DingTalk. Firstly, all telecommunication platforms provide improved conference functions, and users can use the message function to share some information (Bacchus 2020; Wong 2018). Meanwhile, they can assist users in storing data through Microsoft Stream and Ding Drive (Bacchus 2020; Wong 2018). However, compared with Zoom and Microsoft Teams, the functions in DingTalk are more varied. For example, users can purchase digital products and accounting services through the market function and scan news related to the COVID-19 pandemic on DingTalk. Based on the comprehensive functions of the DingTalk platform, the platform's technical support is another *Environmental opportunity* for Chinese students to promote distance learning.

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Table 1. The function comparison

| Functions	Zoom	Microsoft Teams	DingTalk
Online conference	Video meeting, set room, share screen, remote control	Voice meeting, video meeting, share screen	Video meeting, set room, share screen, remote control
Storage	Cloud recording	Microsoft Stream record	Cloud storage (Ding Drive)
Payment	Credit card and PayPal	Connect with Microsoft account	Online payment and connect with Alipay
Message	Message text in the meeting	Chat with users or in a small group	Message text in the meeting, group chat
Online market	None	None	Digital products and services
News	None	None	News related to COVID-19

Personal capability unit

Students' privacy security awareness should be a concern when they accept distance learning on telecommunication platforms. Although functions on the DingTalk platform are comprehensive, some functions would negatively affect students' privacy security, such as the camera monitor, the read-unread statute, and the Alipay function. For example, to ensure students' attendance, some teachers force their students to open their cameras and share their locations while attending online courses, which harms students' privacy security (Lu 2020). Students from universities might be able to protect their safety and refuse to use the DingTalk platform, but most student users from primary school and middle school do not have enough security awareness while using these functions (Yan 2017). Thus, as a *Personal capability*, students' privacy awareness negatively affects their using motivation, which should be analysed.

Cultural control factors

In addition to discovering *Environmental opportunity* and *Personal capability*, this study should pay attention to China's social and cultural environment (Hofstede 2011), which is neglected in the COM-B research theory (Li and Kang 2022a; Li and Kang 2022b). Among these cultural dimensions provided by the Hofstede research, collectivism and power distance significantly impact China's society, which could be reflected explicitly in Chinese family culture and school culture (as Table 2 shows). Unlike Western students, Chinese children tend to make decisions based on their parents' advice and requirements (Li 2018; Wang and Guan 2018). During the process of distance learning in China, school teachers encourage parental involvement and ask them to check students' attendance on the DingTalk platform (Ran 2020). Influenced by the distance power in the family, parental involvement would enhance children's using motivation.

Table 2. The Hofstede cultural model
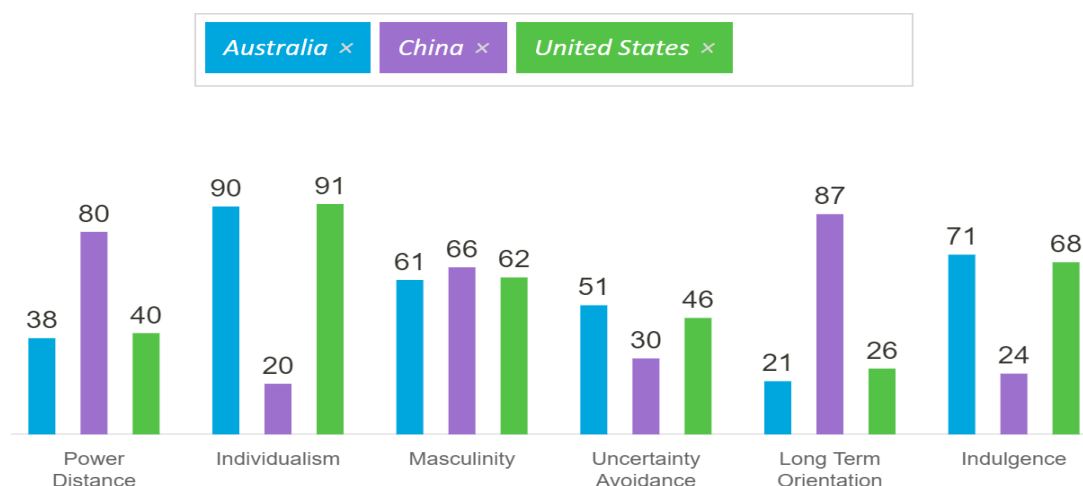
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Moreover, the educational philosophy in China guides students that collective interests are more important than individual parts, and individuals need to follow the organisation's management (Hofstede 2011; Wang and Liu 2010). This philosophy is also included in traditional Confucianism in China. This can explain why whole students in a school utilise the same telecommunication platform. Prior researches draw on the research results of distance education developed by Western online educational organisations (Madge et al. 2019). However, influenced by a particular educational philosophy background, the study results based on the Western environment cannot be directly applied to Eastern regions. In light of this, except for parental involvement, this study should also consider school involvement as a *Cultural control* factor.

Research model and hypotheses

As Figure 1 shows, the research model is based on the COM-B Behaviour Changing theory and the Hofstede cultural theory. In addition to considering the influence of *Environmental opportunity* and *Personal capability*, the study also explores the impact of *Cultural control*.
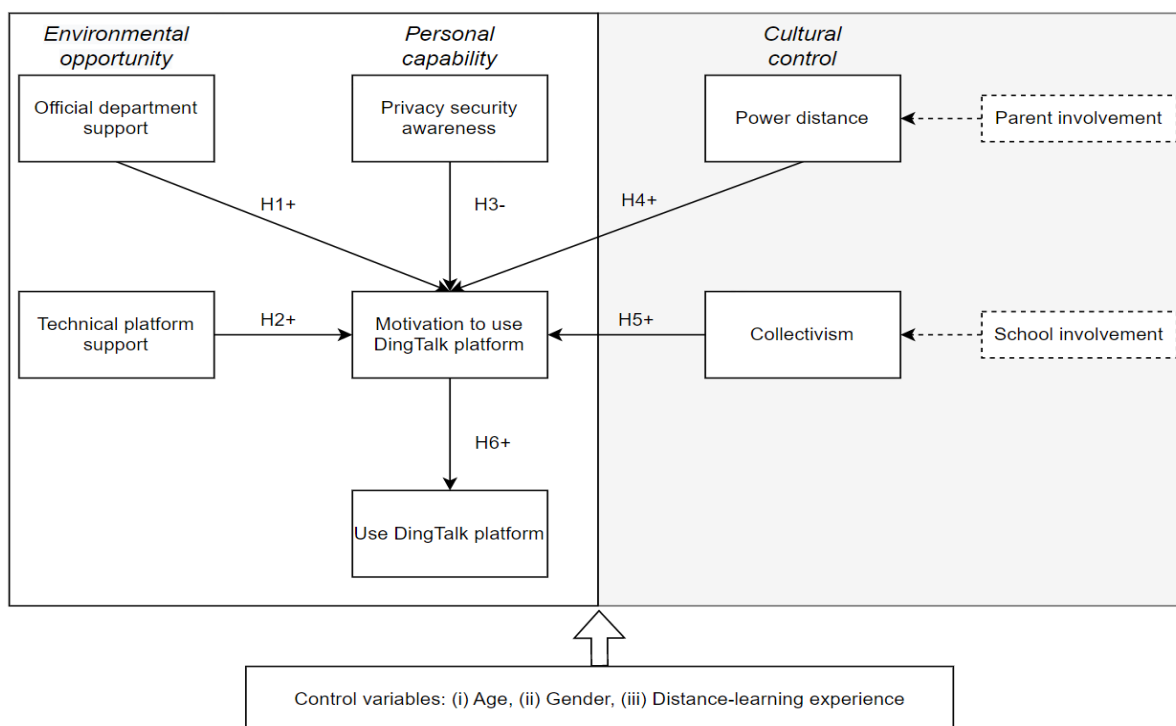

Figure 1. The research model

Opportunity impact

The main reason causing numerous students to use DingTalk is the COVID-19 situation, and students have to follow a self-isolation policy and stay at home. More than 140 thousand schools require their students to install DingTalk, and more than 130 million students have installed this platform by May 2020 (Jiang 2020). Influenced by the COVID-19 pandemic and official department policies, Chinese students have to use the DingTalk platform to continue their studies. Thus, the paper proposed that:

Hypothesis 1: Official department support positively affects Chinese students' motivation to use the DingTalk platform.

When students communicate with teachers, all messages, such as pictures, texts, and documents, can be presented with read and unread statuses on the DingTalk platform, which benefits teachers in monitoring students' distance learning (Wong 2018). To prevent students from cheating in online examinations, students' laptop cameras can be opened while they are promoting online tests. The target users of DingTalk cover enterprises, schools, and official departments. Compared with other telecommunication platforms, like Zoom and Microsoft Team, the DingTalk platform can provide student users with more convenient functions and technical support (Wong 2018; Yang 2020). Hence, the paper hypothesises:

Hypothesis 2: Technical platform support positively affects Chinese students' motivation to use the DingTalk platform.

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Capability impact

Although functions on DingTalk are improved, some functions would have an adverse impact on students' privacy security, such as the camera monitor, the read-unread statute, and the Alipay functions. Most student users are from primary school and middle school, which means they do not have enough security awareness while using these functions (Yan 2017). Conversely, student users who have improved privacy security awareness would refuse to use DingTalk (Huang 2019). Therefore, the study hypothesises:

Hypothesis 3: Privacy security awareness negatively affects Chinese students' motivation to use the DingTalk platform.

Cultural control impact

Power distance significantly impacts China's society, which can be reflected in Chinese family culture. Under school teachers' encouragement, numerous parents engage children's distance learning activities and check students' attendance on DingTalk (Ran 2020). Influenced by family rules, Chinese parents often manage the details of their children's lives, and most children get used to following their parents' requirements (Li 2022; Li et al. 2023a). This means students' motivation for using the platform could be influenced by their parents' involvement, reflected as the power distance. The paper thus proposes:

Hypothesis 4: Power distance positively affects Chinese students' motivation to use the DingTalk platform.

The self-isolation policy compels schools to implement online communication with their students. However, managing numerous students is challenging work. Most schools compulsively require their students to use the same telecommunication platform to increase teaching efficiency. Meanwhile, considering the educational philosophy of collectivism in China, most students probably follow the schools' arrangement and decide to use DingTalk (Wang and Liu 2010). Hence, the study proposes the following:

Hypothesis 5: Collectivism positively affects Chinese students' motivation to use the DingTalk platform.

Based on the COM-B theory proposed by Michie et al. (2011), personal motivation positively affects their final behaviour, which can be applied to this study. This means Chinese students would promote distance study on the DingTalk platform if they have the using motivation. Thus, the paper proposes:

Hypothesis 6: Chinese students' motivation to use the DingTalk platform positively affects them to promote their studies on the DingTalk platform.

Control variables

The research model (see Figure 1) is developed to test the hypotheses. Age, gender, and distance learning experience are included as control variables in this research. This is because existing scholars have suggested students' distance learning motivation and behaviours are affected by them (Richardson and Newby 2006).

METHODOLOGY

Research setting

To test the research model and examine hypotheses, the online questionnaire method as a quantitative strategy is suitable for the current study. Considering the advantages of the online questionnaire method, such as comprehensive coverage, time-saving and easy filling, this study decides to apply it during the COVID-19 pandemic (Li and Kang 2023). Based on the research background, the paper selects Chinese students as samples and promotes an online survey among them. This is because Chinese students have become the primary users of the DingTalk platform, and more than 120 million Chinese students have utilised the DingTalk platform (Li 2020). Given the rapid development of telecommunication platforms and the large base of online students in China, the Chinese distance learning environment is chosen as the research context.

Data collection and data analysis

DingTalk 5.1 version has been implemented by DingTalk technical team, which could provide 130 million student users with a more stable online learning environment (Jiang 2020). To understand students' online learning experience, the research should promote some online questionnaires in China's schools, and all question items will be based on previous studies. Meanwhile, considering the level of economic development and the level of educational development among different regions of China, the distribution of questionnaires needs to involve China's eastern and western regions. This helps to provide a comprehensive understanding of the platform usage by Chinese students. For the research model test, this study will utilise the variance-based partial least squares (PLS) and structural equation modelling (SEM) path modelling based on SmartPLS 3.0 to analyse the data. The

measurement and structural model analysis will be implemented on the SmartPLS 3.0, which is suitable for the research model study and meets the research aims (Chin 1998; Chin et al. 2003). Furthermore, implementing PLS-SEM analysis on SmartPLS could provide a deep understanding of the research model, which previous scholars have long proved (Hair et al. 2017; Sarstedt and Cheah 2019).

Expected outcomes and implications

Based on the research model, the online questionnaire will be designed and disturbed in Chinese schools. After the data collection, the study will utilise the PLS-SEM to promote data analysis and test the research model. The research results would contribute to future research related to distance learning. Unlike traditional teaching models, distance learning designers should consider the telecommunication platform environment and understand student users' requirements. This research expects to provide future studies with the theoretical contribution and inspire them to combine the specific cultural dimension with the COM-B model. Meanwhile, the study outcomes would also benefit educational departments to focus on potential problems related to distance learning, such as personal privacy security, and parental and school enforcement. Respecting students' privacy and providing them with a comfortable environment could improve the telecommunication service system and enhance students' interest in online learning. Through continually developing and improving the distance learning system, more and more young students will get a chance to accept a high-quality distance education during and after the COVID-19 situation.

Discussion and conclusion

Although the DingTalk platform provides Chinese schools with convenient functions to promote distance learning, students' using motivation and using experience need to be focused on. This unbalance-management of distance learning on the DingTalk platform results in numerous negative feedback from Chinese students. In light of this, both the DingTalk team and educational organisations should analyse students' using motivation and provide them with a more comfortable distance learning environment. Based on the continual improvement of telecommunication platforms and distance education, increasingly more Chinese students will accept this new study mode. Meanwhile, a blended learning environment will be promoted once the distance education system is approved, which is beneficial for educational departments to save educational resources and improve the quality of education during and after the COVID-19 situation.

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