ICEMC 2021
International Conference on Emerging Media & Communication

TIKTOK ADDICTION BEHAVIOUR AMONG USERS: A CONCEPTUAL MODEL AND RESEARCH PROPOSITIONS

Qin Yao (a), Bahiyah Omar (b)*
*Corresponding author

(a) School of communication, Universiti Sains Malaysia, Penang, Malaysia, yao_qin@student.usm.my
(b) School of communication, Universiti Sains Malaysia, Penang, Malaysia, bahiyah@usm.my

Abstract

Social media addiction has become a serious problem and deserve urgent attention. TikTok, one of the emerging social media platforms, has gained popularity among social media users and scholars anticipate that the phenomenon of TikTok addiction is expanding especially among adolescents. Despite this alarming concern, less research attention has been paid to the dark side of TikTok compulsive behaviour. The present article aims to propose a conceptual model to depict the external and internal factors determining addiction behaviour among young users of TikTok. We propose a causal-chain framework originated from the Stimuli-Organism-Response (SOR) paradigm to delineate the role of information quality and system quality (i.e.: the external factors as the stimuli), and flow experience (i.e.: the internal factors as organism) in explaining TikTok addiction behaviour (as the response). By adopting SOR framework and employing the flow theory as a guide, this study develops a conceptual model of TikTok addiction behaviour. The model posits that users experience with the system leads to TikTok addiction behaviour. This article contributes to our understanding of TikTok addiction among adolescence and suggests possible solutions to curb this prevailing social problem in society. Theoretical and managerial implications are subsequently discussed in light of the conclusion.

Keywords: TikTok, information system, flow, addiction behaviour

1. Introduction

With the development of technology, short-form video media has gradually become a new favourite of people, which has dramatically changed the way people communicate and interact (Ngai et al., 2015). TikTok, known as Douyin in China, has 1.5 billion active users so far, and downloaded more than 1 billion times around the world, and is already ahead of competitors like Netflix, YouTube, Snapchat and Facebook (Omar & Dequan, 2020; Weimann & Masri, 2020).

TikTok is also the most popular social media platform among millennials in China (Jung & Zhou, 2019). The characteristics of younger group users is short attention span and easily to get immersed in the content they like. According to the features and preferences of this age group, designers build a special algorithm (Feed for You) to customize video content for each user (Figliola, 2020).

When adolescent user exposed with more and more matched content, they will extend the using time, and immersed in TikTok. According to statistics, active TikTok users open the app 8 times per day on average, about 22% of TikTok users use the app for more than an hour a day (Iqbal, 2020). During the COVID-19 outbreak globally, Chinese government has implemented the lockdown. people stay at home without going outside, the average time spent per day by TikTok users rose to 122.3 minutes, that's almost double the 68.8 minutes recorded in 2019, and the number of daily active users increased by 19.4% during the period (Iqbal, 2020) and most of them were active between 9 p.m. and 12 a.m., when about 26.3 percent of its users are online (Mou, 2020).

2. Problem Statement

But excessive immersion leads to users' attachment and addiction to social media (Cao et al., 2020; Weimann & Masri, 2020), it then caused depression, anxiety, insomnia, poor eyesight, academic problem, low work performance, etc. (Beyens et al., 2016; Enez Darcin et al., 2016; Fu et al., 2020; Weinstein & Lejoyeux, 2010). These adverse outcomes are well-known indicators of addiction (Gao et al., 2017).

Thus, similar to Facebook addiction, short-form video app addiction may be another sub-category of Internet addiction (Zhang et al., 2019). Some scholars believe that the phenomenon of TikTok addiction is expanding (Zhang et al., 2019).

The existing literature on social media use behaviour, while very commendable, most of the researches only considered single factors such as the technology characteristic (Rahi et al., 2020), website design quality (Ma et al., 2019), perceived usefulness and perceived ease of use (Ifinedo, 2018), IS quality (Idemudia et al., 2018), satisfaction and attitude (Zhang et al., 2016), the user personality (Omar & Dequan, 2020), cognitive factors (Liao et al., 2009), etc.,. In addition, when explaining social media use behaviour, they over-rely on use and gratification theory (U&G), theory of planed behaviour (TPB), technology continuance theory (TCT) and expectation conformation theory (ECM) models and other models. Further research needs to combine both media factors (external factors) and user factors (internal factors) to comprehensively investigate user behaviour.

3. Research Questions

This research is guided by the following research questions:

RQ1: How do the external factors (information quality and system quality) affect internal factors (flow experience)?

RQ2: Do internal factors (flow experience) have a significant effect on the TikTok addiction behaviour?

RQ3: Do internal factors (flow experience) mediate the effect between external factors and TikTok addiction behaviour?

4. Purpose of Statement

The current conceptual paper aims to develop theoretical framework by proposing the relationship between information quality, system quality, flow, and addictive behaviour. More importantly, to support theoretical framework, two theories were employed including SOR and flow theory. Because So far, there is no comprehensive effort to integrate the factors that induce users to use social media into a single model. This requires further research to develop a wholistic cause and chain framework to help gain more explanatory power and illuminate social media use behaviour.

5. Literature Review and propositions development

Current research on the short-form video app TikTok has focused on user adoption (Omar & Dequan, 2020), and the business and social value created (such as job opportunity) (Hu, 2020; Xu et al., 2019). Recently, scholars have gradually begun to use SOR to explain user behaviour through the combination of internal and external factors, but most studies focus on its negative consequences, like depression, anxiety, insomnia, poor vision, academic problems, low job performance (Cao & Sun, 2018; Fu et al., 2020; Luqman et al., 2017, 2020; Moqbel, 2020; Whelan et al., 2020).

Despite SOR contributes the body of literature on addiction behaviour, the researchers believe that it still ignores the formation of addictive behaviour. To explore the factors of TikTok addictive behaviour in the emerging short-form video medium, SOR model was adopted in this study, and IS model and flow theory were integrated into SOR to develop a comprehensive theoretical framework and expand our understanding of adolescent TikTok addictive behaviour. Drawing on these theories, the conceptual framework of this paper will be reviewed and propositions.

5.1. SOR Model

The SOR model, also known as the environmental psychological model, was developed by Mehrabian and Russell (1974). In the SOR framework, it is assumed that environmental cues would stimulate individual's emotional and cognitive state, which leads to certain behavioural (Lee et al., 2018; Mehrabian & Russell, 1974).

As a meta-theory to explain human behaviour process, SOR is used to predict the cognitive judgment and subsequent behaviour or intention of network users. The model has been successfully used to explain

consumer behaviours, social media applications, virtual experiences, gamification studies (Cho et al., 2019; Kamboj et al., 2018; Sun et al., 2018; Triantoro et al., 2019; Xu et al., 2019). It can explain the internal psychological change and interruption response of individuals when they face the environmental stimulus produced by media. For example, both technological environments and virtual psychological experiences have significant effects on the behaviour of social network users (Luqman et al., 2017). Short-form video applications have a lot in common with social media and SNS. However, as an emerging platform, the current research is still in the initial stage, and we could borrow the theoretical framework from social media research.

5.1.1. Stimuli: External factors: IS mode

In the SOR framework, a stimulus refers to "the environment that an individual encounter (Mehrabian & Russell, 1974). In previous studies, the technical aspects of virtual space have been treated as environmental stimuli (Animesh et al., 2011; Zhang et al., 2015). A study in the field of information systems (IS) used this framework to explain how information technology attributes relate to the user's internal state and subsequent adoption behaviour (Benlian, 2015). Application quality is divided into information quality and system quality (Almahamid et al., 2016), this site quality structure is a major factor in assessing site users' expectations and perceptions of site quality (DeLone & McLean, 2003; Liang & Chen, 2009).

5.1.1.1. Information Quality

Information quality refers to the accuracy, completeness, and freshness of website content, which IS the user's evaluation of IS's performance in providing information based on their experience in using the system (McKinney et al., 2002). It reflects the relevance, timeliness and adequacy of the information provided by the platform (Kim et al., 2003). This assessment is based on the content of the IS website and needs to be personalized, complete, relevant, and easy to use and provide security aspects to encourage online use (DeLone & McLean, 2003). Recently, the IS success model has been used to understand mobile user behaviour. For example, Gao and Bai (2014) used the IS model to explain the continuous intention of users of mobile social network services and found that information quality was positively correlated with user experience of using mobile social network services.

5.1.1.2. System Quality

System quality refers to the degree to which a website functions, such as accessibility, reliability, and response time (DeLone & McLean, 2003). It represents the technical capability of a website to provide users with simple and quick access to information while ensuring reliability and security (Teo et al., 2008). A well-designed system is necessary to reap organizational benefits, such as reduced costs, improved process efficiency, and increased revenue. Conversely, a poorly designed system may be disruptive to the organization, leading to increased product costs and organizational inefficiency (Ghasemaghaei & Hassanein, 2015; Gorla et al., 2010).

5.1.2. Organism: Flow as international factors

The next element of the SOR framework is the organism component, consisting of cognitive and affective mediating states, expressed in the process of regulating the relationship between stimuli and individual responses (Chen & Chang, 2008; Mehrabian & Russell, 1974). According to Gao and Bai (2014), the Organism is a customer's cognitive judgment of the online consumer experience, presented as a stream experience. In this study, we also consider flow as organism component.

5.1.2.1. Flow theory

SOR model provides a theoretical basis for the mediating effect of flow experience. Studies using SOR framework have shown that consumer internal states (organisms) can play a mediating role between timulus and consumer response behaviour (Gao & Bai, 2014; Ha & Lennon, 2010). Computer-mediated communication is a typical situation in which users can experience a psychological state of flow (Lee et al., 2018).

The flow theory was first proposed by Csikszentmihalyi (1975). It refers to a state of deep immersion in a pleasingly optimal psychological experience (Novak et al., 2000), which is a key driver of persistence (Chang, 2013; Khang et al., 2013). Individuals experiencing flow may become so completely lost in the activities they are doing that they lose awareness of time and their surroundings (Csikszentmihalyi, 1975).

Since the short-form video application is an experience product, the user's value mainly comes from their experience during the use process, they can feel great fun. Therefore, based on the SOR model, combined with previous mediation effect on internal cognitive status of research, we have reason to believe that flow in the information system quality and the intermediary role between user reaction, affect the user's internal mental process, which affect their behavioural responses, the flow theory is applied to study the short-form video application addictive behaviour of users.

5.1.3. Response: TikTok addiction behaviour

The response component in the SOR framework refers to the result, final action or reaction, including psychological reaction such as attitude or behaviour, which can be divided into approach behaviour and avoidance behaviour (Mehrabian & Russell, 1974). Approaching behaviour is a positive response and avoiding behaviour is a negative response.

More recently, as algorithmic technology has been upgraded, users have been given more matched content, and using these features has led to varying degrees of immersion, which in turn has induced addictive behaviour. In social media, users are exposed to various technical features or functions, such as user-provided experience, technical stress, exhaustion, and user profiles, which all affect users' participation in social media. As mentioned above, behaviour is closely related to the psychological experience of using social networks (Zhang et al., 2016). TikTok is an emerging short-form video app that offers customized content to users based on their preferences. These fun features and personalized content have addictive entertainment value for very young users. Then, we use addictive behaviour as response to immersive experiences associated with the use of smartphone-based short-form video media.

6. Proposition development

6.1. Information system quality to flow experience

According to the previous research (Zhou et al., 2010), information quality has a significant impact on users' flow experience, which in turn determines users' loyalty. There are many factors that affect flow, Jung et al. (2009) point out that content quality affects the flow experience of mobile TV users. Zhou (2014) confirmed the impact of system quality and information quality on user flow experience of mobile Internet sites as well.

TikTok has its unique way of improving the user experience compared to other social media. For example, offer a variety of special effects filters, fun stickers, and video editing tools to help users spice up their videos. TikTok also offers customized content to users based on their preferences. These fun features and personalized content have addictive entertainment value for very young users. Therefore, this study believes that in order to enable users to have flow experience in TikTok, the positive cognition of the two attributes (information quality and system quality) provided by the platform makes users to immerse themselves in the use process and thus to have flow experience. Therefore, it is very easy for users, especially teenagers who lack self-control, to become addicted to short-form video apps. From this we derive the proposition:

Preposition 1: Information quality has a positive influence on user flow experience.

Preposition 2: System quality has a positive influence on user flow experience.

6.2. Flow experience to TikTok addiction

Recent research provides some empirical support that flow can have negative outcomes. For example, Chou and Ting (2003) found that flow significantly affects online game addiction. Previous studies have shown that smartphone users may experience flow while playing games on their devices (Joo, 2016) and browsing the Internet (Kim & Han, 2014). When people want to have a positive experience of flow, they are also easily addicted to media platforms (Salehan & Negahban, 2013). In this study, we propose that flow may influence the addictive use of short-form video apps in a similar way. We predict that flow may be an important stage prior to users' addictive behaviour (Khang et al., 2013). Therefore, we believe that people who experience flow during the use of short-form video apps are more likely to engage in addictive behaviour. We now raise the proposition:

Preposition 3: Flow experience has a positive influence on TikTok addiction behavioural.
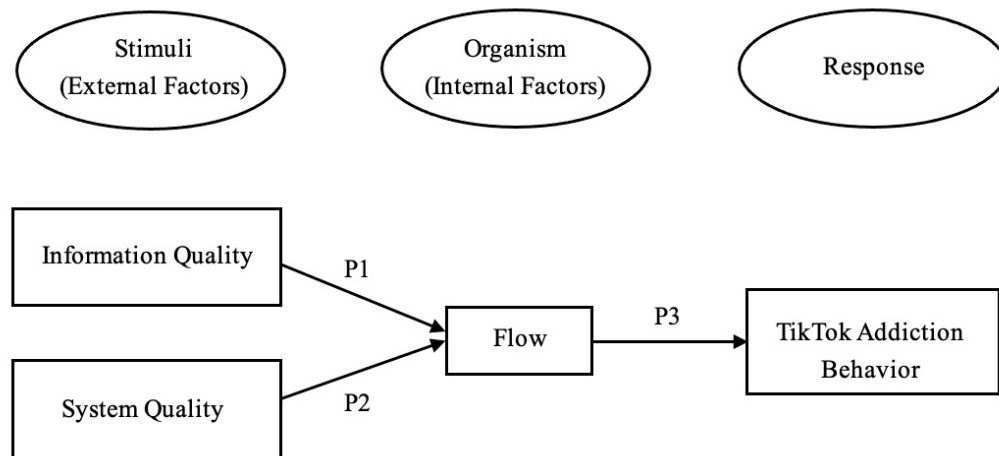
Figure 1. Theoretical framework

The rest of this paper describes the theoretical background of SOR model, IS theory, flow theory and addictive behaviour in detail. Then, the conceptual framework and three propositions are used to study the influence of the combination of internal and external factors on addictive behaviour.

7. Research Methods

This paper is a conceptual work that outlines some research prepositions to understand TikTok addition behaviour. This proposed conceptual model should be tested empirically. To statistically validate our conceptual model, users' perception of information and system qualities as well as their experience with flow and addiction behaviour need to be gauged. Hence, a survey research is the most suitable method to gauge users' perceptions and behaviours. This is consistent with past research which also used survey method to examine TikTok usage behaviour (Omar & Dequan, 2020). It involves identifying sampling technique, measurement, and data analysis.

With regards to sampling technique, adolescents or young people is the targeted sample. According to Mou (2020), the largest age group of TikTok users is 6-17 years old, accounting for 31.59%, followed by 18-24 years old (30.14), 25-30 years old (20.85%), 31-35 years old (8.66%), and over 35 years old (8.76). Hence, individuals between the ages of 14 and 18 who have used TikTok in the past year could be an appropriate sample for study. Researchers can adopt non-probability sampling such as virtual snowballing sampling or network sampling to reach out to the TikTok users online.

As for the measurement of constructs, the items can be adopted from past research. Measures for information quality and system quality can be drawn from Kim et al. (2003) and Zhang et al. (2016). Meanwhile, the measurement of flow experience can be taken from Zaman et al. (2010) and Zhang et al. (2014). Similarly, the TikTok addiction behaviour's measurement is found in Khang et al. (2013); Kim et al. (2003). Table, 1 presents the various constructs in the current framework and strategies for their measurement.

In terms of data analysis, partial least squares (PLS-SEM) analysis is the most option to test the proposed model. This is because PLS-SE< is suitable for the identification of complex critical structural

models (Hair et al., 2019). As suggested by Hair et al., (2019), the study model should be tested in two steps. Firstly, the measurement model should be evaluated to establish the validity and reliability of the questionnaire. Then, in the second step, the structural model should be tested using the bootstrapping technique in order to test the proposed research prepositions.

Table 1. Variables, definitions, and illustrative measures

Variable	Measure Items	Reference
Information quality	1. TikTok provides me with relevant information to my needs. 2. TikTok provides me with sufficient information. 3. TikTok provides me with up-to-date information. 4. The videos on TikTok are usually short. 5. I can understand the general mind of a video in a short time 6. I can gain useful information from celebrities that I subscribe. 7. Information on TikTok is valuable for me in work or study. 8. Information on TikTok can satisfy my needs.	Kim et al. 2003 Zhang et al. 2016
System quality	1. TikTok quickly loads all the text and graphics. 2. TikTok is easy to use. 3. TikTok is easy to navigate. 4. TikTok is usually attractive. 5. My videos are usually commented by some strangers. 6. My videos are usually commented by some strangers. 7. TikTok can make more people know my thoughts.	Kim et al. 2003. Zhang et al. 2016
Flow experience	1. I frequently login on TikTok unconsciously. 2. I feel time passes quickly while using TikTok. 3. I usually ignore other things when using TikTok. 4. Using TikTok is enjoyable, fun, and interesting.	Zaman et al., 2010 Zhang et al. 2014
TikTok addiction behaviour	1. It is hard for me to go a day without using TikTok 2. Although I think I should stop using TikTok, sometimes I continue to watch them. 3. I often use TikTok for a longer time than I intended. 4. I keep thinking about spending less time using TikTok.	Khang et al. 2013 Kim et al. 2003

8. Conclusion

This study has conceptualized the addictive behaviour of users of short-form video applications, in a word, it is a negative behavioural result of users' flow experience under the influence of external factors of the information system. In this context, this paper proposes a conceptual model that provides theoretical and practical benefits from the perspective of SOR model and flow theory.

8.1. Theoretical implications

Theoretically, this study will contribute to the media literature by confirming the SOR model in the context of TikTok addictive behaviour. It will provide strong evidence that internal factors (flow experience) and external factors (IS quality) can lead to adolescents' addiction to TikTok. This study advances the understanding of adolescent addiction behaviour in TikTok through IS quality and flow factors

by applying the modified SOR model (Belk, 1975). Previous literature conducted on social media were heavily rely on theory of planed behaviour (TPB), technology continuance theory (TCT) and expectation conformation theory (ECM) models. These studies analyse the causes of addiction from the perspective of the individual, ignoring external environmental stimuli. Therefore, this study overcomes the defects mentioned before. Based on previous literature, we combine the internal factors (flow) with external factors (information quality and system quality) to revaluate the relationship between information system, flow, and addiction behaviour.

8.2. Practical implications

This research also has practical contributions. Social media addiction can have many negative effects on young users and the society, so it is necessary for scholars and practitioners to solve this problem. As for TikTok adolescents' users, excessive immersion on media platform can actively trigger addictive behaviours, which can lead many problems such as depression and anxiety. Therefore, This could raise legal liability and ethical issues for TikTok operator (Gong et al., 2020; Zheng & Lee, 2016). Adolescents are at a critical stage of development, media operators should cultivate user with healthy social media use habits, instead of inducing them to become addicted. Therefore, when facing addiction issue, the operators should help users to get rid of it. For example, adolescent mode can be set to limit the content provided to adolescents and control the duration of their use (excessive use of the reminder or disconnection system), this method has been proven to be an effective way to control addictive behaviours (Chen et al., 2017).

8.3. Limitations and future research

Although this article presents diverse theoretical and practical implications, limitations are still existing for future research. First, the conceptual framework and propositions must be tested. Due to the current epidemic, the work and life of TikTok users are in an abnormal state. The life at home leads to the prolonged use of smartphone, which may exaggerate the effect of addiction. Therefore, the proposed theoretical model can be used as a reference for subsequent empirical research. Second, the formation of addiction is a complex problem, only adopt quantitative methods may lead to research bias. Future studies could combine qualitative and quantitative method to gain depth of understanding of short-form video application addiction behaviour.

References

Almahamid, S. M., Tweiqat, A. F., & Almanaseer, M. S. (2016). University website quality characteristics and success: Lecturers' perspective. *International Journal of Business Information Systems*, *22*(1), 41–61. https://doi.org/10.1504/IJBIS.2016.075717

Animesh, A., Pinsonneault, A., Yang, S. B., & Oh, W. (2011). An odyssey into virtual worlds: Exploring the impacts of technological and spatial environments on intention to purchase virtual products. *MIS Quarterly: Management Information Systems*, *35*(3), 789–810. https://doi.org/10.2307/23042809

Belk, R. W. (1975). Situational Variables and Consumer Behavior. *Journal of Consumer Research*, *2*(3), 157. https://doi.org/10.1086/208627

Benlian, A. (2015). Web personalization cues and their differential effects on user assessments of website value. *Journal of Management Information Systems*, *32*(1), 225–260. https://doi.org/10.1080/07421222.2015.1029394

Beyens, I., Frison, E., & Eggermont, S. (2016). "I don't want to miss a thing": Adolescents' fear of missing out and its relationship to adolescents' social needs, Facebook use, and Facebook related stress. *Computers in Human Behavior*, *64*, 1–8. https://doi.org/10.1016/j.chb.2016.05.083

Cao, X., Gong, M., Yu, L., & Dai, B. (2020). Exploring the mechanism of social media addiction: an empirical study from WeChat users. *Internet Research*, *30*(4), 1305–1328. https://doi.org/10.1108/INTR-08-2019-0347

Cao, X., & Sun, J. (2018). Exploring the effect of overload on the discontinuous intention of social media users: An S-O-R perspective. In *Computers in Human Behavior* (Vol. 81, pp. 10–18). https://doi.org/10.1016/j.chb.2017.11.035

Chang, C. C. (2013). Examining users′ intention to continue using social network games: A flow experience perspective. *Telematics and Informatics*, *30*(4), 311-321.

Chen, C., Zhang, K. Z. K., Gong, X., Zhao, S. J., Lee, M. K. O., & Liang, L. (2017). Understanding compulsive smartphone use: An empirical test of a flow-based model. *International Journal of Information Management*, *37*(5), 438–454. https://doi.org/10.1016/j.ijinfomgt.2017.04.009

Chen, S. W., & Chang, H. H. (2008). The impact of online store environment cues on purchase intention: Trust and perceived risk as a mediator. *Online Information Review*, *32*(6), 818–841.

Cho, W. C., Lee, K. Y., & Yang, S. B. (2019). What makes you feel attached to smartwatches? The stimulus–organism–response (S–O–R) perspectives. *Information Technology and People*, *32*(2), 319–343. https://doi.org/10.1108/ITP-05-2017-0152

Chou, T. J., & Ting, C. C. (2003). The Role of Flow Experience in Cyber-Game Addiction. *Cyberpsychology and Behavior*, *6*(6), 663–675. https://doi.org/10.1089/109493103322725469

Csikszentmihalyi, M. (1975). Play and intrinsic rewards. *Journal of Humanistic Psychology*, *15*, 41–63.

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems*, *19*(4), 9-30.

Enez Darcin, A., Kose, S., Noyan, C. O., Nurmedov, S., Yılmaz, O., & Dilbaz, N. (2016). Smartphone addiction and its relationship with social anxiety and loneliness. *Behaviour and Information Technology*, *35*(7), 520–525. https://doi.org/10.1080/0144929X.2016.1158319

Figliola, P. (2020). *TikTok: Technology Overview and Issues (CRS Report Number: R46543)*.

Fu, S., Chen, X., & Zheng, H. (2020). Exploring an adverse impact of smartphone overuse on academic performance via health issues: a stimulus-organism-response perspective. In *Behaviour and Information Technology*. https://doi.org/10.1080/0144929X.2020.1716848

Gao, L., & Bai, X. (2014). *An empirical study on continuance intention of mobile social networking services: integrating the IS success model, network externalities and flow theory*. *26*(2), 168–189.

Gao, W., Liu, Z., & Li, J. (2017). How does social presence influence SNS addiction? A belongingness theory perspective. *Computers in Human Behavior*, *77*, 347–355. https://doi.org/10.1016/j.chb.2017.09.002

Ghasemaghaei, M., & Hassanein, K. (2015). Online information quality and consumer satisfaction: The moderating roles of contextual factors - A meta-analysis. *Information and Management*, *52*(8), 965–981. https://doi.org/10.1016/j.im.2015.07.001

Gong, M., Yu, L., & Luqman, A. (2020). Understanding the formation mechanism of mobile social networking site addiction: evidence from WeChat users. *Behaviour and Information Technology*, *39*(11), 1176–1191. https://doi.org/10.1080/0144929X.2019.1653993

Gorla, N., Somers, T. M., & Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. *Journal of Strategic Information Systems*, *19*(3), 207–228. https://doi.org/10.1016/j.jsis.2010.05.001

Ha, Y., & Lennon, S. J. (2010). Online visual merchandising (VMD) cues and consumer pleasure and arousal: Purchasing versus browsing situation. *Psychology and Marketing*, *27*(2), 141–165. https://doi.org/10.1002/mar.20324

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hu, Y. (2020). Research on the commercial value of Tiktok in China. *Academic Journal of Business & Management*, *2*(7), 57–64. https://doi.org/10.25236/AJBM.2020.020706

Idemudia, E. C., Raisinghani, M. S., & Samuel-Ojo, O. (2018). The contributing factors of continuance usage of social media: An empirical analysis. *Information Systems Frontiers*, *20*(6), 1267–1280. https://doi.org/10.1007/s10796-016-9721-3

Ifinedo, P. (2018). Determinants of students' continuance intention to use blogs to learn: an empirical investigation. *Behaviour and Information Technology*, *37*(4), 381–392. https://doi.org/10.1080/0144929X.2018.1436594

Iqbal, M. (2020). TikTok revenue and usage statistics. In *Business of Apps*. https://www.businessofapps.com/data/tik-tok-statistics/

Joo, J. (2016). Exploring Korean Collegians' Smartphone Game Behavior: Focusing on Conciseness, Perceived Ease of Use, Perceived Enjoyment, Flow, and Intent to Use. *Journal of Digital Convergence*, *14*(1), 379–386. https://doi.org/10.14400/jdc.2016.14.1.379

Jung, H., & Zhou, Q. (2019). Learning and Sharing Creative Skills with Short Videos: A Case Study of User Behavior in TikTok and Bilibili. *International Association of Societies of Design Research Conference*, *10*, 25–50. https://www.researchgate.net/publication/335335984

Jung, Y., Perez-Mira, B., & Wiley-Patton, S. (2009). Consumer adoption of mobile TV: Examining psychological flow and media content. *Computers in Human Behavior*, *25*(1), 123–129. https://doi.org/10.1016/j.chb.2008.07.011

Kamboj, S., Sarmah, B., Gupta, S., & Dwivedi, Y. (2018). Examining branding co-creation in brand communities on social media: Applying the paradigm of Stimulus-Organism-Response. *International Journal of Information Management*, *39*, 169–185. https://doi.org/10.1016/j.ijinfomgt.2017.12.001

Khang, H., Kim, J. K., & Kim, Y. (2013). Self-traits and motivations as antecedents of digital media flow and addiction: The Internet, mobile phones, and video games. *Computers in Human Behavior*, *29*(6), 2416–2424. https://doi.org/10.1016/j.chb.2013.05.027

Kim, H. W., Xu, Y., Koh, J., Kim, J., Lee, J., & Choi, D. (2003). A Comparison of Online Trust Building Factors between Potential Customers and Repeat Customers. *Journal of the Association for Information Systems*, *5*(6), 392–420.

Kim, Y. J., & Han, J. (2014). Why smartphone advertising attracts customers: A model of Web advertising, flow, and personalization. *Computers in human behavior*, *33*, 256-269.

Lee, C. H., Chiang, H. S., & Hsiao, K. L. (2018). What drives stickiness in location-based AR games? An examination of flow and satisfaction. *Telematics and Informatics*, *35*(7), 1958-1970. https://doi.org/10.1016/j.tele.2018.06.008

Liang, C. J., & Chen, H. J. (2009). A study of the impacts of website quality on customer relationship performance. *Total Quality Management and Business Excellence*, *20*(9), 971–988. https://doi.org/10.1080/14783360903181784

Liao, C., Palvia, P., & Chen, J. L. (2009). Information technology adoption behavior life cycle: Toward a Technology Continuance Theory (TCT). *International Journal of Information Management*, *29*(4), 309–320. https://doi.org/10.1016/j.ijinfomgt.2009.03.004

Luqman, A., Cao, X., Ali, A., Masood, A., & Yu, L. (2017). Empirical investigation of Facebook discontinues usage intentions based on SOR paradigm. *Computers in Human Behavior*, *70*, 544–555. https://doi.org/10.1016/j.chb.2017.01.020

Luqman, A., Masood, A., Weng, Q., Ali, A., & Rasheed, M. I. (2020). Linking Excessive SNS Use, Technological Friction, Strain, and Discontinuance: The Moderating Role of Guilt. *Information Systems Management*, *37*(2), 94–112. https://doi.org/10.1080/10580530.2020.1732527

Ma, Y., Ruangkanjanases, A., & Chen, S. C. (2019). Investigating the impact of critical factors on continuance intention towards cross-border shopping websites. *Sustainability (Switzerland)*, *11*(21). https://doi.org/10.3390/su11215914

McKinney, V., Yoon, K., & Zahedi, F. (2002). The measurement of Web-customer satisfaction: An expectation and disconfirmation approach. *Information Systems Research*, *13*(3), 296–315. https://doi.org/10.1287/isre.13.3.296.76

Mehrabian, A., & Russell, J. A. (1974). *An Approach to Environmental Psychology*. 266.

Moqbel, M. (2020). Understanding the Relationship between Smartphone Addiction and Well-Being: The Mediation of Mindfulnessand Moderation of Hedonic Apps. *Proceedings of the 53rd Hawaii International Conference on System Sciences*, *3*, 6083–6092. https://doi.org/10.24251/hicss.2020.745

Mou, J. B. (2020). Study on Social Media Marketing Campaign Strategy-TikTok and Instagram. *MIT Sloan School of Management*, *3*(8), 1–41.

Ngai, E. W. T., Tao, S. S. C., & Moon, K. K. L. (2015). Social media research: Theories, constructs, and conceptual frameworks. *International Journal of Information Management*, *35*(1), 33–44. https://doi.org/10.1016/j.ijinfomgt.2014.09.004

Novak, T. P., Hoffman, D. L., & Yung, Y. F. (2000). Measuring the customer experience in online environments: A structural modeling approach. *Marketing Science*, *19*(1), 22–42. https://doi.org/10.1287/mksc.19.1.22.15184

Omar, B., & Dequan, W. (2020). Watch, share or create: The influence of personality traits and user motivation on TikTok mobile video usage. *International Journal of Interactive Mobile Technologies*, *14*(4), 121–137. https://doi.org/10.3991/IJIM.V14I04.12429

Rahi, S., Khan, M. M., & Alghizzawi, M. (2020). Extension of technology continuance theory (TCT) with task technology fit (TTF) in the context of Internet banking user continuance intention. *International Journal of Quality and Reliability Management*. https://doi.org/10.1108/IJQRM-03-2020-0074

Salehan, M., & Negahban, A. (2013). Social networking on smartphones: When mobile phones become addictive. *Computers in Human Behavior*, *29*(6), 2632–2639. https://doi.org/10.1016/j.chb.2013.07.003

Sun, W., Cai, Z., Li, Y., Liu, F., Fang, S., & Wang, G. (2018). Data processing and text mining technologies on electronic medical records: A review. *Journal of Healthcare Engineering*, *2018*. https://doi.org/10.1155/2018/4302425

Teo, T. S. H., Srivastava, S. C., & Jiang, L. (2008). Trust and electronic government success: An empirical study. *Journal of Management Information Systems*, *25*(3), 99–132. https://doi.org/10.2753/MIS0742-1222250303

Triantoro, T., Gopal, R., Benbunan-Fich, R., & Lang, G. (2019). Would you like to play? A comparison of a gamified survey with a traditional online survey method. *International Journal of Information Management*, *49*, 242–252. https://doi.org/10.1016/j.ijinfomgt.2019.06.001

Weimann, G., & Masri, N. (2020). Research Note: Spreading Hate on TikTok. In *Studies in Conflict and Terrorism*. https://doi.org/10.1080/1057610X.2020.1780027

Weinstein, A., & Lejoyeux, M. (2010). Internet addiction or excessive internet use. *American Journal of Drug and Alcohol Abuse*, *36*(5), 277–283. https://doi.org/10.3109/00952990.2010.491880

Whelan, E., Islam, A. K. M. N., & Brooks, S. (2020). Applying the SOBC paradigm to explain how social media overload affects academic performance. *Computers and Education*, *143*(August 2019), 103692. https://doi.org/10.1016/j.compedu.2019.103692

Xu, L., Yan, X., & Zhang, Z. (2019). Research on the Causes of the "Tik Tok" App Becoming Popular and the Existing Problems. *Journal of Advanced Management Science*, *7*(2), 59–63. https://doi.org/10.18178/joams.7.2.59-63

Zaman, M., Anandarajan, M., & Dai, Q. (2010). Experiencing flow with instant messaging and its facilitating role on creative behaviors. *Computers in Human Behavior*, *26*(5), 1009–1018. https://doi.org/10.1016/j.chb.2010.03.001

Zhang, H., Lu, Y., Gupta, S., & Zhao, L. (2014). What motivates customers to participate in social commerce? the impact of technological environments and virtual customer experiences. *Information and Management*, *51*(8), 1017–1030. https://doi.org/10.1016/j.im.2014.07.005

Zhang, H., Lu, Y., Wang, B., & Wu, S. (2015). The impacts of technological environments and co-creation experiences on customer participation. *Information and Management*, *52*(4), 468–482. https://doi.org/10.1016/j.im.2015.01.008

Zhang, K., Min, Q., Liu, Z., & Liu, Z. (2016). Understanding microblog continuance usage intention: an integrated model. *Aslib Journal of Information Management*, *68*(6), 772–792. https://doi.org/10.1108/AJIM-03-2016-0025

Zhang, X., Wu, Y., & Liu, S. (2019). Exploring short-form video application addiction: Socio-technical and attachment perspectives. *Telematics and Informatics*, *42*(April), 101243. https://doi.org/10.1016/j.tele.2019.101243

Zheng, X., & Lee, M. K. O. (2016). Excessive use of mobile social networking sites: Negative consequences on individuals. *Computers in Human Behavior*, *65*, 65–76. https://doi.org/10.1016/j.chb.2016.08.011

Zhou, T. (2014). Understanding continuance usage intention of mobile internet sites. *Universal Access in the Information Society*, *13*(3), 329–337. https://doi.org/10.1007/s10209-013-0313-4

Zhou, T., Li, H., & Liu, Y. (2010). The effect of flow experience on mobile SNS users' loyalty. *Industrial Management and Data Systems*, *110*(6), 930–946. https://doi.org/10.1108/02635571011055126