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Exploring the factors influencing users' satisfaction and continuance intention of MOOCs in China

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Article Info

Abstract

Recently, Massive Open Online Courses (MOOC) have received much attention from users. Users' continuance intention of using MOOC is one of the most important indicators to measure the success of MOOCs. At present, MOOCs are facing a low completion rate and retention rate problems. This calls for the importance in investigating factors that affect MOOC users' satisfaction, thereby enhancing the intention to continue using MOOCs. The purpose of this research was therefore to explore the factors affecting MOOC users' satisfaction and continuance intention towards the Expectation Confirmation Model. In total, 410 questionnaires were collected via an online survey and analysed with the Structural Equation Modelling (SEM). Participants were Chinese employees from different city tiers who had experienced using or now used MOOCs. The analysis indicated a good fit of the structural equation model. The analysis results showed that the confirmation factor has a significant impact on perceived usefulness, perceived service quality, and satisfaction. The analysis results highlighted that perceived service quality has the strongest impact on satisfaction, thereby enhancing the continuance intention in using MOOC. The results also revealed that perceived usefulness and perceived service quality can not only directly influence continuance intention, but also indirectly influenced satisfaction. The findings therefore suggested that MOOC providers should focus on improving MOOCs' overall quality to better meet MOOC users' satisfaction, thereby enhancing the intention to continue using MOOCs.

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Introduction

MOOCs stand for Massive Open Online Courses. MOOCs open for free to anyone to participate. With the advancement of Internet technology, the number of MOOCs and MOOC platforms has increased in recent years. Coursera, Udacity, Udemy, and edX are the most famous overseas MOOCs platform. Some popular MOOC platforms in China are iCourse, XuetangX, CNMOOC, and Zhihuishu, etc. These platforms are the major MOOC providers cooperating with well-known universities to provide a variety of online courses. The goal of MOOC is to provide

online education for anyone who can access the internet at anytime, anywhere in the world. To date, millions of people around the world use MOOCs for learning. According to Class-Central, 110 million global participants (excluding China) enrolled in MOOCs and took 13,500 courses in 2019. In China, around 270 million people enrolled in massive open online courses in 2019 according to the report from the Chinese Ministry of Education in April 2019. The Chinese MOOC market was developing rapidly at that time with three main categories, namely, MOOCs for K12 education, MOOCs for higher education, and MOOCs for enterprise training and development. There has been a significant surge in usage concerning the COVID-19 pandemic. Considering the Chinese government plans to open 3,000 MOOCs by the end of 2020, the Chinese MOOC market will become increasingly competitive. Attracting more users and ensuring retention rates are the key to the success of MOOCs. Hence, it is imperative for MOOC developers and providers to better understand users' preferences in order to meet their needs and increase customer satisfaction and retention rate. Learners are the key component of the MOOC platform. Thus, learner-focused study is an important part of the successful development of MOOC. Despite the huge growth in the number of MOOCs and the corresponding increase in the number of applicants all over the world, the low completion rates and high drop-out rates are considered as a big concern (Sujatha & Kavitha, 2018). Alraimi, Zo, and Ciganek (2015) pointed out that retention rates are on average less than 10 percent and the completion rate is extremely low. Dropout rates of MOOCs are between 91 percent and 93 percent (Goel & Goyal, 2020). A high dropout rate leads to an average completion rate which is less than 13 percent (Krause, Mogalle, Pohl, & Williams, 2015). However, there is insufficient literature investigating the key factors influencing participants' satisfaction and continuing intention. Therefore, it is imperative to study the key drivers of learners' perception and persistence in MOOC. This research aims to propose a conceptual framework and to examine the key factors affecting MOOC users' satisfaction and continuance use intention to potentially provide useful information for designing effective MOOCs, and contribute to the development of MOOCs.

Literature Review

Considering the extant research of MOOC users' continuance intention, empirical data were collected from users in a specific MOOC platform or specific courses. For example, Alraimi et al. (2015) confirmed that reputation, openness, and perceived enjoyment influenced satisfaction and continuance intention by collecting data from learners

on Coursera, edX, and Udacity. The findings are not considered distinguishing learners from different backgrounds, which may not provide adequate information for improving MOOC for a specific group of users. The majority of empirical studies related to MOOCs mainly focused on analysing school students' satisfaction and continuance intention towards MOOCs. Few studies have been found focusing on understanding the intention to use MOOCs in organizations. According to the 2018 Chinese report, young and middle-aged MOOC users dominated the Chinese MOOC market. To fill this gap, our study aimed to investigate the key factors affecting Chinese employees' satisfaction and continuance intention of MOOC learning. The Expectation Confirmation Model (ECM) indicates that users' confirmation from actual information system use, along with the perception of usefulness, influences their satisfaction and continuance intention towards information system use (Bhattacherjee, 2001). Therefore, ECM was employed as the theoretical foundation in this research. Nevertheless, the ECM model considers the individual's perception of the learning benefits, which is not sufficient to explain the learners' satisfaction and continue intention. This research therefore incorporated more variables into the ECM model to strengthen the explanatory power. By integrating task-technology fit into ECM, Chinese researchers explained how tasks and technology characteristics affect the outcomes of technology use and analysed the factors affecting learners' continuous use (Ouyang et al., 2017). Some other factors like interaction, social influence, course content, intrinsic motivation (interest, curiosity, and enjoyment), and extrinsic motivation (certificate, credential, academic, and job relevance) were also added into ECM by many Chinese and international researchers (Dai, Teo, Rappa, & Huang, 2020; Daneji, Ayub, & Khambari, 2019; Junjie, 2017). However, little research has considered how MOOC quality influences learners' use experience. Quality has an important role in influencing users' cognition and behaviour of service or product. Hence, the conceptual framework was developed by incorporating the perceived quality (PSQ) with ECM to explain users' continuance intention of MOOC learning.

Confirmation

Considering the context of MOOCs, confirmation is the extent between the perception of users' expectations of MOOCs and their actual using experience of MOOCs. Bhattacherjee (2001) indicated that confirmation is the key factor to influence a user's perceived usefulness and user satisfaction. Many studies have revealed that users' confirmation led to a positive effect on their perceived usefulness and satisfaction (Alraimi et al., 2015). MOOC users may produce initial expectations about MOOCs

concerning the impact of the internal and external environment. After trying MOOCs, users will gain experiences and develop perceptions about MOOC performances and quality. Liao, Chen, and Yen (2007) found that confirmation during actual use will affect post-consumption expectations such as perceived usefulness and perceived service quality. If MOOC helps users improve their performance, it is usually perceived as usefulness. Confirmation leads to user satisfaction when users believe that it is useful and the actual use experience corresponds or exceeds their original expectation (Ouyang et al., 2017). The higher the user's confirmation degree is, the higher the satisfaction evaluation of the use. From the literature, the hypotheses are derived as follows:

H1: Confirmation has positive effects on perceived usefulness.

H2: Confirmation has positive effects on perceived service quality.

H3: Confirmation has positive effects on users' satisfaction.

Perceived Usefulness

In this study, perceived usefulness refers to the perceived degree of usefulness in improving MOOC users' learning, personal abilities, or job performance. Previous researches have shown that there appears to be a positive relationship between perceived usefulness and user satisfaction (Alraimi et al., 2015; Bhattacherjee, 2001; Junjie, 2017). When MOOC learning can improve users' job learning performance or fulfill their needs, MOOC users will be satisfied. Many empirical studies about MOOC have confirmed that perceived usefulness can not only directly affect behavioural intention to use or continue to use MOOCs (Alraimi et al., 2015; Gao & Yang, 2016; Ouyang et al., 2017; Zhang, Huang, Lv, Liu, & Zhou, 2018) but also indirectly influence the satisfaction of users. When the use of MOOCs has a significant positive effect on the users' performance, they would have a positive feeling and most likely to keep participating in it. The hypothesis is derived as follows:

H4: Perceived usefulness has positive effects on users' satisfaction.

Perceived Service Quality

In this study, perceived service quality can be defined as the MOOC users' overall evaluation and judgment of the excellence and quality offerings in the MOOC platforms. Different criteria used for evaluating the quality of any services focus on important dimensions such as tangibles, reliability, responsiveness, empathy, ease of use,

accuracy, security/privacy, contents, and timeliness (Pham, Limbu, Bui, Nguyen, & Pham, 2019). Those dimensions can be categorized into system quality, information quality, and service quality (Lin, 2007). Therefore, these three types of quality are used to measure PSQ in this research. There is a vital connection between quality and satisfaction (DeLone & McLean, 2003), which was also found in the study of Roca, Chiu, and Martínez (2006). Mohammadi (2015) highlighted that service quality has a positive relationship with e-learning satisfaction. The overall quality appeared to significantly influence continuance intention (Yang, Shao, Liu, & Liu, 2017). From the literature, the hypothesis is derived as follows:

H5: Perceived service quality has positive effects on users' satisfaction.

Continuance Intention

In the context of MOOCs, continuance intention refers to learners' willingness to continue using MOOCs. Roca et al. (2006) stated that one of the important component factors that influence customer intention in adapting the technology is service quality. Plenty of studies found that perceived usefulness has a significant, positive effect on behavioural intention to use or continue to use MOOCs. According to past research, satisfaction, and future repurchase intentions are positively connected. The higher the level of satisfaction, the higher the degree of continuance intention. High intention to continue using MOOCs can lead to lower dropout rates, higher persistence, and greater commitment to the platforms. The hypotheses are derived as follows:

H6: Perceived usefulness has positive effects on continuance intention.

H7: Perceived service quality has positive effects on continuance intention.

Satisfaction

Satisfaction is defined as the users' post-evaluation of their overall experience with a specific information system or service (Bhattacherjee, 2001). In our research, satisfaction is defined as MOOC users' overall perception or evaluation of user experience after the use of MOOCs. In the ECM, Bhattacherjee (2001) confirmed that satisfaction is the main factor determining the user's continuance intention. Many studies (Alraimi et al., 2015; Ouyang et al., 2017) confirmed that satisfaction is one of the key factors determining the willingness to continue using the system. User satisfaction develops repeat usage. The higher the level of satisfaction, the stronger the intention of its continuous use of MOOC. The hypothesis is derived as follows:

H8: Satisfaction has positive effects on continuance intention.

Methodology

This study adopted a quantitative approach to examine the key factors affecting MOOC users' satisfaction and continuance intention. The target population mainly focused on employees working in different city tiers in China, who had used or were using MOOCs platforms. The questionnaire survey method was adopted for gathering empirical data. All measurement items in the questionnaire were adapted from the previous studies and modified according to the MOOC context (Alraimi et al., 2015; Bhattacherjee, 2001; Yang et al., 2017). Every question utilized 5–point scales with anchors from "strongly disagree (1)" to "strongly agree (5)". The questionnaire explicitly stated that it applies only to learners who have used MOOC. The questionnaire was translated into Mandarin with the help of bilingual translators using the back translation method. An online survey was used for distributing questionnaires via www. wjx.cn to different WeChat groups, QQ groups, and DingTalk groups in China from August 2020 to September 2020. In total, 458 questionnaires were collected. The final valid responses were 410 after screening considered as 89.52 percent. Structural equation modelling (SEM) was applied to test the research hypotheses via Amos version 24 software. A two-step procedure was used. First, confirmatory factor analysis (CFA) was examined by assessing reliability, convergent validity, and discriminant validity of the measurement model. Construct reliability was assessed using Cronbach's alpha value. The second step was conducted to examine the structural model.

Results

From a total 410, 52.9 percent of respondents were female and 43.9 percent of respondents were aged between 22 to 30 years old. Bachelor's degree (33.7%) and Master's degree (22.7%) characterized the largest number of participants surveyed. The majority of respondents were from tier 2 cities (22.9%) and tier 3 cities (21.5%). Concerning the MOOC platform usage, 28 percent of the respondents utilized the MOOC platform 2 to 3 times per week, while 34.1 percent of them used the MOOC platform occasionally without a regular plan. As shown in Table 1, all constructs are in the acceptable range, indicating that all items have high internal reliability. For the convergent validity, all factors average variance extracted (AVE) are higher than .50 and composite reliability (CR) higher than .70, indicating sufficient convergent validity. The discriminant validity is met as presented in Table 2. The squared root of the AVE for each construct exceeds the correlation between that and any other constructs, demonstrating adequate discriminant validity of all constructs. The overall fit indices were used to test the structural model, which were χ^2/df = 2.028, NFI = .940, AGFI = .899, CFI = .964, GFI = .920, TLI = .964 and RMSEA = .050. The goodness-of-fit indices met the recommended levels, suggesting that the research model provided a good fit for the data.

The results of the hypotheses testing are shown in Table 3. The results of the structural model in Figure 1 and Table 3 significantly support that (a) confirmation has a positive influence on perceived usefulness (β = .745, p < .05), perceived service quality (β = .715, p < .05), and satisfaction (β = .277, p < .05); (b) perceived usefulness has a positive link to satisfaction (β = .229, p < .05) and continuance intention (β = .204, p < .05); (c) perceived service quality significantly impacts satisfaction (β = .364, p < .05) and continuance intention (β = .234, p < .05); (d) satisfaction has a positive relationship with continuance intention (β = .543, p < .05). The bootstrap test was conducted and confirmed that confirmation influences the continuance intention through the mediating effect of satisfaction, which was also moderated by perceived usefulness and perceived quality.

Table 2 Discriminant validity

Construct	CNF	PU	PSQ	SAT	CI
CNF	**.908**				
PU	.756	**.782**			
PSQ	.715	.841	**.829**		
SAT	.726	.735	.691	**.777**	
CI	.681	.689	.682	.710	**.796**

Table 1 Construct reliability

Construct	Cronbach's Alpha	CR (> .70)	AVE (> .50)
Confirmation (CNF)	.896	.897	.634
Perceived Usefulness (PU)	.883	.884	.603
Perceived Service Quality (PSQ)	.934	.934	.825
Satisfaction (SAT)	.914	.898	.688
Continuance Intention (CI)	.886	.887	.612

Table 3 Model path analysis

Hypothesis	Path coefficient (β)	SE	C.R.	p	Results
H1 CNF→ PU	.745	.055	12.669	***	Supported
H2 CNF → PSQ	.715	.046	14.285	***	Supported
H3 CNF → SAT	.277	.07	3.76	***	Supported
H4 PU → SAT	.229	.07	3.31	***	Supported
H5 PSQ → SAT	.364	.065	5.801	***	Supported
H6 PU → CI	.204	.049	3.766	***	Supported
H7 PSQ → CI	.234	.051	4.26	***	Supported
H8 SAT → CI	.553	.056	8.733	***	Supported
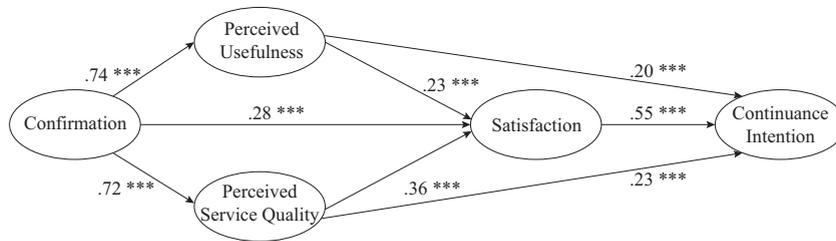
Figure 1 Paths test result of factors influencing user satisfaction and continuance intention of MOOCs in China

Discussion

The outcomes of SEM analysis revealed that confirmation has a significant influence on learners' perceived usefulness, perceived service quality, and satisfaction, which is in line with the result of the previous studies (Alraimi et al., 2015; Liao et al., 2007). It indicates that when users' expectations are confirmed, it will positively impact the degree of perceived usefulness, perceived service quality, and satisfaction of MOOCs. The result of comparing the actual using experience with the expectation will affect user perception and satisfaction. If the experience or performance meets or exceeds the expectation, users will be satisfied, thus affecting the continuance intention. This study also found that perceived usefulness is significantly related to satisfaction, which corresponds to previous study results (Daneji et al., 2019; Joo, So, and Kim, 2018). The explanation is that users have specific learning purposes and motivations. When they feel that MOOC learning can improve their abilities, work performance or learning efficiency, users can be satisfied with the MOOC platform. One of the interesting findings was that perceived service quality has the strongest impact on satisfaction. The explanation for this surprising result is that customer experience matters. The majority of MOOC users now are mainly the youth, they more focus on the users' experience and overall quality provided by MOOCs such as the Internet speed, materials quality, course quality, interface design, and

customer service. These factors play important roles in users' satisfaction. The courses provided by MOOCs are quite similar and the benefit they receive mainly depends on self-transformation. Therefore, the overall service quality of MOOC more significantly affects users' satisfaction. The results also indicate that satisfaction is a key determinant of continuance intention. Our finding supported the result reported in earlier studies (Alraimi et al., 2015; Daneji et al., 2019; Joo et al., 2018). When MOOC users are highly satisfied with its performance and experience, they are likely to continue their usage on MOOC. The findings also indicated that perceived usefulness and perceived service quality can not only directly influence continuance intention, but also indirectly affect it by influencing satisfaction.

Conclusion and Recommendation

The research contributes to the researchers and practitioners in gaining a better understanding of users in continuing to use MOOCs. Theoretically, perceived service quality was integrated into the ECM model to extend an understanding of factors influencing users' satisfaction and continuance intention of MOOCs. The empirical results supported all the hypotheses, indicating a successful extension of ECM. This will contribute to future research on ECM and MOOC learning. The findings fill the literature gaps by highlighting the importance of MOOC quality for elevating employees'

learning experiences, rather than general users in previous studies. Practically, MOOC quality directly affects users' learning experience, which is the core competitive advantage. With the increasing number of paying users, improving the overall quality is the key to enhance users' engagement, which will also directly influence the survival and development of MOOC platforms. Therefore, MOOC providers should continuously improve the design of MOOC systems, improve content quality, optimize service quality, and build a learning community to enhance users' learning experience and willingness to use. MOOC providers should also carry out reasonable promotions and highlight the advantages of the platform without exaggerating advertising, otherwise, users may have excessive expectations. MOOC providers may consider making differentiated learner management strategies to better meet their needs and maximize the chances of promoting their persistence intention and reducing the drop rate. Since employees have limited time to study, it is imperative that MOOC providers consider designing and customizing the MOOC learning platform specifically for each organization. This study has some limitations. There are several ways to measure quality in MOOCs. This study only focused on three dimensions: system quality, information quality, and service quality. Therefore, future research can apply different measurement dimensions to evaluate MOOC overall service quality in order to gain more insights for further improvement of MOOC.

Conflict of Interest

There is no conflict of interest.

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