FACTORS INFLUENCING ACADEMIC PERFORMANCE IN LANGUAGE MOOCS: THE MEDIATING ROLES OF SATISFACTION AND CONTINUED INTENTION AMONG UNIVERSITY STUDENTS IN INNER MONGOLIA

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SULTAN IDRIS EDUCATION UNIVERSITY

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ABSTRACT

This study aims to examine how quality features (educational, service, technical system, and content/information quality), performance expectancy, effort expectancy, social influence, and facilitating conditions influence academic performance in Language MOOCs (LMOOCs), focusing on the mediating roles of satisfaction and continued intention among university students in Hohhot, Inner Mongolia, China. A mixed-method research design was employed. Quantitative data were collected from 665 university students through structured questionnaires, and qualitative data were gathered via focus group interviews. The quantitative data were analyzed using SPSS and SmartPLS, while NVivo was used for thematic analysis of qualitative responses. The study integrates the Unified Theory of Acceptance and Use of Technology (UTAUT) with the DeLone and McLean Information Systems (IS) Success Model to develop a comprehensive framework. Findings indicate that satisfaction and continued intention significantly mediate the relationships between quality-related and behavioral factors and students' academic performance. Notably, content and service quality, along with performance expectancy and effort expectancy, were found to have strong indirect effects on academic performance through the mediators. Qualitative insights further revealed students' preferences for engaging, well-supported, and culturally relevant LMOOCs. This study contributes to both theory and practice. Theoretically, it expands the application of technology acceptance and IS success models in the underexplored context of LMOOCs in less-developed regions. Practically, it offers actionable insights for educators, policymakers, and instructional designers seeking to improve LMOOC design and enhance student performance through learner-centered, high-quality digital education environments.

Keywords: LMOOCs. UTAUT. ISS. Continued Intention. Satisfaction. E-learning Quality. Academic performance.

FAKTOR-FAKTOR YANG MEMPENGARUHI PRESTASI AKADEMIK DALAM MOOC BAHASA: PERANAN PERANTARA KEPUASAN DAN NIAT BERTERUSAN DALAM KALANGAN PELAJAR UNIVERSITI DI INNER MONGOLIA

ABSTRAK

Kajian ini bertujuan untuk meneliti bagaimana ciri-ciri kualiti (pendidikan, perkhidmatan, sistem teknikal, serta kandungan/maklumat), jangkaan prestasi, jangkaan usaha, pengaruh sosial dan keadaan fasilitasi mempengaruhi prestasi akademik dalam Kursus Terbuka Dalam Talian Bahasa Secara Besar-besaran (LMOOC), dengan memberi tumpuan kepada peranan pengantara kepuasan dan niat berterusan dalam kalangan pelajar universiti di Hohhot, Inner Mongolia, China. Reka bentuk penyelidikan kaedah campuran telah digunakan. Data kuantitatif dikumpulkan daripada 665 pelajar universiti melalui soal selidik berstruktur, manakala data kualitatif diperoleh melalui temu bual kumpulan fokus. Data kuantitatif dianalisis menggunakan SPSS dan SmartPLS, manakala analisis tematik bagi data kualitatif dilakukan menggunakan perisian NVivo. Kajian ini mengintegrasikan Teori Penyatuan Penerimaan dan Penggunaan Teknologi (UTAUT) dengan Model Kejayaan Sistem Maklumat (IS) oleh DeLone dan McLean bagi membangunkan satu rangka kerja yang komprehensif. Dapatan menunjukkan bahawa kepuasan dan niat berterusan memainkan peranan pengantara yang signifikan dalam hubungan antara faktor kualiti dan tingkah laku terhadap prestasi akademik pelajar. Secara khususnya, kualiti kandungan dan perkhidmatan, bersama dengan jangkaan prestasi dan jangkaan usaha, didapati memberi kesan tidak langsung yang kuat terhadap prestasi akademik melalui peranan pengantara. Dapatan kualitatif turut mendedahkan keutamaan pelajar terhadap LMOOC yang menarik, disokong dengan baik, dan relevan secara budaya. Kajian ini menyumbang kepada teori dan amalan. Dari segi teori, kajian ini mengembangkan aplikasi model penerimaan teknologi dan kejayaan sistem maklumat dalam konteks LMOOC yang kurang diterokai di kawasan kurang membangun. Dari segi amalan, ia menawarkan panduan berguna kepada pendidik, pembuat dasar dan pereka bentuk pengajaran untuk menambah baik reka bentuk LMOOC dan meningkatkan prestasi pelajar melalui persekitaran pendidikan digital yang berkualiti tinggi dan berpusatkan pelajar.

Kata kunci: LMOOC, UTAUT, Model IS, Niat Berterusan, Kepuasan, Kualiti E-pembelajaran, Prestasi Akademik.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The advent of digital technology has revolutionized the educational landscape, with Massive Open Online Courses (MOOCs) emerging as a pivotal innovation in delivering accessible education worldwide (Yuan & Powell, 2013). In China, MOOCs have witnessed exponential growth, aligning with national initiatives to promote lifelong learning and bridge educational disparities across regions (Ministry of Education of the People's Republic of China, 2020). By 2022, the number of MOOC users in China surpassed 500 million, indicating a substantial shift towards online learning platforms (China Internet Network Information Center, 2022).

Despite their increasing popularity, MOOCs in China face significant challenges that hinder their effectiveness and sustainability. High dropout rates, varying

course quality, and limited student engagement are prevalent issues that educators and policymakers grapple with (Zheng et al., 2020). Specifically, Language MOOCs (LMOOCs), designed to teach foreign languages, encounter additional obstacles due to cultural nuances, language proficiency levels, and technological accessibility, particularly in developing regions like Hohhot, Inner Mongolia.

Existing literature extensively explores technology adoption in education through models like the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) and the Information Systems (IS) Success Model (DeLone & McLean, 2003). However, there is a noticeable gap in studies integrating these models to assess their combined impact on students' satisfaction, continued intention, and academic performance in the context of MOOCs in developing countries. Moreover, the mediating roles of satisfaction and continued intention between technological factors and academic outcomes remain underexplored.

This section is an introduction to the issues related to the study, which analyze the impact of integrating essential factors on academic performance in one Hohhot, Inner Mongolia China's university students' context. Its descriptions give an initial overview of the scope of the study.

Organization of chapter introduction. The main content in this chapter include research background, problem statement, purpose and objective of the study, research questions, research hypothesis, conceptual or theoretical framework, operational definition, study limitations and significance of the research.

Research background shows the phenomenon of LMOOCs this research is trying to understand. Problem statement explains why this study should be carried out based on the arguments and evidence related. The purpose of conducting the study, the specific, measurable, accessible, realistic and suitable objective of this study are described in purpose and objective of the study. Based on the objective of the study and the problem statement, there are several research questions will be listed. Research Hypothesis states early expectations about the possible results of the study. One of the important characteristics of hypotheses is the ability to show the correlation between the variables in the study that are specific, clear and measurable. Conceptual or theoretical framework of UTAUT model and D&M IS success model are given to explain the aspects related to theories or concepts that underlie study based on the resources that are reliable from scholars in the field. In addition, this section operationally defined several important variables that were constantly mentioned throughout this study. Also, it explains the limitations and benefits of the study's findings and results to educators and LMOOCs designers and also the development of knowledge in that particular field of study.

Organization of the thesis. The rest of this paper is organized as follows. Chapter 2 describes the literature review. In Chapter 3, the methodology is described, with the demographic profile of respondents illustrated. In Chapter 4, the validity testing is presented. In addition, factors influencing the intention of students to continue learning in blended environments are analyzed and discussed. Finally, chapter 5 presents the conclusion and future research directions.

1.2 Background Research

The rapid evolution of information and communication technologies (ICT) has transformed the landscape of higher education worldwide. With the increasing integration of online learning systems into university curricula, educators and researchers are now re-evaluating how technology enhances learning outcomes, engagement, and student performance. One major innovation in this domain is the rise of Massive Open Online Courses (MOOCs), which offer scalable, flexible, and cost-effective learning opportunities to diverse student populations.

Among these, Language MOOCs (LMOOCs) have gained prominence as an alternative or supplementary method of delivering language education. As LMOOCs become increasingly embedded within institutional frameworks—especially in contexts where access to quality language instruction is limited—the question arises: What factors truly drive learner success in these digital environments? This study seeks to address that question by investigating the academic performance of university students in LMOOCs and examining how system quality, user perceptions, and behavioral intentions interact to influence learning outcomes, with particular attention to the less-explored regional setting of Hohhot, Inner Mongolia.

The following subsections of this chapter will provide a structured overview of the research context. Section 1.1.1 discusses the global development of LMOOCs and their role in digital education. Section 1.1.2 examines the specific higher education environment in Hohhot and the integration of LMOOCs in local universities. Section 1.1.3 highlights academic performance as a key metric and its challenges in online

learning. Section 1.1.4 introduces the theoretical framework used in this study. Section 1.1.5 identifies gaps in the literature and Section 1.1.6 explains the relevance and rationale behind this research.

1.2.1 Global Trends in LMOOCs and Digital Language Education

In recent years, digital education has experienced a significant transformation, driven by the accelerated adoption of online learning platforms and the rising need for flexible, scalable, and accessible education models. Massive Open Online Courses (MOOCs), which emerged prominently in the early 2010s, have evolved into a global phenomenon offering free or low-cost courses to anyone with internet access. A particular subset—Language MOOCs (LMOOCs)—has gained traction as a tool for language acquisition, especially in non-English-speaking contexts (Martin-Monje & Bárcena, 2015).

LMOOCs offer asynchronous and synchronous learning experiences with interactive content, automatic assessments, and peer-to-peer engagement. With over 60% of MOOC users reporting interest in English-language courses (Class Central, 2022), platforms like edX, Coursera, XuetangX, and FutureLearn have expanded their LMOOC portfolios to meet this demand. These courses are especially relevant in contexts where traditional classroom-based language instruction may not be feasible or where there are shortages of qualified teachers (Liu et al., 2021).

Despite their potential, studies have shown that LMOOCs often suffer from low completion rates, high dropout levels, and uneven engagement. The lack of sustained

learner motivation and platform usability has raised concerns about their effectiveness, particularly in regions where online learning is still emerging (Yang & Yang, 2022; Barrot, 2023).

1.2.2 The Inner Mongolian Context: Hohhot and Higher Education Development

Hohhot, the capital city of Inner Mongolia Autonomous Region, is a strategic node in China's higher education network in the north. With more than a dozen universities and colleges, Hohhot is home to a large population of university students from both Han and Mongol ethnic backgrounds. In line with the Ministry of Education's digitalization push (Ministry of Education of PRC, 2020), many institutions in Hohhot have begun integrating e-learning technologies, including LMOOCs, into their curriculum.

However, adoption does not always translate into success. While many students are registered in LMOOC courses, their academic performance remains inconsistent. In several universities in Hohhot, it has been observed that students either drop out of LMOOCs midway or complete them without achieving desired learning outcomes (Wei & Sun, 2021). These performance issues raise questions about learner engagement, perceived usefulness, and the quality of course delivery.

Several regional studies (e.g., Zhao et al., 2022) have highlighted that even when access and digital infrastructure are sufficient, students' learning outcomes are not guaranteed. This implies that the bottleneck may no longer be access or equity, but

rather learner-centered variables like motivation, satisfaction, and continued intention to engage with the platform.

1.2.3 Academic Performance in Digital Learning Environments

Academic performance remains a core metric of educational success. In the context of LMOOCs, performance refers not only to completion and grades but also to the depth of comprehension, language application skills, and transferability to real-life communication scenarios. Unlike traditional classrooms, LMOOCs shift responsibility for learning onto the students, making self-efficacy, engagement, and perceived value crucial to success (Hew et al., 2020).

While MOOCs in general have been criticized for low retention and passive learning, emerging research suggests that performance outcomes can be significantly improved when learners find the platform useful, easy to use, and satisfying (Albelbisi & Yusop, 2022). This aligns with educational psychology theories, such as the Expectancy-Value Theory and Self-Determination Theory, both of which emphasize the importance of perceived usefulness and autonomy in learning outcomes.

However, relatively few studies have linked these motivational dimensions to performance outcomes using empirical models in the LMOOC context. This leaves a gap in understanding how psychological and system-level variables combine to affect learners' academic performance in such environments.

1.2.4 Theoretical Framework: UTAUT and IS Success Model Integration

This study adopts the Unified Theory of Acceptance and Use of Technology (UTAUT) and the DeLone & McLean Information Systems (IS) Success Model as its dual theoretical foundation. Together, they provide a structured explanation of how user perceptions and system quality influence the behavioral outcomes that eventually translate into academic achievement.

The UTAUT model—developed by Venkatesh et al. (2003)—postulates that four constructs determine users' acceptance of technology: performance expectancy, effort expectancy, social influence, and facilitating conditions. These constructs have been extensively validated in technology acceptance research in higher education (Chao, 2019; Al-Sharafi et al., 2022). Notably, they can explain whether and how students engage with LMOOC platforms as part of their formal academic journey.

In parallel, the DeLone and McLean IS Success Model (2003) emphasizes the importance of system quality, service quality, and information quality in determining user satisfaction and continued use. The interaction of these components provides a comprehensive view of user experience and its downstream effect on outcomes (Tam & Oliveira, 2017; Kim et al., 2021).

An integrated framework combining these two models has gained traction in recent years. For example, Joo et al. (2022) applied this approach in South Korea to study smart learning environments, while Li and Wang (2023) explored the same in Chinese vocational e-learning systems. Their results affirm that satisfaction and

continued intention function as critical mediators between system design and learner performance.

1.2.5 Empirical Gaps in the Literature

Although recent literature recognizes the potential of LMOOCs in enhancing academic performance, there remains a lack of contextualized empirical studies in less-developed urban centers like Hohhot. Most prior studies are either global in scope or concentrated in economically developed regions such as Beijing or Shanghai (Zhou et al., 2023).

Moreover, few studies employ a mixed-method approach to triangulate quantitative findings with qualitative insights. A review of studies published between 2020 and 2024 shows a focus on user acceptance or satisfaction in isolation (e.g., Song & Lin, 2020), with limited effort to connect these to actual academic outcomes. In addition, research often overlooks regional and cultural contexts that influence how learners perceive online education systems.

Another limitation lies in the overreliance on single-theory models. Studies that use UTAUT typically stop at intention to use, while those based on the IS Success Model do not incorporate behavioral dimensions. As a result, there is a lack of comprehensive understanding of how both design and behavioral factors mediate academic success.

This study aims to bridge these gaps by focusing on university students in Hohhot, Inner Mongolia, as the target population, thereby addressing the lack of region-specific research in less-developed urban areas of China. Academic performance is positioned as the primary dependent variable, shifting the analytical focus from mere technology adoption or satisfaction to actual learning outcomes. To provide a comprehensive understanding of the factors influencing performance in LMOOCs, the study integrates the Unified Theory of Acceptance and Use of Technology (UTAUT) with the DeLone and McLean Information Systems (IS) Success Model. In doing so, it highlights the mediating roles of learner satisfaction and continued intention—two constructs that have often been overlooked in performance-oriented research. Furthermore, a mixed-method design is employed to combine the breadth of quantitative analysis with the depth of qualitative insights, enhancing the validity and contextual relevance of the findings.

1.2.6 Relevance of the Study

The findings from this research will contribute to the growing discourse on digital education, particularly within the context of second-tier Chinese cities. By focusing on academic performance in LMOOCs—a relatively underexplored outcome—the study provides evidence-based insights for improving instructional design, learner support, and policy development.

In practice, universities and educational platforms can benefit from a better understanding of what drives or hinders student success in digital language learning

environments. This is especially critical in regions like Hohhot, where learners are transitioning from traditional to blended and online modalities. Additionally, findings may inform broader national strategies under the "Smart Education of China" initiative (Liu et al., 2023).

From a theoretical standpoint, this study contributes by validating an integrated model that captures both system-level and learner-level influences on performance. This hybrid framework could be adapted for use in similar studies across other educational contexts.

1.3 Problem Statement

Although Language MOOCs (LMOOCs) offer a scalable and flexible approach to language education, their effectiveness in improving academic performance remains contested—especially in less-developed regions. Most empirical studies on LMOOCs have focused on learner satisfaction or technology acceptance in developed urban centers (Zhou et al., 2023; Barrot, 2021), with limited attention given to academic outcomes in emerging regional contexts. This presents a critical gap, particularly in regions like Hohhot, Inner Mongolia, where digital language learning is gaining momentum amid unique institutional, infrastructural, and learner-related constraints.

Hohhot is home to a diverse university student population, many of whom are now engaging with LMOOCs as part of blended or fully online programs. Despite substantial government investments in digital infrastructure and national strategies like

the “Smart Education of China” initiative (Liu et al., 2023), recent institutional reports and pilot studies indicate that students often struggle to complete LMOOC courses with satisfactory academic results. While learners may initially engage with LMOOCs, there is a high tendency for disengagement, limited motivation to continue, and difficulty translating digital learning into performance-based outcomes (Wei & Sun, 2022). Furthermore, issues such as poor course design, lack of support, and mismatch between learner expectations and platform features have been found to weaken academic success, even when access is no longer a barrier.

Although previous research has explored individual constructs such as satisfaction (Tam & Oliveira, 2017) or intention to use (Chao, 2019) in MOOCs, there is insufficient empirical evidence on how these factors mediate the relationship between LMOOC platform design and academic performance—particularly in underrepresented and under-researched areas like Inner Mongolia. More importantly, existing studies have often applied either the Unified Theory of Acceptance and Use of Technology (UTAUT) or the DeLone and McLean Information Systems Success Model in isolation, without integrating them to provide a holistic view of system quality, behavioral intention, and performance outcomes. This fragmented approach fails to fully explain why students continue—or discontinue—using LMOOCs and how this affects their learning achievement.

The lack of research that connects system features and learner behavior to measurable academic performance in LMOOCs in Hohhot limits the ability of policymakers, educators, and platform developers to design interventions that support student success. Addressing this gap is not merely of academic interest but has practical

implications: if learners in second-tier cities cannot benefit from high-quality online education due to unaddressed behavioral or system-related barriers, the broader goals of digital inclusion and education equity remain unmet.

Therefore, this study seeks to fill this gap by investigating how key system features and user acceptance constructs influence academic performance in LMOOCs, with satisfaction and continued intention as mediating variables. By targeting university students in Hohhot and employing an integrated theoretical model, this research aims to provide actionable insights for improving the effectiveness of digital language learning in similar underdeveloped contexts.

1.3.1 Limited Research on LMOOC Academic Performance in Underdeveloped Regions

While LMOOCs have become an increasingly popular tool for language learning worldwide, existing research has predominantly focused on their implementation and outcomes in economically advanced regions. Most studies emphasize learner satisfaction, usability, or technology adoption, often neglecting the academic performance dimension—especially in less-developed contexts such as Hohhot, Inner Mongolia (Barrot, 2021; Zhou et al., 2023). This geographic and thematic imbalance limits our understanding of how LMOOCs function for learners in second-tier or developing cities.

Despite policy efforts in China promoting the digitalization of education under initiatives such as Smart Education of China (Liu et al., 2023), there remains a lack of

empirical evidence on whether LMOOCs actually enhance academic achievement in these targeted regions. In Hohhot, students may face unique challenges, including limited pedagogical support, low platform engagement, or difficulty sustaining learning motivation—factors that directly influence their academic performance but remain under-investigated.

1.3.2 Disconnection Between System Design, Learner Behavior, and Performance

Previous studies have often examined system design features (e.g., content quality, service support, technical usability) or behavioral variables (e.g., satisfaction, intention to use) in isolation. However, this fragmented approach fails to fully explain how platform characteristics and user perceptions collectively influence academic outcomes. Although the DeLone and McLean IS Success Model emphasizes system and information quality (DeLone & McLean, 2003), and UTAUT focuses on technology acceptance (Venkatesh et al., 2003), these models have rarely been integrated to explore performance-specific outcomes in LMOOC contexts.

Moreover, learners' satisfaction and continued intention—two key predictors of sustained engagement—have not been adequately positioned as mediators between system quality, user perception, and academic performance. In the case of students in Hohhot, where motivation and digital literacy vary widely, these mediating variables may play a pivotal role in determining whether engagement with LMOOCs leads to tangible academic success.

1.3.3 Insufficient Contextualization in Existing Literature

Much of the literature discussing MOOCs and LMOOCs remains overly generalized, focusing on global trends or macro-level technological challenges (Martin-Monje & Bárcena, 2015; Hew et al., 2020). While such studies contribute to our broader understanding, they fail to reflect the realities of regional implementation, where access alone does not guarantee academic achievement. In Hohhot, although many students now have access to LMOOC platforms through university programs, completion rates remain low and language proficiency outcomes are mixed (Wei & Sun, 2022).

Factors such as lack of cultural adaptation, insufficient learner support, and ineffective course engagement strategies may contribute to these outcomes. Yet, these region-specific barriers are underrepresented in scholarly discourse, creating a gap between theoretical frameworks and practical realities. Without contextualized data, it is difficult for educators, policymakers, and platform developers to tailor solutions that address the real needs of students in underdeveloped regions.

1.3.4 Consequences of the Research Gap

The absence of integrated, region-specific studies has real consequences. Without a clear understanding of what drives academic success in LMOOCs in places like Hohhot, stakeholders risk making decisions based on assumptions that do not reflect actual student experiences. Misaligned course design, underutilized platforms, and poor

academic results may persist, ultimately undermining national goals related to educational equity and digital transformation.

Furthermore, if mediating variables like satisfaction and continued intention are overlooked, intervention strategies may target only surface-level improvements (e.g., adding more features or increasing access), while the deeper behavioral and motivational issues remain unaddressed.

1.3.5 Difference Between Past Studies and This Study

Despite the growing body of research on online learning systems and MOOCs, significant gaps remain in understanding the factors that influence students' academic performance, especially within developing countries and specific contexts like Inner Mongolia, China (Li, Adams, & Williams, 2013). Previous studies have primarily focused on aspects such as user satisfaction and continued intention to use e-learning platforms (Kapasia et al., 2020; Maqableh & Masa'deh, 2015). While these factors are crucial, there is a lack of comprehensive analysis regarding their combined impact on academic performance in MOOCs and Language MOOCs (LMOOCs) (Smith & Wei, 2020; Zhang, Liu, & Wang, 2019).

Moreover, existing research often examines individual factors in isolation, such as satisfaction or intention to use, without fully exploring their collective influence on academic performance. Zhang et al. (2019) found that "intention to use is positively associated with learner satisfaction and is a strong predictor of their actual usage

behavior and learning outcomes" (p. 678). However, they did not delve into how these factors jointly affect academic performance in online learning environments. Similarly, Smith and Wei (2020) highlighted the importance of learner satisfaction in online learning, stating that "learner satisfaction plays a crucial role in predicting their continued intention to use MOOCs" (p. 58), yet the direct relationship with academic performance was not fully explored.

Low academic performance and high dropout rates remain persistent challenges in MOOCs. Previous studies have attributed these issues to factors such as a lack of incentive (Azevedo & Marques, 2017), ambiguous assignments and course expectations (Trenholm & Peschke, 2020), minimal tutorial contact (Chen, Phang, & Zhang, 2018), and competing priorities (Yousef et al., 2014). However, little is known about the specific quality factors that motivate students to continue participating in a particular MOOC platform (Albelbisi, 2019). Gamage, Fernando, and Perera (2015) reviewed 4,745 peer-reviewed papers from 2012 to 2015 and found that only seven provided models for factors influencing MOOC quality, and only three offered empirical evidence on evaluating MOOC quality. This indicates a significant gap in understanding the role of quality factors in MOOC success.

In terms of theoretical frameworks, most studies have utilized models like the Unified Theory of Acceptance and Use of Technology (UTAUT) or the Information Systems (IS) Success Model independently to assess factors influencing user acceptance and satisfaction (Agudo-Peregrina & Pascual-Miguel, 2014; Dečman, 2015). However, the relationships between UTAUT constructs are not always clear, and there is a scarcity of research integrating these models to explore e-learning academic

performance (Abubakar & Ahmad, 2013; Maqableh & Azzam, 2021). Furthermore, few studies have examined the influence of quality factors on MOOC success, particularly in the context of developing countries (Yang, Shao, Liu, & Liu, 2017).

Specifically, in the realm of Language MOOCs, there is limited research focusing on their adoption and effectiveness in non-Western contexts like China, and even less in regions such as Inner Mongolia. LMOOCs differ from other MOOCs in that they offer a wider array of content and rely heavily on instructional videos for language learning, providing authentic socialization for learners (Ding & Shen, 2019; Hsu, 2021). However, their efficacy remains inconclusive, with some studies suggesting that learning language through LMOOCs may be less enjoyable and productive (Martín-Monje & Borthwick, 2021).

Inner Mongolia, with its unique socio-cultural context and diverse population, may affect students' adoption and use of LMOOCs (Zhou, 2019). Existing research predominantly focuses on Western countries, leaving a gap in understanding the factors influencing students' academic performance in using LMOOCs in China. Luo and Ye (2021) note that although there are over 200 LMOOC providers in the United States and Europe, there's a lack of studies on student experiences with LMOOCs in regions like Inner Mongolia.

To address these gaps, this study proposes an integrated model combining the UTAUT and IS Success models to explore factors affecting students' academic performance and use of LMOOCs. By examining quality features alongside performance expectancy, effort expectancy, social influence, and facilitating

conditions, the research aims to understand their collective impact on users' continued intentions, satisfaction, and ultimately, academic performance. This integrated approach addresses the limitations of prior studies by linking the problem statement explicitly to the theoretical frameworks used, thereby providing a stronger rationale for the research design.

The findings of this research are expected to provide valuable insights into the factors that impact students' academic performance of Language MOOCs in Inner Mongolia, China, and contribute to the existing literature on language learning in the context of MOOCs. The results may have implications for educators and designers in designing effective tools to promote the successful use of Language MOOCs and enhance students' academic performance in language learning.

1.4 Purpose of the Study

This study seeks to identify the underlying reasons for the high dropout rates observed in MOOCs. By uncovering these factors, it aims to provide valuable insights that can inform the development of interventions to mitigate these dropout rates and enhance the overall effectiveness of online learning experiences.

To achieve this, the research will utilize the Unified Theory of Acceptance and Use of Technology (UTAUT) model alongside the Information Systems (IS) Success model as the theoretical framework. These models will be employed to examine the factors influencing English as a Foreign Language (EFL) learners' academic

performance and their adoption of Language MOOCs (LMOOCs) for future teaching, learning, and design purposes. The goal is to improve the effectiveness and success of LMOOCs, particularly within the higher education context in China.

By integrating the IS Success model and the UTAUT model into a unified framework, this paper explores both the direct and indirect effects of various factors on users' continued intention and satisfaction, and how these relate to academic performance in MOOCs. The UTAUT model explains why individuals accept or reject information technology based on factors like performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). In contrast, DeLone and McLean's IS Success Model posits that a system can be evaluated based on educational quality, service quality, technical system quality, and content and information quality; these characteristics influence subsequent usage intentions and user satisfaction (DeLone & McLean, 2003).

There are two primary reasons for combining these theoretical models. First, as Han and Shin (2018) highlight, the high dropout rates in MOOCs can be attributed to factors from both models: performance expectancy and effort expectancy from the UTAUT model, and perceived usefulness and user satisfaction from the IS Success model. If learners do not perceive MOOCs as providing relevant and useful knowledge, or if the courses are not designed to support their learning activities effectively, they may choose to drop out. Understanding these factors helps educators and MOOC designers improve course design and delivery, thereby enhancing the learner experience and increasing the success rate of MOOCs.

Second, the integrated model addresses the research gap concerning how design and implementation decisions related to system characteristics and success factors affect users' continuous intention to use MOOCs. The findings from this research can help institutions reduce the risk of failure and overcome obstacles during MOOC implementation. Additionally, scholars can use the results as a foundation for conducting related studies in the e-learning domain.

According to Li, Duan, Fu, and Alford (2012), examining the relationship between e-learners' outcomes, experiences, perceptions, and their behavioral intentions to use the system is essential, as system usage is a crucial indicator of its success. If educators or instructional designers understand the factors that predict MOOC satisfaction, they can tailor course designs to create more satisfying experiences for learners. This study contributes to this body of knowledge and offers valuable implications for academia.

In summary, this research aims to fill a gap by investigating the effects of LMOOC quality features—including educational quality, service quality, technical system quality, and content and information quality—alongside factors like performance expectancy, effort expectancy, social influence, and facilitating conditions on students’ satisfaction and intentions regarding their academic performance in e-learning. It also examines the mediating effect of satisfaction on academic performance through continued intention. Furthermore, the study seeks to determine which factors best predict EFL learners’ academic performance when utilizing LMOOCs for teaching, learning, and design purposes.

1.5 Research Objectives

This study aim to explore a first-order scale. The first-order scale includes educational quality, service quality, technical system quality, and content and information quality, accompanied with performance expectancy, effort expectancy, social influence, facilitating conditions, students' satisfactions, continued intentions and academic performance.

In addition, this study aims to test for relationship between the quality features, performance expectancy, effort expectancy, social influence, facilitating conditions, and academic performance, as well as the mediating effect of continued intention and satisfaction on the relationship between quality features, performance expectancy, effort expectancy, social influence, facilitating conditions and academic performance. Based on the overall scope of the study, the following are the research objectives:

RO1: To determine the level of academic performance among EFL learners by using LMOOCs.

RO2: To examine the mediation of satisfaction between quality features (educational quality, content and information quality, technical system quality, and service quality) and academic performance by using LMOOCs.

RO3: To examine the mediation of continued intention between performance expectancy, effort expectancy, social influence, facilitating conditions and academic performance by using LMOOCs.

RO4: To examine the mediation of satisfaction and continued intention between quality features and academic performance.

RO5: To determine the impact of quality features (educational quality, content and information quality, technical system quality, and service quality), performance expectancy, effort expectancy, social influence, facilitating conditions, and other factors on the academic performance by using LMOOCs.

RO1: To determine the level of academic performance among EFL learners using LMOOCs, with the aim of informing educators and policymakers about the effectiveness of LMOOCs in enhancing language proficiency and academic outcomes. This will help in assessing whether LMOOCs are a viable tool for language education in higher education settings in China.

RO2: To examine the mediation effect of satisfaction between quality features (educational quality, content and information quality, technical system quality, and service quality) and academic performance when using LMOOCs, in order to provide insights for course designers and educational institutions on how improving these quality features can enhance learner satisfaction and, consequently, academic success.

RO3: To investigate the mediation effect of continued intention between performance expectancy, effort expectancy, social influence, facilitating conditions, and academic performance when using LMOOCs, so as to offer guidance on strategies that can increase learner engagement and retention, thereby informing practices that reduce dropout rates in LMOOCs.

RO4: To analyze the combined mediation effects of satisfaction and continued intention between quality features and academic performance, with the goal of

understanding how these factors interact to influence learning outcomes, thus enabling educators and policymakers to implement targeted improvements in LMOOC delivery and support services.

RO5: To determine the impact of quality features (educational quality, content and information quality, technical system quality, and service quality), along with performance expectancy, effort expectancy, social influence, facilitating conditions, and other factors on academic performance when using LMOOCs, providing evidence-based recommendations for enhancing the effectiveness and adoption of LMOOCs in higher education. This will assist in shaping educational practices and policies that promote successful integration of LMOOCs into the curriculum.

By explicitly connecting these objectives to practical implications, the research aims to directly impact educational practices and policy decisions related to LMOOCs. The findings will offer actionable insights for educators, instructional designers, and policymakers to improve the quality, adoption, and effectiveness of LMOOCs, ultimately enhancing academic performance among EFL learners in China.

1.6 Research Questions

Based on the study objectives, which served as a guidance for this study. The research questions for this study were as follows:

RQ1: What are the levels of academic performance among EFL learners by using LMOOCs?

RQ2: Does satisfaction as mediators influence the relationship between quality features (educational quality, content and information quality, technical system quality, and service quality) and academic performance by using LMOOCs?

RQ3: Does continued intention as mediators influence the relationship performance expectancy, effort expectancy, social influence, facilitating conditions and academic performance by using LMOOCs?

RQ4: Do satisfaction and continued intention as mediators influence the relationship between quality features and academic performance?

RQ5: What are the perceptions and experiences of learners regarding the impact of quality features (educational quality, content and information quality, technical system quality, and service quality), performance expectancy, effort expectancy, social influence, facilitating conditions, and other factors on their academic performance when utilizing LMOOCs?

1.7 Hypothesis

Based on Research Questions, the research hypotheses for this study was formulated. There were fourteen (14) research hypotheses that guided the Research Question of this study. The research hypotheses were as follows:

H1: There is a positive relationship between educational quality and satisfaction when using LMOOCs.

H2: There is a positive relationship between service quality and satisfaction when using LMOOCs.

H3: There is a positive relationship between technical quality and satisfaction when using LMOOCs.

H4: There is a positive relationship between content and information quality and satisfaction when using LMOOCs.

H5: There is a positive relationship between performance expectancy and continued intention when using LMOOCs.

H6: There is a positive relationship between effort expectancy and continued intention when using LMOOCs.

H7: There is a positive relationship between social influence and continued intention when using LMOOCs.

H8: There is a positive relationship between facilitating conditions and continued intention when using LMOOCs.

H9: There is a positive relationship between satisfaction and continued intention when using LMOOCs.

H10: There is a positive relationship between satisfaction and academic performance when using LMOOCs.

H11: There is a positive relationship between continued intention and academic performance when using LMOOCs.

H12: The mediation effect of satisfaction have a significant influence between quality features and academic performance when using LMOOCs.

H13: The mediation effect of continued intention have a significant influence between performance expectancy, effort expectancy, social influence, facilitating conditions and academic performance when using LMOOCs.

H14: The mediation effect of satisfaction and continued intention have a significant influence between quality features and academic performance when using LMOOCs.

1.8 Theoretical Framework and Models

This study employed an integrated model of UTAUT and DeLone & McLean's ISS model for predicting students' academic performance of LMOOCs in a university in Hohhot, Inner Mongolia of China.

1.8.1 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a widely used theoretical framework in information systems research that aims to explain the factors that influence users' acceptance and use of technology. UTAUT is a model of users' acceptance of technology, which can be seen in Figure 1.1, compiled and developed by Venkatesh, Morris, Davis, and Davis (2003). They reviewed and consolidated the constructs of eight models including the Theory of Reasoned Action (Fishbein & Ajzen, 1975), Technology Acceptance Model (TAM; Davis, 1989, 1993; Venkatesh & Davis, 2000), Motivational Model (Davis, Bagozzi, & Warshaw, 1992), Theory of Planned Behaviour (Ajzen, 1991), a Combined Technology Acceptance Model/Theory of Planned Behaviour (C-TAM-TPB; Taylor & Todd, 1995), the Model of Personal Computer Utilization (Thompson, Higgins, & Howell, 1991), Diffusion of Innovations

Theory (Rogers, 1995), and Social Cognitive Theory (Bandura, 1986). Among these eight models, TAM is extensively used to explore and examine students' acceptance of instructional technology in educational research. Nevertheless, TAM has been criticized for not providing information about users' opinions of specific technologies (Alkawsi, Ali, & Baashar, 2021); therefore, it suffers due to its limited capability, and inability to explain more than 40% of the variance in the dependent variable (Mohammad-Salehi, Vaez-Dalili, & Tabrizi, 2021). The four core determinants of UTAUT (i.e. effort expectancy, performance expectancy, social influence, and facilitating condition) have been validated to have predictive efficacy of as high as 70% for identifying factors affecting learners' adoption of technologies, including MOOCs (Jung & Lee, 2015; Mulik, Srivastava, & Yajnik, 2018; Oye, Iahad, & Rahim, 2014; Wu, Fang, & Lai, 2019). Here are some of them:

Figure 1.1

The Unified Theory of Acceptance and Use of Technology (UTAUT) model

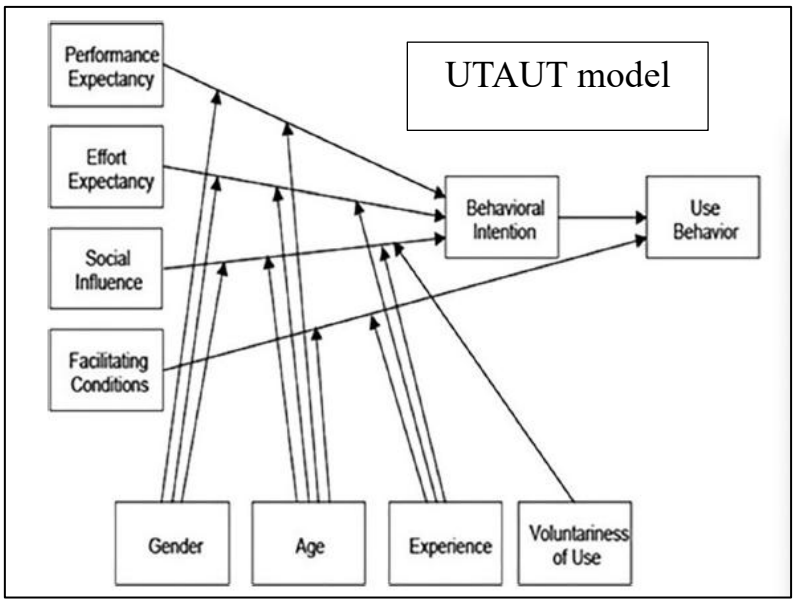


Figure 1.1. The Unified Theory of Acceptance and Use of Technology (UTAUT) model adapted from “User acceptance of information technology: Toward a unified view,” Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. , 2003, MIS Quarterly, 27(3), 425-478.

Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB): The TRA and TPB are two related theories that serve as the basis for the UTAUT model. According to the TRA, individuals' behavior is influenced by their attitudes toward the behavior and subjective norms. The TPB extends the TRA by adding perceived behavioral control as a third factor that affects behavior. Venkatesh et al. (2003) state that "the UTAUT model builds upon the TRA and TPB by integrating key constructs from these theories" (p. 447).

Innovation Diffusion Theory (IDT): IDT is a theory that explains how new technologies are adopted by individuals and organizations. According to IDT, the adoption of an innovation is influenced by five factors: relative advantage, compatibility, complexity, trialability, and observability. Venkatesh et al. (2003) incorporate some of these factors into the UTAUT model, stating that "UTAUT incorporates the key constructs of IDT that are directly relevant to IT adoption, such as relative advantage, compatibility, and complexity" (p. 449).

Social Cognitive Theory (SCT): SCT is a theory that explains how individuals learn and adopt new behaviors through observation and imitation of others. According to SCT, the adoption of a new behavior is influenced by three factors: personal factors, environmental factors, and behavior. Venkatesh et al. (2003) incorporate some of these

factors into the UTAUT model, stating that "UTAUT integrates several key constructs from SCT, such as self-efficacy, social influence, and facilitating conditions" (p. 451).

Expectancy-Value Theory (EVT): EVT is a theory that explains how individuals make decisions based on their expectations of outcomes and the value they place on those outcomes. According to EVT, the adoption of a new behavior is influenced by two factors: expectancy and value. Venkatesh et al. (2003) incorporate these factors into the UTAUT model, stating that "UTAUT integrates the key constructs of EVT, such as performance expectancy and effort expectancy" (p. 453).

Self-Determination Theory (SDT): SDT is a theory that explains how individuals are motivated to engage in certain behaviors based on their needs for autonomy, competence, and relatedness. According to SDT, the adoption of a new behavior is influenced by three factors: autonomy, competence, and relatedness. Venkatesh et al. (2003) incorporate some of these factors into the UTAUT model, stating that "UTAUT includes several constructs from SD".

The Technology Acceptance Model (TAM): The Technology Acceptance Model proposed by Davis, Bagozzi, and Warshaw, (Davisw et al., 1989) appears to be the most widely used innovation adoption model. This model has been used in a variety of studies to explore the factors affecting individual's use of new technology (Venkatesh & Davis, 2000). Davis (1989) suggests that the sequential relationship of belief–attitude–intention–behavior in TAM (as shown in Figure 1.2), enables us to predict the use of new technologies by users. Adapting theories from social-psychological/ behavioral literature, mainly the Theory of Reasoned Action (Ajzen & Fishbein, 1980),

TAM states that the most proximal antecedent to technology use is intention, which is now commonly regarded as the agent of acceptance (Tao et al., 2018; Venkatesh et al., 2003), and is also a widely validated predictor of actual behavior (Venkatesh et al., 2003). Intention, which is the main dependent variable identified in the studies conducted based on the TAM, is defined as the likelihood that an individual will use an IS. Intention plays a critical role in the actual use of a new technology (Davis, 1989). According to Venkatesh (2000), intention is determined by two beliefs: perceived usefulness and perceived ease of use. Perceived usefulness is defined as the extent to which an individual believes that using a technology will enhance his/her task performance, and perceived ease of use refers to the extent to which an individual believes that using a technology will be free of effort (Davis et al., 1989; Venkatesh, 2000). In addition, perceived ease of use has a significant and positive effect on perceived usefulness. TAM models are consistently shown to be able to explain technology acceptance in varied contexts, such as social network applications (Chen, Tao, & Zhou, 2019), automated vehicles (Zhang et al., 2019) and health informatics (Tao et al., 2018). The models have also been tested and extended in MOOC and other e-learning applications (Agudo-Peregrina & Pascual-Miguel, 2014; Fianu et al., 2018; Hsu et al., 2018; Mohammadi, 2015; Wu & Chen, 2016). For example, Hsu et al. (2018) compared behavioral intention patterns of traditional e-learning platform and MOOCs, and found that sense of community and perceived gains influence learners' behavioral intention of both general e-learning platform and MOOCs.

Figure 1.2

The Technology Acceptance Model (TAM)

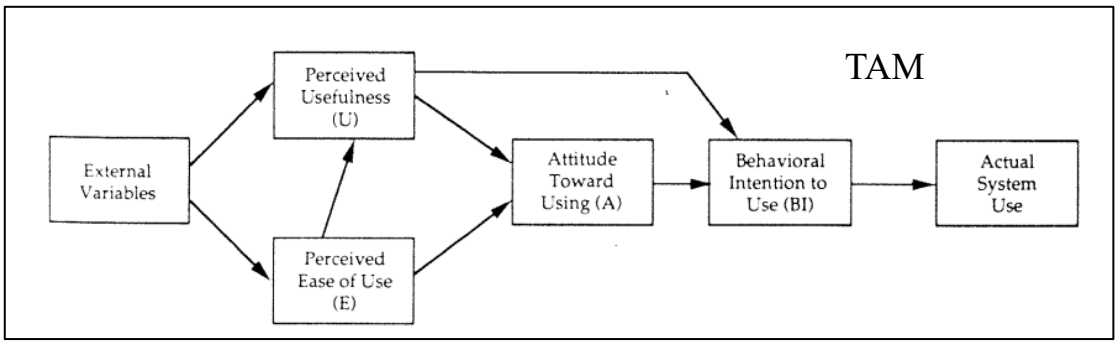


Figure 1.2. The Technology Acceptance Model (TAM). Adapted from "User acceptance of computer technology: A comparison of two theoretical models," by Davis, F. D., Bagozzi, R. P., & Warshaw, P. R., 1989, Management Science, 35(8), 982–1003.

In summary, in the The Unified Theory of Acceptance and Use of Technology (UTAUT) model, intention is affected by four factors, which are effort expectancy (EE), performance expectancy (PE), social influence (SI), and facilitating condition (FC).

1.8.2 DeLone and McLean IS Success Model

There are primarily three theories given in the area of IS success. Owing to complicated, interrelated, and multi-faceted nature of IS success, early attempts fell short in defining information system success. To address this problem, a success model was presented by DeLone and McLean (1992) which was later modified to compensate for changing in IS over time. In order to address criticism by several studies (such as Seddon and

Kiew, 1996) relating to some of its constructs such as individual impact, organizational impact and use, Seddon (1997) introduced a re-specified model of DeLone and McLean (1992) where use of the system was considered to have results of various types, perceived usefulness was introduced in the model as an IS measure. Latter in the year 2003, DeLone and McLean discussed many of the significant IS research efforts that have applied, validated, challenged, and offered enrichments to their original model. The updated IS success model (DeLone and McLean, 2003) incorporated a new construct 'service quality' and substituted the variables, individual impact and organisational impact, with net benefits with accounting for benefits at different levels of analysis.

IS success model (DeLone & McLean, 2003) identified six components of IS success as follows: system quality, information quality, and service quality, intention to use/use, user satisfaction, and net benefits. In IS success model, system use precedes user satisfaction and positive experience with use contributes to the enhancement of satisfaction which sequentially leads to a higher intention to use (Petter, DeLone, & McLean, 2008). The revised IS success model, as one of the most widely used model for IS success, has so far been frequently adopted to examine e-learning system success.

In IS success model proposed by DeLone and McLean (2003), technical system quality refers to technical success and the accuracy and efficiency of the communication system that produces information. Service quality constitutes the quality of the support that users receive from the IS such as training (Petter & McLean, 2009) and helpdesk. The success dimension content and information quality represents the desirable characteristics of an IS's output (Petter & McLean, 2009). Satisfaction is defined as the

individuals' perceptions of the extent to which their needs, goals, and desires have been fully met (Petter & McLean, 2009) and refers to their overall view of IS.

Figure 1.3

DeLone and McLean IS success model

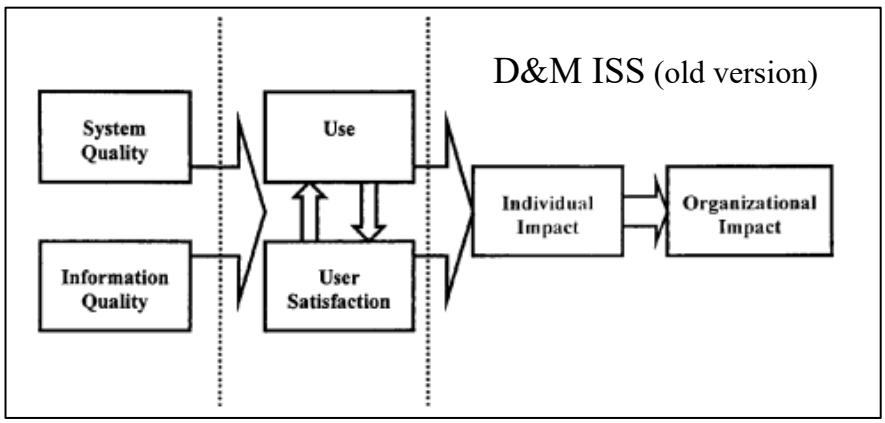


Figure 1.3. DeLone and McLean IS success model. Adapted from "Information systems success: The quest for the dependent variable," by DeLone, W. H., & McLean, E. R., 1992, *Information Systems Research*, 3(1), 60–95.

Figure 1.4

Updated DeLone and McLean IS success model

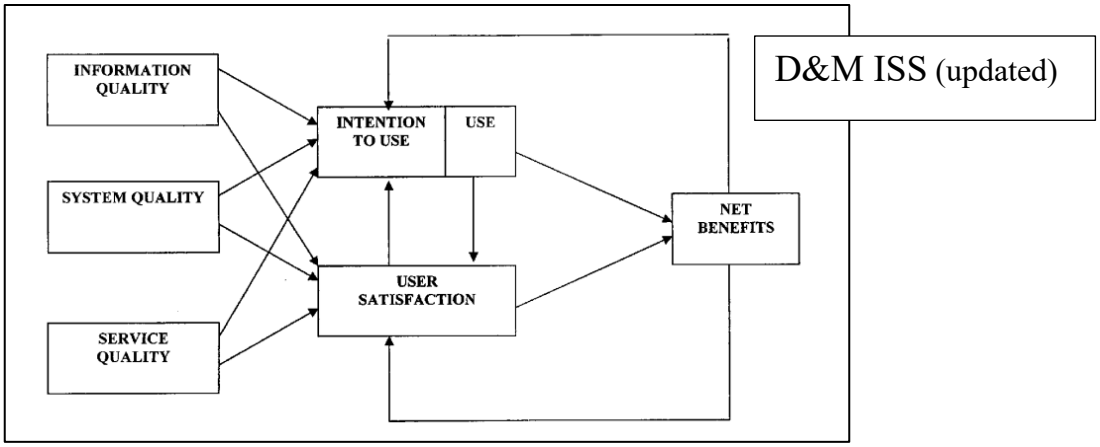


Figure 1.4. Updated DeLone and McLean IS success model. Adapted from "The DeLone and McLean model of information systems success: A ten year update.," by DeLone, W. H., & McLean, E. R., 2003, Journal of Management Information Systems, 19(4), 9–30.

In summary, in the DeLone and McLean IS success model (D&M model), net benefits is said to be a function of intention (INT) and satisfaction (SAT). These two factors, which are intention (INT) and satisfaction (SAT) are then further decomposed into lower level belief constructs.

Based on the The Unified Theory of Acceptance and Use of Technology (UTAUT) model and the DeLone and McLean IS success model (D&M model), there are three measures that could explain satisfaction (SAT). The measures are: (1) content and information quality (CIQ); (2) technical system quality (TSQ); and (3) service quality (SQ). Next, there are four measures that could explain intention (INT). The measures are: (1) effort expectancy (EE); (2) performance expectancy (PE); (3) social influence (SI); and (4) facilitating condition (FC).

Also, intention (INT) can be affected by satisfaction (SAT). Figure 1,2,3&4 above show the The Unified Theory of Acceptance and Use of Technology (UTAUT) model and the DeLone and McLean IS success model (D&M model) which served as the theoretical frameworks to guide this study.

1.9 Conceptual Framework

Related Researches and Theoretical Models: The conceptual framework that guided this study was adapted from The Unified Theory of Acceptance and Use of Technology (UTAUT) model by Venkatesh et al. (2003) and the DeLone and McLean IS success model by DeLone and McLean (2003).

1.9.1 Reviews from Past Literature

This section includes several conceptual frameworks from past studies.

1.9.1.1 Conceptual Framework from Mohammadi (2015)

Moreover, based on DeLone and McLean IS success model, Mohammadi (2015) present a model for measuring e-learning systems success. In this model, it has tried to resolve the weaknesses of previous models and to reinforce the strength of them. Based on the results of experts questionnaire, components such as technical system quality, educational system quality, content and information quality, service quality, user satisfaction, intention to use, perceived ease of use, and perceived usefulness, are suitable for measuring e-learning systems success (Mohammadi, 2015).

Mohammadi (2015) incorporated a new construct ‘educational quality’ to IS success model. Educational quality can be defined as the extent to which an IS system

managed to provide a conductive learning environment for learners in terms of collaborative learning (Hassanzadeh et al., 2012; Kim et al., 2012; Mohammadi, 2015). As Hassanzadeh et al. (2012) concluded in their study, educational quality positively affects individuals' satisfactions which is also confirmed by Kim et al. (2012) and Mohammadi (2015) who found that instructional quality have a significant positive effect on user satisfaction. After finalizing the indicators of conceptual model, based on students, alumni and instructors' opinions in universities, his research model was designed and its fitness was confirmed (Hassanzadeh et al. 2012). The final model is shown in Figure 1.5.

Therefore, according to Mohammadi (2015) and Hassanzadeh et al. (2012), educational quality (EQ) can also measure students' satisfaction, along with content and information quality (CIQ), technical system quality (TSQ), and service quality (SQ).

Figure 1.5

Mohammadi's research model

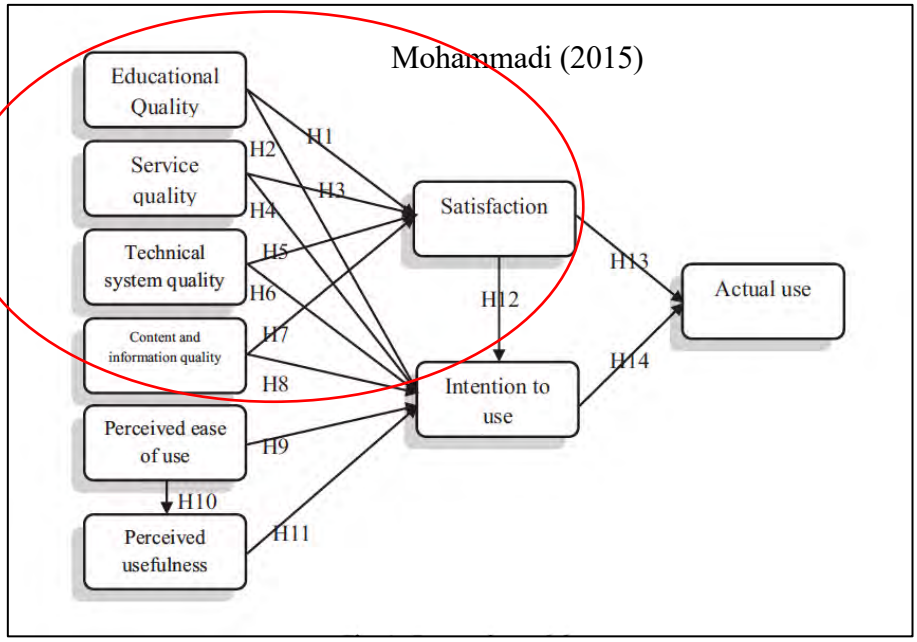


Figure 1.5. Mohammadi's research model. Adapted from "Investigating users' perspectives on e-learning: An integration of TAM and IS success model," by Mohammadi, 2015, Computers in Human Behavior, 45, 359–374.

1.9.1.2 Conceptual Framework from Wang et al. (2020)

In Wang et al. (2020)' research, which can be seen in Figure 1.6, they attempt to combine the UTAUT model, the TTF model, and user satisfaction together to explore the determinants that influence university students' continued intention to use MOOCs. The results indicate that technological factors such as performance expectancy and effort expectancy are crucial predictors of continued intention.

Also, Bhattacherjee (2001) introduced the ECT into the research about user's adoption of information system (IS) and he brought up the expectation confirmation model of IS continuance intention (ECM-ISC). That model includes four core variables: perceived usefulness, confirmation, satisfaction, and IS continuance intention. It assumes that user's continued usage intention of the IS decided by their previous satisfaction and perceived usefulness of the whole system (Bhattacherjee, 2001).

Figure 1.6

Wang et al. research model

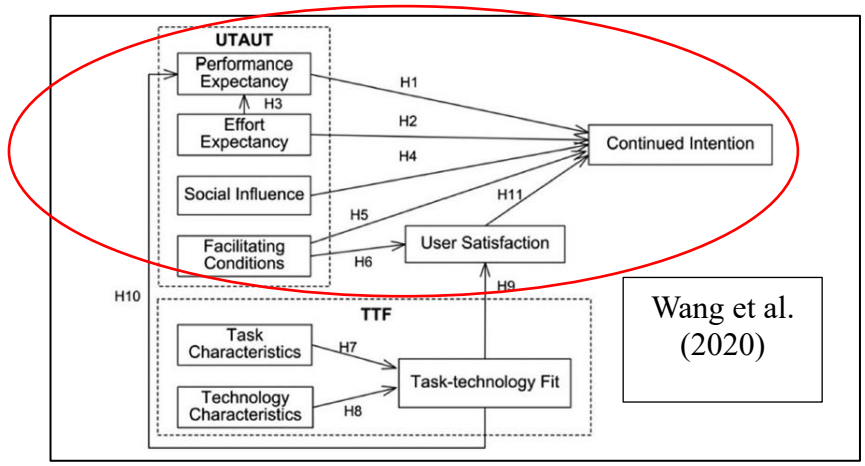


Figure 1.6. Wang et al. research model. Adapted from "Toward an understanding of university students' continued intention to use MOOCs: When UTAUT model meets TTF model.," by Wan, L., Xie, S., & Shu, A., 2020, Sage Open, 10(3), 2158244020941858.

Therefore, according to Wang (2020), effort expectancy (EE), performance expectancy (PE), social influence (SI), and facilitating condition (FC) can explain students' continued intention (CINT).

1.9.1.3 Conceptual Framework from Maqableh (2021)

Based on DeLone and McLean IS success model, some studies examined the relationship between students satisfaction from Internet usage and students performance (Goyal et al. 2011; Samaha and Hawi, 2016; Maqableh et al. 2021). They

found that Internet usage satisfaction had a significant positive impact on students academic performance. Samaha and Hawi (2016) found that a low level of life satisfaction were less likely to achieve satisfactory cumulative GPAs. Maqableh (2021) found that satisfaction and intention can directly affect students' academic performance, and intention also has a mediating role between satisfaction and academic performance, as shown in Figure 1.7.

Figure 1.7

Relationship between academic performance and satisfaction and intention

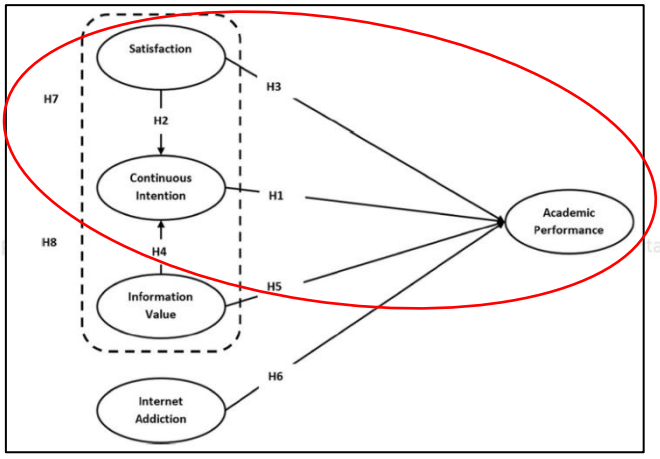


Figure 1.7. Relationship between academic performance and satisfaction and intention. Adapted from "Exploring the determinants of students' academic performance at university level: The mediating role of internet usage continuance intention," by Maqableh, M., Jaradat, M., & Azzam, A. A., 2021, Education and Information Technologies, 26, 4003-4025.

Therefore, according to Maqableh (2021), academic performance (AP) can be measured by satisfaction (SAT) and continued intention (CINT).

1.9.2 Conceptual Framework of This Study

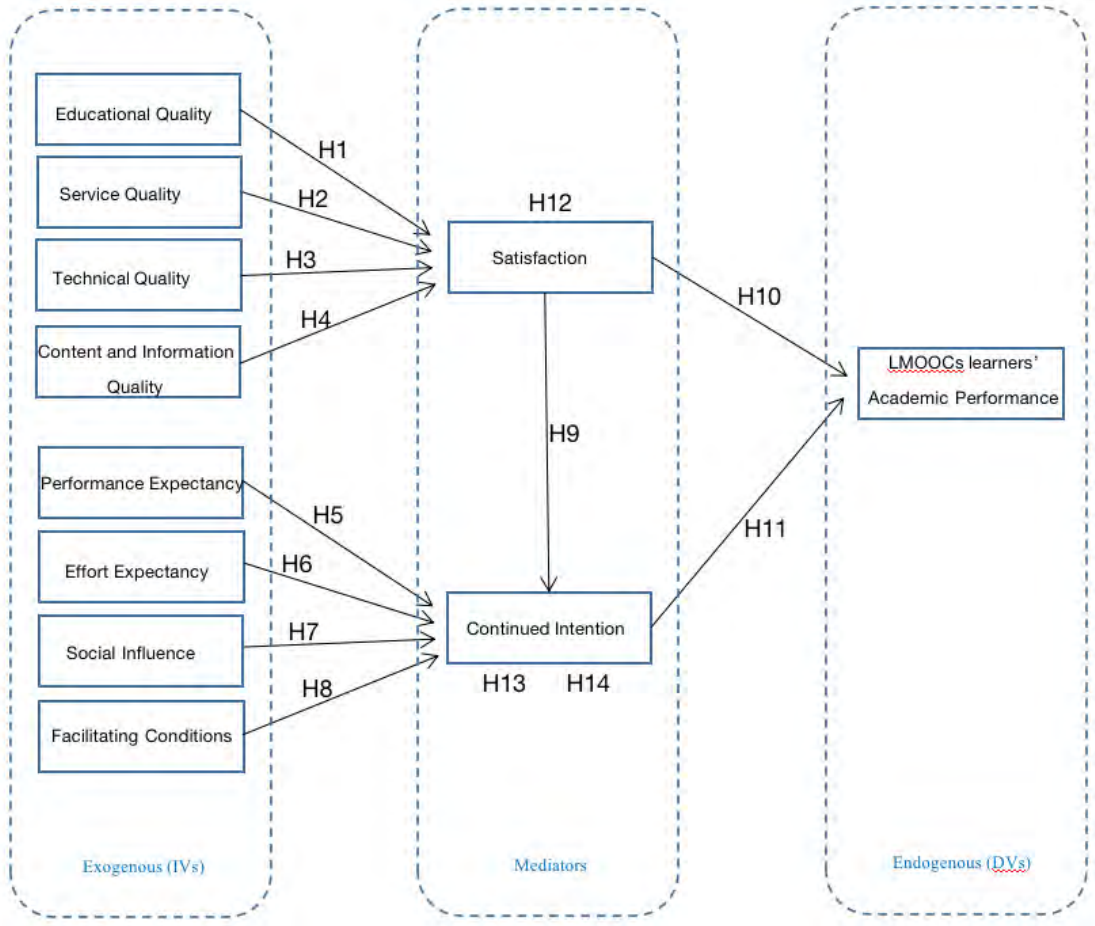
The proposed model retains the original relationships of the D&M model, which shows that the quality attributes can explain students' satisfaction (SAT). This study contributes to the development of a context-specific model that aligns with the unique requirements and specifications of e-learning success. It achieves this by replacing the net benefits construct with academic performance (AP) as the outcome variable. According to Maqableh, (2021), academic performance (AP) can be measured by satisfaction (SAT) and continued intention (CINT).

In summary, based on the UTAUT model and D&M ISS model, and combined with the theoretical models proposed by Mohammadi (2015), Wang (2020) and Maqableh (2021), academic performance(AP) is said to be a function of continued intention (CINT) and satisfaction (SAT). These two factors, which are contuined intention (CINT) and satisfaction (SAT) are then further decomposed into lower level belief constructs.

There are four measures that could explain continued intention (CINT) in this study. The measures are: (1) effort expectancy (EE); (2) performance expectancy (PE); (3) social influence (SI); and (4) facilitating condition (FC). Next, there are four measures that could explain satisfaction (SAT). The measures are: (1) content and information quality (CIQ); (2) Technical system quality (TSQ); (3) service quality (SQ); and (4) educational quality (EQ). Moreover, continued intention (CINT) can be affected by satisfaction (SAT). Figure 1.8 below shows the the conceptual framework that is used to guide this study.

Figure 1.8

Conceptual Framework



1.9.3 The Type of Variables and Structural Model

Exogenous variables are those that are external to the system under study and are not influenced by other variables within the model. They are considered as independent variables or inputs to the model. According to Hair et al. (2019), exogenous variables are "those that exert an influence on the endogenous variable but are not influenced by it" (p. 182).

Endogenous variables, on the other hand, are influenced by other variables within the model and are considered as dependent variables or outcomes of the model. They are affected by the exogenous variables and the relationships among the variables in the model. As stated by Hair et al. (2019), endogenous variables are "those that are influenced by exogenous variables in the model" (p. 182).

Therefore, the variables in this research can be categorized as follows:

- **Exogenous Variables:**

Quality Factors: content and information quality (CIQ), technical system quality (TSQ), service quality (SQ), and educational quality (EQ). These are external variables that have an impact on students satisfaction (SAT). They are considered exogenous as they are not influenced by other variables within the model.

Effort expectancy (EE), performance expectancy (PE), social influence (SI), and facilitating condition (FC): These are other exogenous variables that affect students' continued intention (CINT). They are independent of other variables in the model and influences students' continued intention.

- **Endogenous Variables:**

Academic Performance (AP): Academic performance is influenced by students' satisfaction (SAT) and continued intention (CINT), and indirectly influenced by the exogenous variables, such as quality factors, effort expectancy (EE), performance expectancy (PE), social influence (SI), and facilitating condition (FC). It is an

endogenous variable as it is dependent on the satisfaction and continued intention of the students.

- **Mediator Variable:**

Satisfaction (SAT) acts as a mediator variable, playing a crucial role in the relationship between the exogenous variables (quality factors) and academic performance (AP). It represents users' perception and evaluation of their overall satisfaction with the LMOOCs, which is influenced by the quality factors. Students satisfaction serves as a bridge between the external factors and the subsequent academic performance exhibited by the students.

Continued intention (CINT) acts as a mediator variable, playing a crucial role in the relationship between the exogenous variables (effort expectancy, performance expectancy, social influence, and facilitating condition) and academic performance (AP). It represents users' perception and evaluation of their overall continued intention with the LMOOCs, which is influenced by effort expectancy, performance expectancy, social influence, and facilitating condition. Students continued intention serves as a bridge between the external factors and the subsequent academic performance exhibited by the students.

In summary, the quality factors effort expectancy, performance expectancy, social influence, and facilitating condition act as exogenous variables that affect students satisfaction (SAT) and continued intention (CINT), which in turn influences academic performance (AP), which also shows the structural model in this study.

1.9.4 Aspects of the Structural Model and Measurement Model

The structural model represents the relationships and paths between the variables (Hair et al, 2019). In this study, the structural model indicates that satisfaction (SAT) and continued intention (CINT) have direct effect on academic performance (AP). Students satisfaction (SAT) and continued intention (CINT) act as mediators, as it is influenced by the exogenous variables (quality factors, effort expectancy, performance expectancy, social influence, and facilitating condition) and, in turn, influences the endogenous variable, academic performance (AP). The structural model provides insights into the causal relationships between these variables.

The measurement model focuses on the relationships between latent variables (constructs) and their observed indicators (Hair et al, 2019). In this study, the measurement model includes the quality factors (content and information quality (CIQ), technical system quality (TSQ), service quality (SQ), and educational quality (EQ)), satisfaction (SAT), continued intention (CINT), and academic performance (AP). Each latent variable is measured by multiple observed indicators, which are reflective in nature. For example, instructor quality, course content quality, educational system quality, support service quality, and technical system quality would have corresponding observed indicators that reflect these constructs.

In this study, the measurement model is 1st order, indicating that the latent variables directly measure their respective constructs. As stated by Hair et al. (2019), “First-order measurement models represent a single factor or a construct measured by a set of reflective indicators” (p. 182).

The type of measurement model employed in this study is reflective, wherein the observed indicators reflect the underlying constructs. Reflective measurement models assume that the observed variables are caused by their corresponding latent constructs. As described by Hair et al. (2019), “In reflective measurement models, we assume that the common factor (construct) causes the observed indicators” (p. 168).

1.10 Definition of Terms

This section defined several important variables that were constantly mentioned throughout this study, which provide both conceptual and operational aspects. The definition of terms were as follows:

1.10.1 MOOCs

MOOCs (Massive Open Online Courses) are online courses designed for large-scale participation and open access via the internet. According to the European Commission (2014), MOOCs are "online courses open to an unlimited number of participants, which can be accessed by anyone anywhere as long as they have an internet connection, are free of charge (though sometimes a fee may be required to obtain a certificate of completion) and do not require any formal qualifications for enrolment." MOOCs are online courses with unlimited access via the internet, providing interactive learning with multimedia resources. They are popular for their accessibility, reaching diverse

audiences, and offering opportunities for lifelong learning and professional development. (Sun & Shang, 2020)

In this research context MOOCs stands for Massive Open Online Course. It is an online course that is designed to be open to anyone with an internet connection, and often offered for free or at a low cost. MOOCs typically have a large number of participants and are often taught by professors or experts in the field. They are self-paced, meaning that participants can complete the coursework on their own schedule. MOOCs may offer video lectures, interactive exercises, discussion forums, and assessments. MOOCs have become increasingly popular in recent years as a way to provide education and training to a wide audience, and they have been used by universities, corporations, and other organizations to offer educational opportunities to learners around the world.

1.10.2 Language MOOCs

According to Maria Perifanou and Alexandra Bardi (2016) in their article "Language MOOCs: Definition, typology and research issues," published in the journal "Education and Information Technologies" in 2016, Language MOOCs can be defined as:

> "Online courses, designed to provide free and open access to language learning opportunities, which are aimed at learners who wish to acquire a new foreign language, improve their existing language skills or develop intercultural communicative competence in a flexible and interactive way."

In this research context LMOOCs are defined as Massive Open Online Courses specifically designed for language learning. In this research, LMOOCs refer to online courses provided by higher education institutions in China that focus on English or Mandarin instruction and are accessible to university students in Hohhot via platforms such as XuetangX and iCourse.

1.10.3 Academic Performance

Academic performance can be defined as "the degree to which a student meets learning objectives in terms of knowledge, skills, and abilities." This definition comes from the work of Tuckman and Kennedy in their book "Theories and Models of Student Development," where they emphasize the importance of measuring academic performance as a way of assessing student learning and progress (Tuckman & Kennedy, 2010, p. 69).

In this study, academic performance refers to students' self-reported achievement in language learning via LMOOCs. It is operationalized through a composite of perceived learning outcomes, task completion, and grade-related indicators collected via questionnaire items on a 7-point Likert scale (e.g., "I achieved good results in this LMOOC course"). Quantitative validation was performed using SmartPLS.

1.10.4 Continued Intention

"Continued intention refers to an individual's persistent commitment to pursuing a particular course of action over time" (Fishbein & Ajzen, 2010, p. 81).

Continued intention refers to the "persistence of an intention to engage in a behavior over time and in the face of competing intentions or situational demands" (Webb & Sheeran, 2006, p. 262).

Continued intention, in the context of the Unified Theory of Acceptance and Use of Technology (UTAUT), refers to "the user's intention to continue using a system" (Venkatesh et al., 2003, p. 452). It is one of the four key constructs in the UTAUT model, which also includes performance expectancy, effort expectancy, and social influence.

According to Venkatesh et al. (2003), continued intention is influenced by a number of factors, including "perceived usefulness, perceived ease of use, social influence, facilitating conditions, and hedonic motivation" (p. 452). These factors can either positively or negatively affect a user's intention to continue using a technology.

In this study, continued intention represents a student’s willingness to persist in using LMOOCs for future learning. It is measured through questionnaire items adapted from UTAUT literature (e.g., “I intend to continue using LMOOCs for language learning in the future”) using a 7-point Likert scale.

1.10.5 Satisfaction

Satisfaction can be defined as "the state of being pleased or contented; the fulfillment or gratification of a desire, need, or appetite" (Oxford English Dictionary, n.d.).

In the context of an Information Systems (IS) Success Model, satisfaction refers to the degree to which users of the system are pleased with its performance and features, which is also the operational definition in this study. It is one of the key dimensions of IS success, and is closely related to user acceptance and adoption of the system.

Satisfaction refers to students' overall contentment with their LMOOC learning experience. It is operationalized through survey items measuring perceived course quality, usefulness, and enjoyment (e.g., "I am satisfied with the content provided in this LMOOC") using a 7-point Likert scale.

1.10.6 Performance Expectancy

Performance expectancy is a construct in the Unified Theory of Acceptance and Use of Technology (UTAUT) that refers to "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh, Morris, Davis, & Davis, 2003, p. 453). In other words, it is the extent to which a user perceives that using a particular technology will improve their work or productivity.

Performance expectancy is one of the key constructs in the Unified Theory of Acceptance and Use of Technology (UTAUT) model, which is used to explain users' intentions and actual usage of a particular technology. According to Venkatesh et al. (2003), performance expectancy refers to "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (p. 447). In simpler terms, performance expectancy relates to the perceived usefulness of a technology in facilitating the user's work or task performance. In this study, performance expectancy specifically refers to students' perception of how LMOOCs improve their learning performance and provide relative advantages, which is similar to perceived usefulness in TAM.

Performance expectancy in this study refers to the degree to which students believe that using LMOOCs will enhance their academic performance. It is operationalized using survey items adapted from the UTAUT model (e.g., "Using LMOOCs improves my ability to perform well in language courses").

1.10.7 Effort Expectancy

According to Venkatesh et al. (2003), "effort expectancy refers to the degree of ease associated with the use of the system, which includes the perceived ease of use of the system, the complexity of the system, and the amount of cognitive and physical effort required to use the system" (p. 447).

One of the key constructs in UTAUT is "effort expectancy," which refers to the degree of ease associated with the use of a technology. According to Venkatesh et al. (2003), the authors of UTAUT, effort expectancy is defined as "the degree of ease associated with the use of the system." In other words, it is the perceived level of effort required to use a technology. The effort expectancy is influenced by several factors, including the complexity of the technology, the degree of user support available, and the user's experience and skill level with similar technologies.

Effort expectancy is an important factor in determining user acceptance and use of technology, as users are more likely to adopt and continue using a technology if they perceive it as easy to use. Effort expectancy in this study is defined as the perceived ease of using LMOOCs. It is assessed using questionnaire items (e.g., “Learning how to use LMOOCs is easy for me”) on a 7-point Likert scale.

1.10.8 Social Influence

Social influence is an important construct in the Unified Theory of Acceptance and Use of Technology (UTAUT). According to the theory, social influence refers to "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p. 447).

Venkatesh et al. (2003) explain that social influence can be divided into two components: normative pressure and subjective norm. Normative pressure refers to the "degree to which an individual perceives that important others expect him or her to

perform the behavior in question" (p. 448). Subjective norm, on the other hand, refers to the "degree to which an individual perceives that important others think he or she should perform the behavior in question" (p. 448).

In this study, it specifically indicates students' perceived recognition from influential persons on the continued use of MOOCs, that is, the students will care about the attitude and opinion from their important friends, classmates, and teachers. Their attitude and opinion will influence students' adoption tendency and continued intention. Social influence denotes the extent to which students perceive that important people (e.g., teachers, peers) believe they should use LMOOCs. It is measured via items such as "People who are important to me think I should use LMOOCs for language learning."

1.10.9 Facilitating Conditions

Facilitating conditions in the Unified Theory of Acceptance and Use of Technology (UTAUT) are defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh et al., 2003, p. 447).

Facilitating conditions refer to the extent to which an individual perceives that the necessary resources and support are available to use the technology effectively (Venkatesh et al., 2003). This construct is one of the four key determinants of user

acceptance of information technology in the Unified Theory of Acceptance and Use of Technology (UTAUT) model.

According to Venkatesh et al. (2003), facilitating conditions are defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (p. 447). This construct includes factors such as the availability of technical support, training, and infrastructure resources that can facilitate the use of technology.

In the UTAUT model, facilitating conditions are considered a significant determinant of technology adoption because they can significantly impact the user's ability to use the technology effectively. When these conditions are perceived to be favorable, users are more likely to adopt the technology and use it in a way that supports their goals and objectives. On the other hand, if users perceive that the necessary resources and support are not available, they may resist the technology or abandon it altogether (Venkatesh et al., 2003).

In this study, facilitating conditions particularly indicates students' perception about the convenience degree of accessing and using MOOCs as well as the completeness and compatibility of various technological supports. If the facilities and technological condition do not support common access or use of MOOCs, it is barely possible for them to choose it. Facilitating conditions refer to the perceived availability of resources and support to use LMOOCs effectively. This includes access to devices, internet, and technical help, assessed with items like "I have the resources necessary to use LMOOCs."

1.10.10 Content and Information Quality

Content and information quality refers to "the extent to which information is relevant, accurate, complete, and up-to-date" (DeLone and McLean, 2003). In other words, content quality is a measure of how well the information provided by an information system meets the needs of its users.

In this study, in the context of an Information Systems (IS) Success Model, content and information quality refer to the accuracy, completeness, relevance, and timeliness of the information provided by the system. They are two key dimensions of IS success, and are closely related to user satisfaction and performance. This refers to the perceived relevance, clarity, and usefulness of the instructional content provided in LMOOCs. It is measured using items such as "The LMOOC content was up-to-date and helpful for my learning."

1.10.11 Technical System Quality

Technical System Quality, which refers to the "quality of the system itself in terms of ease of use, response time, and reliability" (DeLone and McLean, 2003).

The Delone and McLean IS Success Model considers technical system quality as one of the six dimensions of IS success, along with content and information quality, use, individual impacts, and organizational impacts. The model suggests that technical

system quality is a critical factor in determining the success of an IS, and that it can have a significant impact on user satisfaction and performance.

In this research, in the context of an Information Systems (IS) Success Model, technical system quality refers to the degree to which the system meets the user's expectations in terms of its functionality, reliability, usability, and performance. It is one of the key dimensions of IS success, and is closely related to user satisfaction and system usage. System quality refers to the reliability, usability, and responsiveness of the LMOOC platform. It is measured through items such as "The LMOOC platform is easy to navigate and functions reliably."

1.10.12 Service Quality

In the context of an Information Systems (IS) Success Model, service quality refers to the degree to which the system provides high-quality service and support to its users, including timely and effective assistance, clear and accurate information, and responsive and helpful interactions with support staff (DeLone and McLean, 2003). It is one of the key dimensions of IS success, and is closely related to user satisfaction and system usage.

The Delone and McLean IS Success Model considers service quality as one of the six dimensions of IS success, along with system quality, information quality, use, individual impacts, and organizational impacts. The model suggests that service quality

is a critical factor in determining the success of an IS, and that it can have a significant impact on user satisfaction and performance.

In this study, service quality refers to the quality of the support that users receive from IS system. Service quality encompasses several aspects of the system, such as its customer service, technical support, helpdesk operations, and user training and documentation. A system that is perceived as high in service quality is expected to provide fast and efficient support, accurate and helpful information, and friendly and responsive interactions with support staff. Service quality refers to the quality of learner support services, including instructor interaction and technical help, operationalized via questionnaire items like “The support services for this LMOOC were helpful and responsive.”

1.10.13 Educational Quality

According to DeLone and McLean (2003), educational quality is defined as "the degree to which the system provides relevant and timely information to support learning and knowledge generation" (p. 61). This means that educational quality is a measure of how well the information system supports the educational goals and objectives of the organization or institution.

In the context of an Information Systems (IS) Success Model, educational quality refers to the degree to which the system supports and enhances the educational process and outcomes, including the acquisition of knowledge and skills, the

development of critical thinking, and the achievement of learning goals. It is one of the key dimensions of IS success in the context of educational settings, and is closely related to student satisfaction and performance.

In this study, it refers to a conductive learning environment in terms of collaborative learning. Educational quality refers to the overall instructional design, pedagogical effectiveness, and alignment between learning objectives and teaching strategies in the LMOOC. It encompasses how well the course promotes engagement, critical thinking, and language skill development. In this study, educational quality is measured using a 7-point Likert scale with items such as "The instructional design of this LMOOC effectively supported my learning" and "This course promoted my language proficiency through well-structured teaching strategies."

1.11 Significance of the Research

For this study, the Unified Theory of Acceptance and Use of Technology (UTAUT) model and DeLone & McLean's IS success model will be used as the theoretical framework for studying the factors that influence the EFL learners' academic performance to adopt LMOOCs for teaching, learning and designing purposes in the future and to improve LMOOCs using effectiveness and success, particularly in the higher education context in Hohhot, Inner Mongolia China. Apart from that, the factors that best predict students' intention to adopt LMOOCs in the future were further explored. If educators or instructional designers know something about these factors that can predict LMOOCs success, they can then tailor the course design in a way to

create a more satisfying LMOOCs experience for learners. This study makes two contributions related to the current research in this field of study, which are from the perspective of practical significance of study and theoretical significance of study, respectively.

First, this research will contribute to the growing body of knowledge in regards to the use of LMOOCs based on EFL learners' perspectives and opinions. This is because it is important to place the utmost consideration of learners' needs and perception while designing, developing, and delivering distance education courses (Sahin & Shelley, 2008). It is the learners' needs that is the most crucial factor and should be put into consideration when planning and designing a technology-integrated lesson. In an online course, learners' satisfaction is an important dimension in understanding the success of the course (Simonson et al., 2007), and failing to meet this may result to low level of students' involvement (Hall, 2001, as cited in Sahin & Shelley, 2008). By researching on the issues that are related to satisfactions and intentions to use e-learning platform, much emphasis is placed on analyzing students' intention by using MOOCs (Bartolomé & Steffens, 2015; Zhang, Chen, Phang, & Zhang, 2018; Wu & Chen, 2016). While, this study will give an in-depth insight into designing a conducive language MOOCs (LMOOCs) learning experience according to students' preference, their own point of view, their intention and academic performance. Therefore, this is the practical significance of study.

Second, various studies in regards to MOOC usage have been conducted which used different theoretical models to examine the factors related to technology usage such as the Theory of Reasoned Action by Ajzen and Fishbein (1980), the Decomposed

Theory of Planned Behaviour (DTPB) by Taylor and Todd (1995) and Theory of Planned Behaviour by Ajzen (1991). This research applied the integrated model of UTAUT model and IS success model, which are two theoretical models that could explain satisfaction, intention and academic performance on technology usage in a more comprehensive way. In addition, by using the integrated model, it provides a better understanding on the study of LMOOC implementation and students' learning outcomes to use it for teaching and learning purposes. This study is the first to examining model of UTAUT and ISS on students' academic performance. Furthermore, this study is also distinguished from other studies by investigating the mediating role of satisfaction on the relationship between quality features and academic performance, and the mediating role of continued intention between performance expectancy, effort expectancy, social influence, facilitating conditions and academic performance. This study contributes to such knowledge and provides insightful implications for academia. Therefore, this is the theoretical significance of study.

In summary, this study provides a more comprehensive and detailed explanation based on the integrated UTAUT and ISS model to understand factors influencing students' satisfaction, intention and academic performance to use LMOOC for EFL learners in Hohhot, Inner Mongolia China.

1.12 Limitations

There are several limitations to this study. The first limitation was due to the small scope of study. In this study, the sample size was only limited to participants in a public university in Hohhot, Inner Mongolia China.

The generalizability of this study is only limited to students who enrolled in courses and form of learning in a specific area. Therefore, results from the findings of this study need careful interpretation due to the generalizability issues. Secondly, there may be other influencing factors that are not included. There are drawbacks of selected factors in that the IS success model may hard to identify all the potential influencing factors. Thirdly, this research was conducted in Hohhot, Inner Mongolia China, where LMOOCs are developing rapidly but are still in their initial stages. Thus, survey respondents participated of their own volition which may reflect a self-selection bias.

1.13 Chapter Summary

This chapter focused on the background of the study, particularly regarding the influencing factors of LMOOCs in the teaching, learning and designing process. Web-based MOOCs open up the society to a vast opportunity and possibility towards the educational field. Although technology offers the society with various possibilities, however, the implementation of the use of LMOOC in educational system has not been without any issues as many still prefers the traditional learning setting.

Therefore, through this study, it was hoped that it will contribute a greater understanding to the educational communities whether EFL learners find using as beneficial to their learning when online activities are conducted to supplement the face-to-face meeting. In addition, this study also aimed to predict factors that relate to students' academic performance to adopt the use of LMOOCs for teaching and learning purposes. Subsequently, the factors that best predict students' academic performance to use LMOOCs in the future were then further explored.

The purpose of an introduction is to present the motivation behind the research, to defend it: also, the introduction shows this study in a theoretical context and helps to understand objectives clearly. This chapter introduces the research problem and indicates its importance and validity. It sets forth the context, hypotheses to be tested, and the research questions and objectives.

In the next chapter, which is Chapter 2, various literature regarding the use of e-learning platform, particularly LMOOCs for educational purposes were discussed. This is to enlighten the concept and provide an in-depth understanding based on the studies that have been conducted in the past in regards to the use the tool. In addition, the literature review section also discussed the theoretical and the conceptual framework that became the basis of this study.