EDUCATION SUPPLY CHAIN MANAGEMENT: SATISFACTION AMONGUUMSTUDENTS IN MOOCS COURSES

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EDUCATION SUPPLY CHAIN MANAGEMENT: SATISFACTION AMONG UUM STUDENTS IN MOOCS COURSES

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ABSTRACT

The adoption of Massive Open Online Courses (MOOCs) has significantly transformed the education landscape by providing scalable, flexible, and cost-effective learning opportunities. This study examines the role of Education Supply Chain Management (ESCM) in optimizing MOOCs for higher education institutions, with a particular focus on Universiti Utara Malaysia (UUM). By integrating the Technology Acceptance Model (TAM), the research explores the influence of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Enjoyment (PE), and Behavioral Intention (BI) on students' engagement with MOOCs. Additionally, A quantitative research approach was employed, using structured questionnaires to collect primary data from UUM students actively engaged with MOOCs. The sample size was determined using Krejcie and Morgan's (1970) table, with a total of 370 respondents selected through a systematic sampling technique. Data were analyzed using the Statistical Package for the Social Sciences (SPSS), applying descriptive and inferential statistical methods to assess the relationships among the study variables. Findings reveal that PU, PEOU, and PE significantly impact BI, highlighting the importance of user-friendly platforms and engaging course content in fostering learner retention. Furthermore, the study identifies key challenges in MOOC implementation, including high dropout rates, limited learner motivation, and content variability. By integrating ESCM principles, institutions can enhance resource allocation, optimize course design, and improve overall learning outcomes. The research contributes both theoretically and practically by bridging the gap between supply chain management and digital education, offering insights for policymakers, educators, and MOOC providers to refine online learning strategies.

Keywords: Acceptance Model, Behavioral Intention**,** Education Supply Chain Management, MOOCs, Perceived Ease of Use, Technology Perceived Usefulness,

ABSTRAK

Penggunaan Massive Open Online Courses (MOOCs) telah mengubah landskap pendidikan secara signifikan dengan menyediakan peluang pembelajaran yang berskala besar, fleksibel, dan kos efektif. Kajian ini meneliti peranan Pengurusan Rantaian Bekalan Pendidikan (Education Supply Chain Management - ESCM) dalam mengoptimumkan MOOCs untuk institusi pengajian tinggi, dengan tumpuan khusus kepada Universiti Utara Malaysia (UUM). Dengan mengintegrasikan Model Penerimaan Teknologi (Technology Acceptance Model - TAM), kajian ini meneroka pengaruh Persepsi Kegunaan (Perceived Usefulness - PU), Persepsi Kemudahan Penggunaan (Perceived Ease of Use - PEOU), Persepsi Keseronokan (Perceived Enjoyment - PE), dan Niat Tingkah Laku (Behavioral Intention - BI) terhadap penglibatan pelajar dengan MOOCs. Pendekatan penyelidikan kuantitatif telah digunakan, dengan soal selidik berstruktur bagi mengumpul data primer daripada pelajar UUM yang aktif menggunakan MOOCs. Saiz sampel ditentukan menggunakan jadual Krejcie dan Morgan (1970), dengan sejumlah 370 responden dipilih melalui teknik persampelan sistematik. Data dianalisis menggunakan Perisian Statistik untuk Sains Sosial (SPSS), dengan menggunakan kaedah statistik deskriptif dan inferensi bagi menilai hubungan antara pemboleh ubah kajian. Dapatan menunjukkan bahawa PU, PEOU, dan PE mempunyai kesan yang signifikan terhadap BI, menekankan kepentingan platform yang mesra pengguna dan kandungan kursus yang menarik dalam mengekalkan penglibatan pelajar. Selain itu, kajian ini mengenal pasti cabaran utama dalam pelaksanaan MOOC, termasuk kadar keciciran yang tinggi, motivasi pelajar yang terhad, dan variasi kandungan. Dengan mengintegrasikan prinsip ESCM, institusi dapat meningkatkan peruntukan sumber, mengoptimumkan reka bentuk kursus, dan memperbaiki hasil pembelajaran secara keseluruhan. Kajian ini menyumbang dari segi teori dan praktikal dengan merapatkan jurang antara pengurusan rantaian bekalan dan pendidikan digital, serta menawarkan panduan kepada pembuat dasar, pendidik, dan penyedia MOOC dalam memperkemas strategi pembelajaran dalam talian.

Kata kunci: Model Penerimaan, Niat Tingkah Laku, Pengurusan Rantaian Bekalan Pendidikan, MOOCs, Persepsi Kemudahan Penggunaan, Persepsi Kegunaan Teknologi.

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MOOCs	Massive Open Online Courses
ESCM	Education Supply Chain Management
PU	Perceived Usefulness
PEOU	Perceived Ease of Use
PE	Perceived Enjoyment
BI	Behavioral Intention to Use
TAM	Technology Acceptance Model
SPSS	Statistical Package for the Social Sciences

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CHAPTER ONE

INTRODUCTION

1.0 Background of study

Education Supply Chain Management (ESCM) is a strategic framework designed to optimize the flow of educational resources, services, and information among institutions, educators, and learners (Rahman et al, 2021; Sannegadu et al., 2018). By ensuring the efficient development, delivery, and consumption of learning materials, ESCM addresses critical challenges such as scalability, accessibility, and quality assurance in education (Huang, et al., 2024). Within this framework, Massive Open Online Courses (MOOCs) have emerged as a transformative innovation, reshaping the global education landscape (Huynh-Cam et al, 2024). MOOCs leverage Information and Communication Technologies (ICTs) to democratise access to learning, offering flexible and open educational opportunities without formal entry barriers (Rahman et al, 2021; Sannegadu et al.., 2018). Unlike traditional eLearning, which often supplements in-class instruction, MOOCs provide a scalable alternative, enabling mass participation across diverse demographics (Chiu et al.., 2021). The rapid expansion of MOOCs accelerated by the shift to online learning during the COVID-19 pandemic (Chiu et al.., 2021) demonstrates their potential to bridge gaps in educational equity (Huynh-Cam et al, 2024). However, their integration into the education supply chain faces significant challenges, including high dropout rates, inconsistent content quality, and logistical inefficiencies in resource distribution (Huynh-Cam et al, 2024).

From an ESCM perspective, MOOCs operate within a complex network involving multiple stakeholders and processes (Pampouri et al., 2021). These include content creation (course design, instructor collaboration), delivery (platform infrastructure, technological scalability), and

consumption (learner engagement, support systems). Efficient ESCM practices can enhance MOOC sustainability by aligning these processes with the needs of learners, educators, and institutions (Chiu et al.., 2021). For instance, applying lean principles originally developed in manufacturing can help streamline MOOC production, reducing waste and improving cost efficiency while maintaining educational quality (Cicha et al., 2021). Despite these advantages, MOOCs continue to struggle with low completion rates and variable learner engagement (Huynh-Cam et al, 2024). Research attributes these challenges to factors such as insufficient learner motivation (Rahman et al, 2021; Huynh-Cam et al, 2024).

To better understand the barriers to MOOC adoption, the Technology Acceptance Model (TAM) offers a valuable theoretical framework (Rahman et al, 2021). Developed by Davis (1989), TAM posits that perceived usefulness (PU) and perceived ease of use (PEOU) are key determinants of technology adoption (Pampouri et al., 2021). In the context of MOOCs, PU reflects learners' belief that the course will enhance their skills or knowledge, while PEOU measures the platform's user-friendliness and accessibility (Voudoukis, & Pagiatakis, 2022). Additionally, perceived enjoyment (PE) the intrinsic satisfaction derived from using MOOCs has emerged as a significant factor influencing behavioral intention (BI) to continue learning (Dai et al., 2020). Elements such as gamification, interactive content, and peer collaboration can enhance PE, indirectly improving PEOU and learner retention (Rahman et al., 2021). However, while TAM provides insights into individual acceptance, it does not fully account for systemic challenges related to ESCM, such as institutional partnerships, cost models, and regulatory constraints (Alqahtani & Rajkhan, 2020).

This study seeks to bridge these gaps by integrating TAM constructs (PU, PEOU, PE, and BI) with ESCM principles to provide a holistic understanding of MOOC effectiveness (Rahman et al,

2021). By addressing these questions, the study aims to generate actionable insights for optimizing MOOC design, delivery, and policy, ultimately contributing to a more sustainable and efficient education supply chain (Rahman et al, 2021).

1.1 Problem Statement

The global expansion of Massive Open Online Courses (MOOCs) has promised to democratize education, yet significant disparities in adoption and effectiveness persist across different regions, revealing systemic limitations in their design and implementation (Voudoukis, N., & Pagiatakis, 2022). While developed nations have leveraged MOOCs to supplement traditional education, developing regions particularly in Asia and Africa face unique challenges that exacerbate existing educational inequalities (Rahman et al., 2021). In Africa, where internet penetration remains below 40% (World Bank, 2022), limited digital infrastructure and high data costs restrict access to MOOC platforms, disproportionately excluding low-income learners (Voudoukis, N., & Pagiatakis, 2022). Similarly, in South Asia, where mobile-first learning is crucial, many MOOCs remain desktop-oriented, failing to accommodate the primary device used by millions of students (UNESCO, 2021). Beyond accessibility, cultural and pedagogical mismatches further hinder engagement; course content often reflects Western-centric perspectives, neglecting local knowledge systems and languages, which discourages participation from non-English-speaking populations (Alam et al., 2023).

Even where access exists, completion rates remain critically low averaging below 10% globally due to insufficient learner support, weak motivation structures, and a lack of formal recognition for MOOC certifications in many employment markets (ICEF Monitor, 2022). In regions like

Sub-Saharan Africa, where credential recognition is already a barrier to workforce entry, the absence of standardized accreditation for MOOCs diminishes their perceived usefulness, a key factor in the TAM (Rahman et al., 2021). Meanwhile, in Asia, where education systems are highly exam-driven, the self-paced nature of MOOCs conflicts with traditional learning cultures, reducing sustained engagement (Dhawal Shah, 2023).

From an Education Supply Chain Management (ESCM) perspective, these challenges highlight inefficiencies in content localization, delivery mechanisms, and institutional partnerships (Rahman et al., 2021). Many MOOC providers prioritize scalability over adaptability, resulting in a one-size-fits-all approach that fails to address regional needs (Pampouri et al., 2021). For instance, while universities in Europe and North America integrate MOOCs into hybrid degree programs, institutions in developing economies often lack the resources to adopt them effectively, widening the global education divide (Voudoukis, & Pagiatakis, 2022). Furthermore, the absence of sustainable financing models such as government subsidies or corporate sponsorships in low-income regions limits long-term viability, forcing platforms to rely on premium models that exclude the most disadvantaged learners (World Economic Forum, 2023).

The convergence of these issues technological barriers, cultural misalignment, pedagogical rigidity, and economic constraints calls for an urgent reevaluation of MOOC frameworks (Pampouri et al., 2021). Current research predominantly examines these problems in isolation, with TAM focusing on individual adoption and ESCM analyzing operational logistics, but rarely intersecting to address the holistic ecosystem (Voudoukis, & Pagiatakis, 2022). Without an integrated approach that considers regional disparities, learner diversity, and institutional capacities, MOOCs risk perpetuating rather than alleviating global educational inequities (Voudoukis, & Pagiatakis, 2022). This study seeks to bridge this gap by proposing a unified

model that aligns TAM's behavioral insights with ESCM's systemic strategies, while incorporating lean principles to enhance efficiency and inclusivity across diverse socioeconomic contexts (Pampouri et al., 2021). Only through such a comprehensive framework can MOOCs truly fulfill their promise of equitable, high-quality education for all.

1.2 Research questions

i. Does Perceived Ease of Use have an impact on satisfaction on using MOOCs?
ii. Does perceived usefulness have an impact on satisfaction on using MOOCS?
iii. Does Perceived Enjoinment have impact on satisfaction on using MOOCS?
iv. Does Behavioral Intention have an impact on satisfaction using MOOCs?

1.3 Research objectives

i. To investigate the impact of Perceived Ease of Use on satisfaction on using MOOCs.
ii. To investigate the impact of perceived usefulness on satisfaction on using MOOCS.
iii. To investigate the impact of perceived Enjoinment on satisfaction on using MOOCS.
iv. To investigate the impact of Behavioral Intention on satisfaction sing MOOCs.

1.4 Scope of the study

This study examines the adoption and utilization of Massive Open Online Courses (MOOCs) among students at Universiti Utara Malaysia (UUM), with a specific focus on understanding how the integration of Education Supply Chain Management (ESCM) principles and Technology Acceptance Model (TAM) constructs influences learning outcomes in the Malaysian higher education context. Focusing specifically on undergraduate and postgraduate students at UUM Sintok, the research provides valuable insights into how institutional infrastructure, cultural

factors, and pedagogical approaches collectively shape MOOC effectiveness within this unique academic environment. Grounded in the TAM framework, the study thoroughly investigates three key determinants of technology adoption: Perceived Usefulness (PU), which assesses students' beliefs about how MOOCs can enhance their academic performance and career prospects; Perceived Ease of Use (PEOU), which evaluates platform accessibility and user-friendliness within UUM's technological ecosystem; and Perceived Enjoyment (PE), which examines how interactive elements and engaging content design impact continued participation.

Moving beyond conventional TAM applications, the research incorporates an ESCM perspective to critically analyze how institutional processes influence these acceptance factors. This comprehensive approach includes an in-depth evaluation of course content development pipelines and their alignment with student needs, an assessment of technological infrastructure readiness and digital support systems, an examination of learner support mechanisms and their accessibility, and an analysis of resource allocation and dissemination efficiency across UUM's MOOC ecosystem. By employing this dual theoretical framework, the study aims to identify specific institutional factors that either facilitate or impede successful MOOC implementation at UUM. The findings are expected to make significant contributions to both theoretical understanding and practical strategies for optimizing MOOC delivery in Malaysian higher education institutions, while simultaneously establishing a potential model for similar educational contexts in developing Asian countries. Ultimately, this research seeks to bridge the gap between technological potential and practical implementation, offering actionable insights for enhancing digital education initiatives in Malaysia and comparable higher education environments.

1.5 Contribution of the Study

1.5.1 Practical Contribution

This study offers several practical contributions that have implications for the enhancement of MOOCs and similar online learning environments. One significant contribution is its focus on improving learner engagement, a critical factor in addressing the high dropout rates that MOOCs often face. By emphasizing the importance of user-friendly platforms and effective learner support systems, the study provides actionable recommendations for increasing course completion rates. Furthermore, the integration of Education Supply Chain Management (ESCM) principles provides practical guidelines for educational institutions to align technological platforms with learner needs, ensuring the development, delivery, and sustainability of high-quality educational content.

1.5.2 Theoretical Contribution

The study makes a meaningful theoretical contribution by extending the application of the Technology Acceptance Model (TAM) in the context of MOOCs. By integrating TAM with ESCM and learner engagement, the research broadens the theoretical scope of TAM, demonstrating its relevance in the evolving landscape of digital education. Moreover, the study bridges the gap between supply chain management principles and online education by highlighting how ESCM concepts can enhance the operational efficiency of MOOCs. Lastly, the study contributes to the existing literature on learner engagement by providing a framework for its assessment and enhancement, offering new insights into the factors that influence participation and persistence in online learning environments (Voudoukis, & Pagiatakis, 2022).

1.6 Definition of key terms

1.6.1 Education Supply Chain Management (ESCM)

In this study, ESCM refers to the processes involved in creating, delivering, and maintaining educational content and services. Within the context of MOOCs, this includes understanding learner needs, designing course materials, using technology platforms, and supporting learner engagement (Al-Mekhlafi et al., 2022), technology Acceptance Model (TAM)

1.6.2 Perceived Usefulness (PU)

In this study, PU refers to the extent to which learners believe that using MOOCs will enhance their educational experience and help them achieve their learning goals (Wu & Chen, 2017).

1.6.3 Perceived Ease of Use (PEOU)

In this study, PEOU refers to the degree to which learners find MOOCs intuitive and simple to navigate, thereby reducing effort and increasing satisfaction (Wu & Chen, 2017).

1.6.4 Perceived enjoyment (BE)

Perceived enjoyment refers to the degree to which an individual finds the use of a particular technology or system inherently enjoyable, independent of any external outcomes (Iranmanesh et al., 2024).

1.6.5 Behavioral intention to use (BI)

Behavioral intention to use denotes an individual's willingness or likelihood to adopt and use technology in the future (Maria & Sugiyanto2023).

1.6.7 Massive Open Online Courses (MOOCs)

In this study, MOOCs refer to web-based learning platforms that provide open access to a variety of courses offered by educational institutions or independent providers. They aim to democratize education by making high-quality learning resources accessible to learners regardless of geographical or socio-economic barriers (Papadakis, 2023).

1.7 Organization of the study

This study is organized into five comprehensive chapters examining Education Supply Chain Management (ESCM) and Massive Open Online Courses (MOOCs) at Universiti Utara Malaysia (UUM). The introduction in Chapter One establishes the research background, problem statement, objectives, and key concepts including ESCM, MOOCs, and the Technology Acceptance Model (TAM). Chapter Two conducts an extensive literature review covering theoretical foundations and empirical studies related to ESCM components, MOOC adoption factors (PU, PEOU, PE, BI), and lean principles. Chapter Three details the research methodology, including study design, sampling approach, questionnaire development, and planned statistical analysis using SPSS. Chapter Four presents and analyzes collected data through descriptive statistics and inferential techniques like multiple regression to test hypotheses. Finally, Chapter Five synthesizes key findings, draws conclusions, and provides practical recommendations for enhancing MOOC implementation at UUM and comparable institutions, bridging theoretical insights with actionable strategies for educational improvement

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive review of existing literature related to Education Supply Chain Management (ESCM), Massive Open Online Courses (MOOCs), and the Technology Acceptance Model (TAM). It begins by examining Education Supply Chain Management (ESCM), discussing its role in optimizing educational processes, resource distribution, and stakeholder coordination in digital learning environments. Key subtopics under ESCM include Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Enjoyment (PE), and Behavioral Intention (BI), which explore learners' motivations and barriers in MOOC adoption. Additionally, the chapter then transitions to Massive Open Online Courses (MOOCs), covering their growth, global impact, and challenges such as high dropout rates and scalability issues. It highlights market trends, technological advancements, and post-pandemic shifts in MOOC adoption. Finally, the chapter presents the Theoretical Framework, integrating TAM and ESCM to analyze MOOC engagement, followed by the Research Framework and Hypotheses, which establish the relationships between key variables (PU, PEOU, PE, BI, and Lean Principles) and MOOC success. Collectively, this review synthesizes theoretical and empirical insights to contextualize the study's objectives.

2.2 Massive Open Online Courses (MOOCs)

MOOCs have emerged as a transformative force in the landscape of higher education, offering unprecedented access to learning opportunities on a global scale. These online courses, designed to accommodate thousands of students simultaneously, have gained significant traction in recent years due to their accessibility and cost-effectiveness (Bozkurt et al., 2018). MOOCs typically comprise various traditional teaching materials, including recorded video lectures, e-books, online quizzes, presentations, assessments, interactive learning modules, and forum interactions, all of which are easily accessible through subscription-based or free login accounts (IMARC Group, 2024).

Moreover, the global MOOC market has experienced remarkable growth, with projections indicating a surge from USD 22.3 billion in 2024 to USD 169.9 billion by 2033, reflecting a compound annual growth rate (CAGR) of 24.04% during the forecast period of 2025-2033 (IMARC Group, 2024). This exponential growth can be attributed to several factors, including the increasing need for cost-effective and self-paced learning platforms, the widespread adoption of remote learning by educational institutions, and the rising demand for skill development in an ever-evolving job market (IMARC Group, 2024).

Additionally, one of the key drivers behind the popularity of MOOCs is their ability to democratize education by providing access to high-quality learning resources from prestigious universities and institutions worldwide (Bozkurt et al., 2018). This global reach enables individuals who may not have the means to attend traditional brick-and-mortar institutions to access courses and degrees from top universities, thereby fostering lifelong learning opportunities and enhancing career prospects (IMARC Group, 2024).

Despite their numerous advantages, MOOCs face several challenges that impact their effectiveness and long-term sustainability. One of the most significant issues is the high dropout rate, with course completion rates ranging from a mere 5% to 40% (Zhang et al., 2022). This low completion rate has prompted researchers and educators to explore ways to enhance student engagement and motivation within the MOOC environment (Zhang et al., 2022).

To address these challenges and capitalize on the potential of MOOCs, educational institutions and MOOC providers are increasingly focusing on innovative approaches to course design and delivery. These include the integration of advanced technologies such as artificial intelligence, data analytics, and mixed reality to offer personalized learning experiences and improve student outcomes (IMARC Group, 2024). Additionally, there is a growing emphasis on developing micro-credentials and specializations that align more closely with industry needs, thereby enhancing the practical value of MOOCs for learners seeking to advance their careers (IMARC Group, 2024).

The COVID-19 pandemic has further accelerated the adoption of MOOCs, as educational institutions worldwide were forced to rapidly transition to online learning models (Williams, 2023). This sudden shift has not only highlighted the importance of digital learning platforms but has also prompted a reevaluation of traditional educational paradigms, potentially paving the way for more hybrid and flexible learning models in the future (Williams, 2023).

Hence, as MOOCs continue to evolve, there is an increasing focus on addressing the needs of diverse learner populations and fostering global collaboration and cross-cultural learning experiences (IMARC Group, 2024). This emphasis on inclusivity and cultural diversity has the

potential to enrich the learning experience and prepare students for an increasingly interconnected global workforce.

Furthermore, by looking ahead, the future of MOOCs appears promising, with ongoing technological advancements and pedagogical innovations expected to further enhance their effectiveness and reach. The integration of blockchain technology for credentialing and the development of industry-relevant content updates are among the trends that are likely to shape the MOOC landscape in the coming years (IMARC Group, 2024).

2.3 Education Supply Chain Management (ESCM)

Education Supply Chain Management (ESSCM) is a dynamic and evolving discipline that applies supply chain principles to the education sector, focusing on the efficient management of processes, resources, and stakeholders involved in creating, distributing, and delivering educational services (Voudoukis & Pagiatakis, 2022). ESCM integrates logistics, procurement, and technology management to optimize the flow of educational resources ranging from curricula and learning materials to digital platforms while addressing the needs of students, educators, and institutions (Huynh-Cam, et al, 2024). The primary goal of ESCM is to enhance accessibility, quality, and efficiency in education by streamlining coordination across the supply chain, much like traditional SCM optimizes the flow of physical goods (Rahman et al., 2021)

The concept of ESCM builds upon earlier studies in supply chain management (SCM), which initially focused on manufacturing and logistics but has since expanded to service sectors, including education (de Moura et al., 2021). For instance, Habib and Jungthirapanich (2008)

traced the evolution of SCM from its logistical roots in the 1950s to its application in education by 2007, highlighting its potential to reduce waste and improve operational efficiency in academic institutions (Rahman et al., 2021). Similarly, Jain and Gupta (2022) emphasized ESCM's role in managing intellectual resources, such as digital curricula and learning technologies, which distinguish it from traditional SCM's focus on tangible goods (de Moura).

Education Supply Chain Management (ESCM) is a dynamic and evolving field. It encompasses the management of various processes, resources, and stakeholders involved in the creation, distribution, and delivery of educational services. The primary goal of ESCM is to optimize the coordination of these elements, thereby improving the efficiency, accessibility, and quality of education. ESCM achieves this by integrating elements of logistics, procurement, and technology management, with a unique focus on addressing the educational needs of students, teachers, and educational institutions.

This integration represents a significant evolution in the landscape of higher education and professional development. ESCM, by applying supply chain principles to educational processes, finds a powerful ally in Massive Open Online Courses (MOOCs), which offer scalable, accessible learning opportunities to a global audience. The integration of MOOCs into traditional educational models has created new pathways for knowledge dissemination and skill development, particularly in fields like supply chain management. This synergy has led to innovative approaches in course design and delivery, with institutions like MIT pioneering programs that combine online MOOC content with on-campus learning. The flexibility and reach of MOOCs align well with the ESCM goal of optimizing the flow of educational resources and experiences to learners, potentially reducing costs and increasing accessibility.

Moreover, the data generated by MOOC platforms provides valuable insights into learning patterns and preferences. This enables educators to refine and personalize content delivery in ways that traditional classroom settings cannot easily match. However, challenges remain in fully integrating MOOCs into established educational frameworks, including issues of accreditation, student engagement, and the need for more practice-oriented content in technical fields. Despite these challenges, the convergence of ESCM principles and MOOC technologies continues to drive innovation in educational delivery, promising more efficient, effective, and globally accessible learning experiences for students and professionals alike.

In addition to managing physical resources, ESCM goes beyond traditional Supply Chain Management (SCM) by including the management of intellectual resources such as curricula, learning materials, and educational technology. The scope of ESCM extends to the coordination of diverse educational stakeholders, such as teachers, students, school administrators, suppliers of learning materials, and technology providers, all of whom play a role in shaping the educational experience.

The ESCM framework is typically viewed as a network of interconnected processes designed to meet the educational demands of various stakeholders. This network includes the supply of educational resources, the development and distribution of curricula, the implementation of teaching strategies, and the assessment and evaluation of student learning. An essential feature of ESCM is its ability to enhance the flow of information between different entities within the education system, ensuring that each stakeholder receives the necessary resources and support to succeed.

A major focus of ESCM is resource optimization, which involves ensuring that both human and material resources are used in the most efficient manner possible. For example, ensuring that

students have timely access to necessary learning materials, that educators have adequate training and support, and that educational institutions are able to provide infrastructure that meets the needs of all learners are key priorities within ESCM. Furthermore, the application of technology plays a significant role in this optimization process, as digital tools can streamline the distribution of resources and make learning more flexible and accessible to a broader range of students.

Indeed, the role of technology in ESCM cannot be overstated, particularly as education increasingly shifts toward digital platforms. Learning Management Systems (LMS), online courses, and digital libraries are now an integral part of the education supply chain. The integration of these digital tools into ESCM helps to facilitate remote learning, support personalized education, and expand access to educational resources. This transformation also brings challenges, as educational institutions must adapt to new technologies, manage digital content, and address the technological needs of both students and teachers.

Another emerging trend in ESCM is the growing emphasis on sustainability. Educational institutions and organizations are recognizing the importance of reducing their environmental impact while maintaining quality education. This includes minimizing waste by promoting digital resources, reducing paper use, and encouraging energy-efficient practices across the educational system. By incorporating sustainable practices into the education supply chain, ESCM not only contributes to environmental stewardship but also helps build a more resilient educational system that can adapt to future challenges.

As ESCM continues to evolve, it must also address issues of equity and access. One of the challenges in ESCM is ensuring that educational resources and opportunities are equally distributed, particularly in developing regions or among marginalized communities. Bridging the

digital divide, providing affordable access to technology, and supporting inclusive education models are all essential aspects of a modern ESCM approach. This means that ESCM must focus not only on efficiency but also on the equitable distribution of resources to all students, regardless of their socioeconomic background.

Moreover, ESCM is increasingly recognized as a tool for fostering global collaboration in education. With the rise of international online education platforms, the education supply chain now operates on a global scale, transcending geographic boundaries. This globalized approach to education requires greater coordination among educational institutions, content providers, and technology companies to ensure that students around the world receive high-quality, culturally relevant educational experiences. As a result, ESCM must be adaptable to different national policies, educational frameworks, and cultural contexts.

Looking ahead, the future of ESCM will likely see continued advancements in automation, artificial intelligence (AI), and data analysis. These technologies can enhance decision-making processes, predict educational trends, and improve the overall efficiency of the education supply chain. For instance, AI-powered systems could be used to optimize the distribution of educational resources based on real-time demand, while data analytics can help institutions track student performance and identify areas for improvement. As these technologies mature, ESCM will become increasingly sophisticated and responsive to the changing needs of students and educators.

Hence , Education Supply Chain Management (ESCM) is a multifaceted and critical area of focus within modern education systems. It encompasses a broad range of processes and stakeholders, from the development and distribution of educational content to the integration of technology and sustainability practices. By improving efficiency, accessibility, and quality of

education through a well-managed supply chain, ESCM plays a key role in shaping the future of education in an increasingly interconnected and technology-driven world.

2.3.1 ESCM Framework

ESCM, or the eSourcing Capability Model, is a comprehensive framework designed to manage and improve sourcing relationships and services (Małys, 2022). It is particularly beneficial for organizations that deliver IT-enabled services (De Vries & Opperman, 2023). The framework provides a structured approach to assess and enhance the capabilities required for successful eSourcing engagements, which include outsourcing, offshoring, and nearshoring (Goudarzi et al, 2021). ESCM helps organizations by offering a robust framework that outlines best practices and standards to ensure effective governance, performance, and value generation in sourcing arrangements (Goudarzi et al, 2021). It offers detailed guidance on aspects like service design, transition management, governance, and ongoing service operations (De Vries & Opperman, 2023). Through stages and levels of maturity, ESCM facilitates continual improvement and ensures alignment of service delivery with business objectives (Goudarzi et al, 2021). Organizations can use the ESCM to benchmark their current processes, identify gaps, and develop strategies to achieve higher levels of maturity, ultimately leading to better service quality, enhanced client satisfaction, and stronger supplier-client relationships (Du, et al, 2024).

2.3.2 ESCM Principles

At the core of ESCM are several guiding principles that underpin its effectiveness and application. These principles emphasize the importance of collaboration, value focus, and

continuous improvement in sourcing engagements (Du, et al, 2024). The first principle is collaboration, which stresses the importance of working closely with all stakeholders involved in sourcing arrangements to foster trust, mutual understanding, and strategic alignment (Małys, 2022). The second principle is value orientation, focusing on delivering tangible benefits that align with the strategic objectives of the business, ensuring that service performance translates into measurable business outcomes (De Vries & Opperman, 2023). A third principle promotes a systematic approach to managing and improving sourcing efforts through structured processes and methodologies (Goudarzi et al, 2021). Lastly, the principle of continuous improvement encourages organizations to regularly assess performance, learn from experiences, and adapt to changes in the business environment, technology, and market conditions (Du, et al, 2024). By adhering to these principles, organizations can create a resilient framework for managing sourcing relationships that drive sustained success and adaptability.

2.4 Determinants of ESCM Using PEOU, PU, PE, and BI

In modern business environments, the effectiveness of eSourcing and its capability models like the eSourcing Capability Model (ESCM) is often influenced by several key determinants (Huang et al., 2024). Among these, Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Perceived Enjoyment (PE), and Behavioral Intention (BI) emerge as significant factors. PEOU refers to the degree to which individuals believe that utilizing a particular system or technology will be free of effort, greatly impacting user acceptance and the seamless implementation of ESCM frameworks (Bettiol, et al, 2022). PU, on the other hand, denotes the extent to which a person believes that using a specific system would enhance their job performance, highlighting the importance of measurable value addition through ESCM processes (de Moura et al., 2021).

Perceived Enjoyment (PE) contributes an intrinsic motivational aspect, focusing on the pleasure or satisfaction derived from engaging with the system, which can influence the adoption and sustained usage of ESCM. Lastly, Behavioral Intention (BI) represents users' intention to use the system, acting as a precursor to actual usage behavior (Huang et al., 2024). Understanding these determinants is crucial as they collectively shape how organizations perceive and implement ESCM, affecting adoption rates, user satisfaction, and ultimately, the success of eSourcing initiatives (de Moura, et al, 2021). By examining these factors, organizations can tailor their strategies to improve engagement, enhance capability development, and achieve more effective service delivery within the ESCM framework.

2.4.1 Perceived Usefulness (PU)

Additionally, the perceived usefulness plays a crucial role in the adoption and continued use of Massive Open Online Courses (MOOC s) it refers to the degree to which an individual believes that using a particular system or technology will enhance their performance or productivity (Davis, 1989). In the context of MOOC s, PU is a key factor influencing learners' intentions to engage with and complete online courses.

Research has consistently shown that PU significantly impacts students' attitudes towards MOOC s and their intention to continue using these platforms. For instance, Daneji et al. (2019) found that PU has a direct positive effect on learners' continuance intention to use MOOC s. This suggests that when students perceive MOOC s as useful for their learning and career development, they are more likely to persist in using these online platforms.

According to the PU & MOOC adoption is further supported by studies integrating the Technology Acceptance Model (TAM) with other theoretical frameworks. Wang et al. (2023)

incorporated TAM and the Theory of Planned Behavior to examine students' perceptions of MOOCs. Their findings revealed that PU, along with other factors such as perceived ease of use and attitude, positively influenced behavioral intention to use MOOCs. Moreover, PU has been found to have a strong correlation with learner satisfaction in the MOOC environment. Suriazdin et al. (2022) observed that PU directly affects user satisfaction, which in turn influences the continuance intention to use MOOCs. This highlights the importance of designing MOOCs that are perceived as useful by learners to enhance their overall satisfaction and engagement with the courses. The impact of PU on MOOC adoption extends beyond individual perceptions to broader educational implications As MOOCs continue to gain popularity in higher education, understanding the role of PU becomes crucial for institutions and MOOC providers.

According to Alraimi et al. (2015), the author emphasized that the perceived usefulness of MOOCs significantly contributes to learners' satisfaction and their decision to continue using these platforms. In the context of career development and lifelong learning, PU takes on added significance that many learners enroll in MOOCs to acquire marketable skills and enhance their professional prospects. Kizilcec and Schneider (2015), noted that career development is a primary motivator for MOOC enrollment, underscoring the importance of perceived usefulness in attracting and retaining learners. In order to enhance PU in MOOCs, course designers and providers should focus on creating content that aligns with learners' goals and expectations. This may involve offering practical, industry-relevant courses, incorporating real-world applications, and providing clear pathways for skill development. Additionally, highlighting the tangible benefits of course completion, such as certificates or badges, can further reinforce the perceived usefulness of MOOCs (Alraimi et al., 2015). Perceived Usefulness is a critical factor in the success and sustainability of MOOCs as online education continues to evolve, understanding and

leveraging PU will be essential for MOOC providers to create engaging, valuable learning experiences that meet the needs of diverse learners in an increasingly digital educational landscape (Joo et al., 2018).

2.4.2 Perceived Ease of Use (PEOU)

PEOU is a critical factor in the adoption and continued use of Massive Open Online Courses (MOOCs). PEOU refers to the degree to which students believe that using MOOCs would be effortless or free from difficulty (Wang, 2023). Research has consistently shown that PEOU has a significant positive impact on learners' attitudes towards MOOCs and their intention to continue using them (Wang et al., 2020; Yang & Su, 2017). When students perceive MOOCs as easy to navigate and interact with, they are more likely to engage with the course content and complete their studies (Choe et al., 2021).

PEOU and MOOC adoption is often explained through the Technology Acceptance Model (TAM), which posits that PEOU directly influences both perceived usefulness and attitude towards using a technology (Wang, 2023). In the context of MOOCs, this means that when learners find the platform intuitive and user-friendly, they are more likely to perceive it as useful for their learning goals and develop a positive attitude towards using it. This positive perception can lead to increased engagement and a higher likelihood of course completion (Yang & Lee, 2022).

Moreover, PEOU has been found to have both direct and indirect effects on continuance intention in MOOCs. It directly affects continuance intention and indirectly influences it through perceived usefulness and attitude (Shao, 2018).

According to Zhang et al., (2023), This underscores the importance of designing MOOCs with user-friendly interfaces and intuitive navigation to enhance learners' experiences and promote sustained engagement. to improve PEOU in MOOCs, platform developers, and course designers should focus on creating clear and consistent layouts, providing easily accessible support resources, and ensuring that the technology requirements are not overly complex for the average user (Wang et al., 2020). By prioritizing PEOU, MOOC providers can potentially address one of the key challenges in online education: high dropout rates. When learners find a platform that is easy to use, they are more likely to persist in their studies and achieve their educational goals (Alraimi et al., 2015).

2.4.3 Perceived Enjoyment (PE)

PE refers to the extent to which a learner finds an activity or system enjoyable, rather than to achieve a specific goal. In the context of Massive Open Online Courses (MOOCs), perceived enjoyment plays a crucial role in determining learners' engagement, motivation, and ultimately, their success in completing courses (Shao, 2018). When learners find the course content, platform, and overall learning experience enjoyable, they are more likely to stay committed and continue participating in the course. As MOOCs expand globally, understanding the factors that contribute to PE can help educators and institutions design more engaging, interactive, and enjoyable online learning experiences that encourage learner retention (Davis, 1989).

One of the primary reasons that PE influences learner engagement in MOOCs is that enjoyment enhances motivation. When learners enjoy the learning process, they are more likely to invest effort, time, and cognitive resources into their studies. In a digital learning environment, where

students face challenges such as self-regulation and lack of face-to-face interaction, fostering enjoyment is essential for maintaining engagement and ensuring that learners stay motivated throughout the course (Cheng & Zhang, 2023), Interactive elements such as quizzes, gamified learning, multimedia content, and dynamic feedback mechanisms contribute significantly to increasing PE by making the learning experience more enjoyable and immersive.

The design and usability of the learning platform are also central to fostering perceived enjoyment in MOOCs. Platforms that are visually appealing, easy to navigate, and offer a seamless user experience tend to increase learners' enjoyment of the learning process. Conversely, poorly designed platforms that are difficult to use or have technical glitches can detract from the overall enjoyment and discourage learners from continuing with the course (Singh & Gupta, 2022).

Additionally, when MOOCs incorporate features such as social interaction tools, discussion forums, or collaborative projects, learners can engage with one another, enhancing their sense of enjoyment through shared experiences and social learning opportunities (Jain & Gupta, 2022), these elements of social interaction, when combined with well-organized course materials, create an engaging environment that encourages learners to persist and enjoy the experience.

Furthermore, incorporating multimedia and interactive content is another way that MOOCs can enhance perceived enjoyment. Videos, animations, podcasts, and simulations not only make learning more dynamic but also cater to different learning styles, ensuring that learners remain engaged and entertained while processing new information. Studies have shown that when learners interact with content in various forms, such as through quizzes, simulations, or multimedia presentations, their enjoyment of the learning experience increases, which may lead

to higher levels of engagement and better learning outcomes (Murthy & Kumar, 2024), This engagement is especially important in MOOCs, where learners often lack a structured classroom environment that can facilitate face-to-face interaction with instructors or peers.

Additionally, the gamification of MOOCs—incorporating game-like elements such as points, badges, and leaderboards—has proven to be an effective strategy for increasing PE. By embedding these features into courses, learners are incentivized to progress through the material and participate more actively. Gamification encourages a sense of achievement and friendly competition, making the learning experience more enjoyable and motivating learners to complete the course. Research has shown that learners who enjoy the process of learning are more likely to complete MOOCs, even when faced with challenges such as lack of time or external distractions (Zhang & Liu, 2023).

Another factor that enhances perceived enjoyment in MOOCs is the level of autonomy and control learners have over their learning experience. MOOCs are typically designed with self-paced learning in mind, allowing learners to decide when and how they engage with the course material. This autonomy enables learners to create a learning schedule that fits their individual preferences and lifestyles, increasing their sense of control and enjoyment (Cheng & Zhang, 2023). Furthermore, the ability to choose which courses to take based on personal interests and career goals adds to the overall satisfaction of the learning process.

Despite the positive effects of perceived enjoyment, some challenges remain. For example, the lack of face-to-face interaction with instructors and peers in MOOCs can reduce the enjoyment for learners who thrive in social and collaborative environments. Although MOOCs often

incorporate online forums and peer discussions, these virtual interactions may not replicate the sense of camaraderie and engagement found in traditional classroom settings (Singh & Gupta, 2022). To address this, educators can enhance the social components of MOOCs by integrating synchronous sessions, live webinars, and group projects, which can foster a greater sense of community and enjoyment.

Moreover, the content of MOOCs must strike a balance between being engaging and educational. While gamification, multimedia content, and interactive activities can enhance enjoyment, they must also be aligned with the educational goals of the course. Overemphasizing entertainment or novelty elements without maintaining the quality and depth of the content can negatively affect the perceived educational value of the course, ultimately undermining the learner's overall experience (Zhang & Liu, 2022). Thus, a well-designed MOOC should aim to integrate enjoyment with meaningful learning outcomes.

Perceived Enjoyment (PE) is a critical factor that influences learner engagement, motivation, and success in Massive Open Online Courses (MOOCs). By designing platforms that are easy to navigate, incorporating interactive and multimedia content, and fostering social engagement, MOOC providers can enhance learners' enjoyment and increase their likelihood of course completion. As MOOCs continue to evolve, understanding the role of enjoyment in online learning will be key to creating engaging and effective educational experiences that appeal to a global audience.

2.4.4 Behavioral intention to use (BI)

BI has emerged as a critical factor in understanding the adoption and continued use of massive open online courses (MOOCs) in recent years. As MOOCs have gained prominence in the

educational landscape, researchers have increasingly focused on examining the factors that influence learners' intentions to engage with these online platforms (Zaremohzzabieh et al., 2022).

The concept of behavioral intention, rooted in technology acceptance theories, plays a pivotal role in predicting actual usage behavior and has been widely applied in the context of MOOCs (Ahmed et al., 2023), Studies have consistently shown that several key factors contribute to the formation of behavioral intention to use MOOCs. Performance expectancy and effort expectancy have been identified as significant predictors of BI across multiple cultural contexts (Zaremohzzabieh et al., 2022).

Learners who perceive MOOCs as useful for enhancing their knowledge and skills, and those who find the platforms easy to navigate, are more likely to express a strong intention to use them (Al-Adwan, 2020). Additionally, perceived usefulness (PU) has been consistently reported to have a positive effect on BI, highlighting the importance of demonstrating the practical benefits of MOOCs to potential users (Ahmed et al., 2023), The role of social influence in shaping behavioral intention to use MOOCs has been a subject of debate. While some studies have found it to be a significant factor, others have reported no substantial impact (Zaremohzzabieh et al., 2022).

This discrepancy suggests that the influence of peers, instructors, and social norms on MOOC adoption may vary depending on the specific context and target population. Cultural factors have also been shown to play a role in moderating the relationship between various predictors and BI, emphasizing the need for culturally sensitive approaches in MOOC design and implementation (Padilha et al., 2021), Recent research has expanded the scope of factors influencing BI to

include psychological and experiential aspects. For instance, Hossain et al. (2022) found that psychological needs and immersive experiences mediate the relationship between perceived skill gaps and the intention to enroll in MOOCs. This highlights the importance of creating engaging and psychologically satisfying learning environments to foster strong behavioral intentions among potential MOOC users.

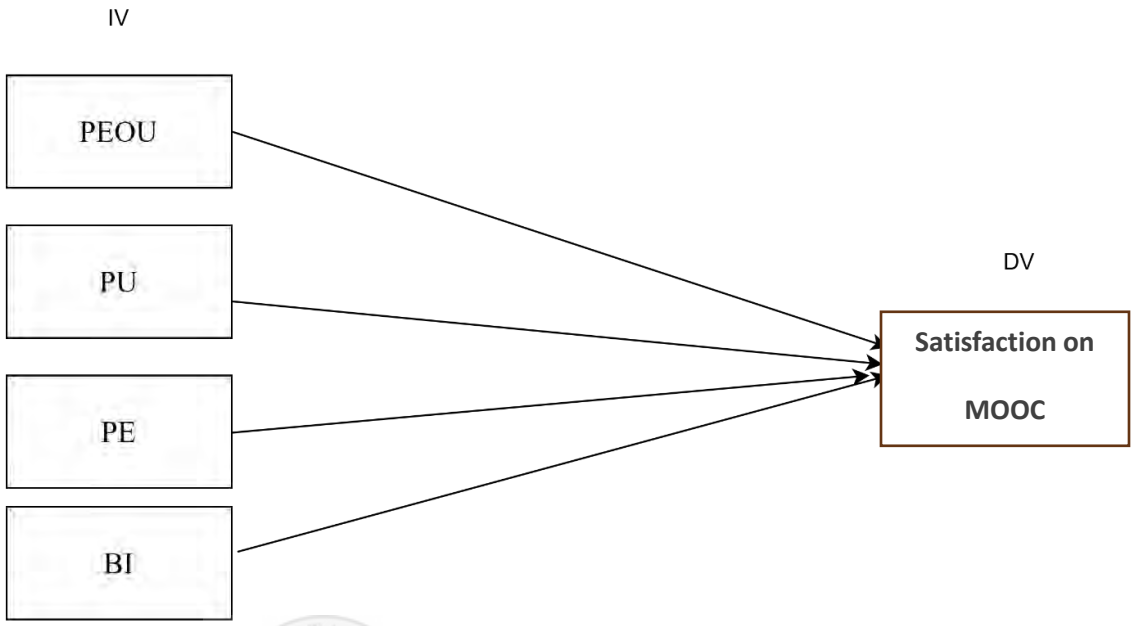
The COVID-19 pandemic has further underscored the relevance of understanding behavioral intention in the context of MOOCs. As educational institutions worldwide shifted to online learning, the factors influencing students' intentions to adopt MOOCs gained renewed attention. Studies conducted during this period have provided valuable insights into how external circumstances can shape BI, with factors such as perceived necessity and adaptability coming to the forefront (Ahmed et al., 2023), By looking ahead, the continued evolution of MOOC platforms and pedagogical approaches necessitates ongoing research into behavioral intention.

As MOOCs increasingly integrate advanced technologies such as artificial intelligence and virtual reality, understanding how these innovations impact learners' intentions to use the platforms will be crucial. Moreover, the growing emphasis on lifelong learning and professional development suggests that future studies should explore how BI varies across different learner demographics and educational contexts (Padilha et al., 2021), In conclusion, behavioral intention to use remains a central construct in MOOC research, offering valuable insights into the factors that drive adoption and continued engagement. As the educational landscape continues to evolve, understanding and leveraging these insights will be essential for designing effective, user-centered MOOCs that meet the diverse needs of learners worldwide.

2.5 Theoretical Framework

The theoretical framework for this study is built on essential constructs and theories that guide its analysis and contextual understanding. At its core is the Technology Acceptance Model (TAM), which examines how learners adopt and engage with Massive Open Online Courses (MOOCs). TAM emphasizes four key determinants: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Enjoyment (PE), and Behavioral Intention to Use (BI), as highlighted in the work of Wu & Chen (2017). Additionally, the study integrates the concept of Education Supply Chain Management (ESCM) to better understand the operational processes within MOOCs. ESCM focuses on elements such as identifying learner needs, designing course materials, implementing technology platforms, and maintaining learner support systems. Combined, these theoretical components create a comprehensive framework for analyzing the relationship between user perceptions, engagement, and the operational success of MOOCs, as discussed by Al-Mekhlafi et al. (2022).

2.6 Research Framework



Source: Research Computations (2025)

Figure 2.1 Research framework

2.7 Hypotheses of the Study

I. There is a direct relationship between Perceived Usefulness (PU) and MOOCs

II. There is a direct relationship between Perceived Ease of Use (PEOU) and MOOCs

III. There is a direct e relationship between Perceived enjoyment (PE) and MOOCs

IV. There is a direct relationship between Behavioral intention and MOOC s

i. There is a direct relationship between Perceived Usefulness (PU) and MOOCs.

This hypothesis suggests that when learners perceive MOOCs as useful, they are more likely to engage with and utilize them effectively. Perceived Usefulness refers to the extent to which an individual believes that a course will enhance their knowledge or skills and contribute positively to their learning outcomes. If learners believe that participating in a MOOC will lead to

meaningful professional or academic benefits such as improving their career prospects or providing valuable knowledge they are more inclined to enroll and actively participate. Thus, the hypothesis highlights the critical role of perceived usefulness in fostering learner engagement in MOOCs.

ii. **There is a direct relationship between Perceived Ease of Use (PEOU) and MOOCs.**

This hypothesis posits that if learners find MOOCs easy to navigate and use, they are more likely to engage with them. Perceived Ease of Use refers to the degree to which a learner believes that the course and its delivering platform require little effort to use. If the design and functionality of a MOOC are user-friendly, learners will feel more comfortable exploring materials, participating in discussions, and completing assignments. As a result, this positive perception can lead to increased motivation and participation in MOOCs, reinforcing their impact on learning.

III. There is a direct relationship between Perceived Enjoyment (PE) and MOOCs.

This hypothesis indicates that when learners find enjoyment in participating in MOOCs, it positively affects their engagement. Perceived Enjoyment refers to the intrinsic satisfaction or pleasure that students derive from the learning experience. When learners enjoy the course content, interactive elements, and community aspects of a MOOC, they are more likely to stay engaged and motivated throughout the course. This enjoyment can lead to higher completion rates and a more profound learning experience, emphasizing the importance of creating engaging and enjoyable learning environments in MOOCs.

IV. There is a direct relationship between Behavioral Intention and MOOCs.

This hypothesis suggests that learners' intentions to use MOOCs will directly influence their actual participation and engagement with these courses. Behavioral Intention is a measure of

how likely individuals are to engage in a particular behavior in this case, enrolling in and actively participating in MOOCs. If learners intend to take an MOOC, their likelihood of following through increases significantly, driven by their perceptions of usefulness, ease of use, and enjoyment. This hypothesis underscores the importance of fostering positive perceptions among potential learners, as strong behavioral intentions can lead to higher enrollment and course completion rates in MOOCs.

CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

This chapter outlines the methodological framework adopted for the study, detailing the research design, target population, sampling strategy, data collection procedures, and analytical techniques. A robust methodology is critical to ensuring the validity, reliability, and reproducibility of research findings (Creswell & Creswell, 2018). This study employs a quantitative research design, utilizing structured questionnaires to collect numerical data from students at Universiti Utara Malaysia (UUM). The chapter also discusses the measures taken to address reliability (consistency of measurements) and validity (accuracy of measurements), as well as the statistical tools (SPSS and Excel) used for data analysis. By transparently documenting these methodological choices, this chapter provides a clear roadmap for replicability and reinforces the credibility of the study's conclusions.

3.1 Research Design

This study employs a quantitative research design utilizing a survey-based approach, which is particularly suited for examining relationships between measurable variables through statistical analysis. As emphasized by Creswell and Creswell (2018), this design ensures objectivity,

precision, and replicability - essential qualities for producing valid, generalizable findings. The research follows a deductive approach grounded in the positivist paradigm, beginning with theoretical foundations from existing literature which inform the development of specific research questions and hypotheses (Saunders et al., 2019). A cross-sectional survey design was selected as it allows for efficient collection of standardized data from a large sample at a single point in time, enabling the examination of current attitudes, behaviors, and trends among Universiti Utara Malaysia students (Bryman, 2016). The research process unfolds systematically: first, clear research objectives and variables are identified; then, a representative sample is selected using random sampling techniques based on Krejcie and Morgan's (1970) parameters; subsequently, structured questionnaires featuring closed-ended questions are administered both physically and electronically to optimize response rates; finally, collected data undergoes rigorous statistical analysis using SPSS and Excel, with particular attention given to ensuring reliability through Cronbach's alpha tests and establishing validity through content, construct, and criterion validation measures. This methodical approach, from hypothesis formulation through data collection to analysis, ensures methodological rigor while minimizing potential biases, ultimately strengthening the study's validity and the credibility of its conclusions.

3.2 Target Population

The study population comprises all undergraduate and postgraduate students at Universiti Utara Malaysia (UUM), representing a diverse group across various faculties, academic programs, and demographic backgrounds (Creswell & Creswell, 2018). This heterogeneous population provides an appropriate foundation for generalizing research findings to the broader student community. From this target population of approximately 10,000 students, a statistically representative

sample of 370 respondents was determined using Krejcie and Morgan's (1970) sample size table, ensuring a 95% confidence level with a 5% margin of error. The selected sample maintains the population's diversity while being sufficiently robust for meaningful statistical analysis. This sampling approach balances research feasibility with the need for results that accurately reflect the characteristics and perspectives of UUM's student body.

3.3 Sampling and sample size

To ensure the results the study uses a random sample. Random sampling is essential for ensuring that study results are representative of the target population, as it allows each unit within the population an equal or known probability of selection, thereby minimizing bias and enhancing the validity of statistical inferences (Kesemen et al., 2021)

According to Praxis, (2022) Table sample size determination is a widely recognized tool that aids researchers in calculating the appropriate sample size necessary for ensuring the validity and reliability of their studies. Sample size calculations are crucial as they directly influence the statistical power of a study (Vasudevan, 2024).

According to Wang et al., (2013), Researchers must consider various factors, including the desired confidence level, effect size, and acceptable precision, to arrive at a sample size that is both ethical and practical (Althubaiti, 2022). Furthermore, the process involves engaging in discussions about the appropriateness of the calculated sample size to the research question, available data, and logistical constraints (Althubaiti, 2022). Ultimately, utilizing established guidelines like Krejcie and Morgan's table can streamline this complex process, enhancing the overall quality of research (Jansen et al., 2024). The sample size is calculated using Krejcie and

Morgan's (1970) table for sample size determination. For a population of approximately 10,000 students, the recommended sample size is 370 to achieve a 95% confidence level with a margin of error of ±5%. This ensures statistical robustness and minimizes sampling error (Shukla & Huber, 2023)

Table 3. 1 *Krejcie and Morgan's (1970) table for sample size determination*

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.
Source: Krejcie & Morgan, 1970

3.4 Data Collection Method

This study utilized structured questionnaires as the primary data collection method, employing both online and physical distribution channels to ensure comprehensive participation from the

target sample of 370 UUM students. The questionnaire was carefully designed with closed-ended questions using Likert scales and multiple-choice formats to maintain standardization and facilitate quantitative analysis (Sukmawati, 2023). For optimal reach and response rates, the survey was administered through digital platforms like Google Forms for convenient online access while simultaneously being distributed in hard copy at strategic campus locations to capture students who might be less responsive to digital surveys. Prior to full implementation, a pilot test involving 30 participants was conducted to refine question clarity, assess completion time, and validate the instrument's reliability (Roopa & Rani, 2012). This dual-mode approach offered several methodological advantages: it ensured broad representation across different student demographics while maintaining data consistency through identical question formats; provided flexibility for respondents to choose their preferred participation method; and enhanced the study's rigor through complementary data collection streams. The structured nature of the questionnaire design, combined with systematic administration procedures, strengthened the validity of responses and enabled efficient analysis of the quantitative data needed to address the research objectives.

3.5 Data collection Procedure

The distribution process was carried out using two methods (1) face-to-face self-administration and (2) mail. Over three weeks distribution period, a total of 293 complete questionnaires were received and classified as early responses. After multiple follow-ups through phone calls and personal visits**,** an additional 73 questionnaires were retrieved, and categorized as late responses. In total, out of the 370 questionnaires distributed, 366 were successfully retrieved, resulting in an 98.92% response rate**,** which was deemed sufficient for data analysis.

Several challenges were encountered during the data collection process. Some respondents exhibited a lackadaisical attitude, delaying completion despite multiple reminders. In some cases, even after repeated follow-ups, certain respondents refused to fill out the questionnaire. Additionally, some misplaced their copies, requiring the researcher to issue replacements**.** Moreover, some questionnaires sent via mail were not returned through the same medium**,** prompting the researcher collect them in person**.**

3.6 Questionnaire development

The use of questionnaires is a prevalent method in scientific research, particularly within the social sciences and education, as they facilitate the collection of data from a large number of respondents efficiently. Questionnaires can be administered in various formats, including traditional paper forms and modern electronic versions, which enhance accessibility and response rates (Valli, 2016). Their effectiveness hinges on careful design, including appropriate question formulation and ordering, which ensures that the data collected accurately reflects the participants' views (Roopa & Rani, 2012). Thus, while questionnaires are essential tools in research, this study adapts questionnaires.

S/No	MOOC	SA	A	N	D	SD
1	The content provided meet the requirement of the course syllabus					
2	The content is well-organized.					
3	I believe MOOC s are an effective tool for					

	achieving my educational goals.					
4	I am satisfied with the quality of education provided through MOOC					
5	I would recommend MOOC s to others for their educational needs.					

S/No	**Perceived ease to use**	SA	A	N	D	SD
1	It is simple to learn how to use MOOCs.					
2	MOOC s are easy to navigate and operate.					
3	I find it easy to become skillful at using MOOCs.					
4	The design of MOOC s makes it easy to use..					
5	Learning through MOOC s requires little effort..					

S/No	**Perceived ease to use**	SA	A	N	D	SD
1	Using MOOCs improves my learning efficiency.					
2	MOOC s provide useful knowledge for my studies or professional growth.					
3	MOOC s enhance my understanding of subjects effectively.					
4	MOOCs help me perform better in my coursework.					
5	MOOC s increase my productivity in learning.					

S/No	**Perceived Usefulness**	SA	A	N	D	SD
1	Using MOOCs improves my learning efficiency.					
2	MOOC s provide useful knowledge for my studies or professional growth.					
3	MOOC s enhance my understanding of subjects effectively.					
4	MOOCs help me perform better in my coursework.					
5	MOOC s increase my productivity in learning.					

S/No	**Perceived Enjoyment**	SA	A	N	D	SD
1	Using MOOCs improves my learning efficiency.					
2	MOOC s provide useful knowledge for my studies or professional growth.					
3	MOOC s enhance my understanding of subjects effectively.					
4	MOOCs help me perform better in my coursework.					
5	MOOC s increase my productivity in learning.					

S/No	**Behavioral Intention to use**	SA	A	N	D	SD
1	I intend to use MOOC s regularly for learning.					
2	I am likely to recommend MOOC to my peers.					

3	I plan to explore more MOOC s courses in the future.					
4	I will integrate MOOCs into my regular study routine.					
5	I will consider MOOC s as a primary source of learning.					

3.6 Data analysis

The data analysis phase employed a dual-software approach utilizing both SPSS (Version 27) and Microsoft Excel to ensure rigorous examination of the collected responses from 370 participants. Following data cleaning and coding procedures, preliminary analysis was conducted in Excel to organize the dataset and generate basic descriptive statistics, providing an initial overview of response patterns and distributions. The dataset was then imported into SPSS for advanced statistical analysis, where key techniques including reliability testing (Cronbach's alpha), correlation analysis, and regression modeling were performed to examine relationships between variables (Pallant, 2020). This complementary use of analytical tools capitalized on Excel's strengths in data visualization and preliminary exploration while leveraging SPSS's robust capabilities for inferential statistics and hypothesis testing. The integration of both platforms facilitated comprehensive data validation through cross-verification of results, while SPSS's output was systematically documented to ensure transparency and replicability of all analytical procedures. This methodological approach not only enhanced the accuracy of statistical computations but also enabled clear presentation of findings through both numerical outputs and graphical representations, ultimately strengthening the study's empirical foundation and the interpretability of its results.

3.6.1 Reliability and Validity

Reliability pertains to the stability and consistency of a measurement across different conditions and over time. In this study, reliability was ensured through various approaches. Test-retest reliability was assessed by administering the same questionnaire to a group of respondents at two different intervals. This allowed for the comparison of results to determine stability and consistency over time, confirming the reliability of the instrument (Tavakol & Dennick, 2011).

Inter-rater reliability was also employed, especially in qualitative aspects of the study, by evaluating the level of agreement between two researchers interpreting the same responses. This minimized subjective biases and ensured consistent data interpretation (Heale & Twycross, 2015).

Internal consistency reliability was verified using Cronbach's alpha, with a threshold value of 0.7 or above considered acceptable. This statistic ensured that all items within the questionnaire consistently measured the same construct (Tavakol & Dennick, 2011).

SPSS software was utilized to compute Cronbach's alpha and confirm the instrument's reliability, with a 95% confidence interval established during the planning stage to enhance confidence in the results, Validity, on the other hand, refers to the extent to which the measurement instrument accurately captures the concepts it is intended to measure, to ensure validity, content validity was addressed by consulting experts during the planning phase. The questionnaire was reviewed to ensure it comprehensively covered all dimensions of the constructions under investigation, such as customer satisfaction or student performance, to ensure its relevance and applicability (Creswell & Creswell, 2018).

Construct validity was established by aligning the questionnaire with the theoretical framework of the study and comparing it with validated instruments used in similar research. This process reinforced the accuracy of the constructions being measured (Heale & Twycross, 2015). Criterion validity was also examined, particularly concurrent validity, by comparing the studies' results with existing datasets on comparable populations to ensure alignment with external benchmarks (Creswell & Creswell, 2018).

By meticulously addressing both reliability and validity, this study achieved robust and trustworthy results. The efforts taken to ensure consistent and accurate measurement strengthened the overall rigor of the research and ensured that the findings were both meaningful and applicab

3.7 Summary

Chapter Three outlines the research methods used in the study. It employs a quantitative research design using a survey-based approach to examine relationships between measurable variables. The target population is undergraduate and postgraduate students at Universiti Utara Malaysia (UUM), with a sample size of 370 respondents determined using Krejcie and Morgan's (1970) table to ensure a 95% confidence level. Data is collected through structured questionnaires with closed-ended questions, administered both online and physically. The data analysis involves using SPSS and Excel for descriptive and inferential statistics, including reliability testing (Cronbach's alpha), correlation analysis, and regression modeling. The chapter emphasizes the steps taken to ensure the reliability and validity of the research findings.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

Following the methodology outlined in the previous chapter, this chapter presents the results of our data analysis. We distributed questionnaires to a sample of 370 students at Universiti Utara Malaysia (UUM) and achieved a 98% retrieval rate, with 361 responses collected. This chapter is structured to firstly tp present demographic information, then analyze the relationships between ESCM, TAM, and MOOC adoption. The analysis aims to address the research questions and hypotheses outlined in Chapter One

Table 4.1 Response Rate of Returned Questionnaire from respondents

Table 4.1: Administration of Questionnaire and Response Rate		
Response	**Copies retrieved**	**%**
Copies of questionnaire distributed	370	100%
Copies of questionnaire not returned	4	1.08%
Copies of questionnaire returned	366	98.92%
Copies of questionnaire with defect	5	1.35%

Source: Field Survey, 2025

Table 4.1 provides a comprehensive overview of the administration of a questionnaire survey and the corresponding response rates. Out of the total 370 questionnaires distributed, the high engagement of participants is evident with only 4 questionnaires not being returned, which

constitutes just 1.08% and signifies an impressive overall return rate of 98.92%. Among the returned questionnaires, a mere 5 copies, accounting for 1.35%, were found to have defects such as incomplete answers or errors. This indicates that the vast majority of participants completed the questionnaire satisfactorily. Such a high return rate, coupled with a low incidence of defective questionnaires, suggests a well-executed distribution and collection process. It underscores effective engagement with participants and assures a robust dataset for further analysis, with most responses being usable and reliable.

4.2 Demographic

Table 4.2: Demographic Profile of Respondents.

Characteristics	Category	Frequency	Percent
Gender	Male	192	53.1
	Female	167	47.2
Age	20-25	96	26.6
	26-30	77	21.3
	31-36	47	13.1
	37-45	59	16.5
	46-50	52	14.5
	51 and above	26	7.3
	18	1	.3

Source: Field Survey, 2025

From the table above, Table 4.4 presents the demographic profile of respondents, highlighting key characteristics such as gender and age distribution. In terms of gender, a majority of the respondents are male, with 192 individuals representing 53.1% of the sample, while female respondents account for 167 individuals, or 47.2%. The age categories reveal a diverse

demographic, with the largest group being individuals aged 20-25, comprising 96 respondents (26.6%). This is followed by the 26-30 age group with 77 respondents (21.3%). Other age categories include 31-36, 37-45, and 46-50, with frequencies of 47 (13.1%), 59 (16.5%), and 52 (14.5%) respectively. The oldest group, those aged 51 and above, includes 26 respondents, accounting for 7.3%. There is also a negligible representation of respondents aged 18, at just 1 individual (0.3%). This demographic profile indicates a predominance of young to middle-aged respondents and suggests a balanced gender representation, providing a solid foundation for understanding the perspectives and experiences captured in the survey.

4.1.3 College of the respondents

The respondents were further classified according to their college as presented in the table below.

Table 4. 1 College

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	UUM	76	21.1	21.2	21.2
	UUM College of (UUM COB)	187	51.8	52.2	73.5
	UUM College of Art and Sciences (UUM CAS)	95	26.3	26.5	100.0
	Total	358	99.2	100.0	
Missing	System	3	.8		
Total		361	100.0		

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 76 respondents who are representing 21.1% of the entire response do attested that they are from UUM, while 187 respondents representing 52.2% of the entire response are from COB, also 95 respondents representing 26.3 % of the entire population attended UUM CAS.

4.1.4 Education

The respondents were classified according to their Educational Level, we shall classify them in the table below.

Table 4. 2 Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's Degree	133	36.8	37.2	37.2
	Master's Degree	160	44.3	44.7	81.8
	Doctoral	65	18.0	18.2	100.0
	Total	358	99.2	100.0	
Missing	System	3	.8		
Total		361	100.0		

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 133 respondents who are representing 36.8% of the entire response do strongly agree to the statement that they had a Bachelor's Degree, 160 respondents who are representing 44.3% of the entire response do strongly agree to the statement that they had a Master's Degree, 65respondents who are representing 18.2% of the entire response do strongly agree to the statement that they had a Doctoral Degree

4.1.5 Years of the respondents

The respondents were classified according to their Years of experiences learning through MOOC's, we shall classify them in the table below.

Table 4. 3 Learning Experience of using MOOC's

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	.6	.6	.6
	less than 1 year	48	13.3	13.4	14.0
	1-5years	116	32.1	32.5	46.5
	6-8 years	82	22.7	23.0	69.5
	9-12 years	62	17.2	17.4	86.8

	more than 12	47	13.0	13.2	100.0
	Total	357	98.9	100.0	
Missing	System	4	1.1		
Total		361	100.0		

Source: Field Survey, 2025

From the table above, 2 respondents representing .6% attested that they had less than a Year of experience learning through MOOC's. Also 48 respondents representing 13.3 % of the entire response attested that they had from 6-8 years of learning through MOOC. Further, a total of 116 respondent's representing32.1% of the entire respondents all had 1-5 years of experience on MOOCs. Also 82 a total of 62 respondents representing17.2% of the entire respondents all had 1-5 years of experience on MOOCs. A total of 62 respondents representing17.2% of the entire respondents and 47 respondents representing 13.0 percentage of the entire response have more tha 12 years of service in MOORE.

4.2 Section 2: Perceive usefulness

4.2.1 Using MOOCs improves my learning efficiency

The respondents were asked to testify if they believe that Using MOOC's improves their learning efficiency, their response is presented in the table below.

Table 4. 4 Using MOOC's improves my learning efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	31	8.6	8.6	8.6
	Disagree	23	6.4	6.4	15.0
	Undecided	33	9.1	9.1	24.1
	Agree	183	50.7	50.7	74.8
	Strongly Agree	91	25.2	25.2	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, a total of 32 respondents who are representing 8.6% of the entire response do strongly disagree to the statement that Using MOOC's improves their learning efficiency, also related to the above, a total of 23 respondents representing 6.4% of the entire response Disagree to the statement that Using MOOC's improves their learning efficiency. Further, 33 respondents representing 9.1% of the entire response were indifferent in their response. Against the above positions, a total of 183 respondents representing 50.7% of the entire response agree to the statement that Using MOOC's improves their learning efficiency while a total of 91 respondents representing 25.2% of the entire response strongly agree to the statement that Using MOOC's improves their learning efficiency. This therefore implies that more of the respondents attested that Using MOOC's improves their learning efficiency. We shall therefore adopt their position.

4.2.2 MOOC's provide useful knowledge for my studies or professional growth

We also requested the respondents to testify if they believe that Using MOOC's improves their learning efficiency, their response is presented in the table below.

Table 4. 5 MOOC's provide useful knowledge for their studies or professional growth

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	5.8	5.8	5.8
	Disagree	28	7.8	7.8	13.6
	Undecided	31	8.6	8.6	22.2
	Agree	124	34.3	34.3	56.5
	Strongly Agree	157	43.5	43.5	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 21 respondents who are representing 5.8% of the entire response do strongly disagree to the statement that MOOC's provide useful knowledge for their studies or professional growth, also related to the above, a total of 28

respondents representing 7.8% of the entire response disagree to the statement that MOOC's provide useful knowledge for their studies or professional growth. Further to the above, 31 respondents representing 8.6% of the entire response were indifferent in their response. However, against the above positions, a total of 124 respondents representing 34.3% of the entire response agree to the statement that MOOC's provide useful knowledge for their studies or professional growth while a total of 157 respondents representing 43.5% of the entire response strongly agree to the statement that MOOC's provide useful knowledge for their studies or professional growth. This therefore implies that more of the respondents attested MOOC's provide useful knowledge for their studies or professional growth.

4.2.3 MOOC's provide useful knowledge for my studies or professional growth

We also requested the respondents to testify if they believe that MOOC's provide useful knowledge for their studies or professional growth, their response is presented in the table below.

Table 4. 6 MOOC's enhance my understanding of subjects effectively.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	16	4.4	4.4	4.4
	Disagree	37	10.2	10.2	14.7
	Undecided	38	10.5	10.5	25.2
	Agree	182	50.4	50.4	75.6
	Strongly Agree	88	24.4	24.4	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 16 respondents who are representing 4.4% of the entire response do strongly disagree to the statement that MOOC's provide useful knowledge for their studies or professional growth, also related to the above, a total of 37 respondents representing 10.2% of the entire response disagree to the statement that MOOC's

provide useful knowledge for their studies or professional growth. Further, 38 respondents representing 10.5% of the entire response were indifferent in their response. Against the above positions, a total of 182 respondents representing 50.4% of the entire response agree to the statement that MOOC's provide useful knowledge for their studies or professional growth while a total of 88 respondents representing 24.4% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested that MOOC's provide useful knowledge for their studies or professional growth.

4.2.4 MOOC's provide useful knowledge for my studies or professional growth

We also requested the respondents to testify if they believe that MOOC's help me perform better in my coursework**,** their response is presented in the table below.

Table 4. 7 MOOC's help me perform better in my coursework

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	25	6.9	6.9	6.9
	Disagree	28	7.8	7.8	14.7
	Undecided	47	13.0	13.0	27.7
	Agree	99	27.4	27.4	55.1
	Strongly Agree	162	44.9	44.9	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 25 respondents who are representing 6.9% of the entire response do strongly Disagree to the statement that MOOC's help me perform better in my coursework, also related to the above, a total of 28 respondents representing 7.8% of the entire response disagree to the statement that MOOC's help me perform better in my coursework. Further, 47 respondents representing 13.0% of the entire response were indifferent in their response. Against the above positions, a total of 99 respondents representing 27.4% of

the entire response agree to the statement that MOOC's help me perform better in my coursework while a total of 162 respondents representing 49.9% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested that MOOC's help me perform better in my coursework.

4.2.5 MOOC's increase my productivity in learning

We also requested the respondents to testify if they believe that MOOC's increase their productivity in learning**,** their response is presented in the table below.

Table 4. 8 MOOC's increase my productivity in learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	5.0	5.0	5.0
	Disagree	27	7.5	7.5	12.5
	Undecided	34	9.4	9.4	21.9
	Agree	125	34.6	34.6	56.5
	Strongly Agree	157	43.5	43.5	100.0
	Total	361	100.0	100.0	

Source; Survey, 2025

From the table above, we can see clearly that a total of 18 respondents who represent 5.0% of the entire response do strongly disagree to the statement that MOOC's increase their productivity in learning, also related to the above, a total of 27 respondents representing 7.5% of the entire response disagree to the statement that MOOC's increase their productivity in learning. Further, 34 respondents representing 9.4% of the entire response were indifferent in their response. Against the above positions, a total of 125 respondents representing 34.6% of the entire response agree to the statement that MOOC's increase their productivity in learning while a total of 157 respondents representing 43.5% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested that MOOC's increase their productivity in learning.

4.3 Section 3: Perceived ease to use

4.3.1 It is simple to learn how to use MOOC's

Here we asked the respondents to testify if they attest that it is simple to learn how to use MOOC's**,** their response is presented in the table below.

Table 4. 9 It is simple to learn how to use MOOC's.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	6.1	6.1	6.1
	Disagree	19	5.3	5.3	11.4
	Undecided	39	10.8	10.8	22.2
	Agree	185	51.2	51.2	73.4
	Strongly Agree	96	26.6	26.6	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 22 respondents who are representing 6.1% of the entire response do strongly disagree to the statement that it is simple to learn how to use MOOC's, also related to the above, a total of 19 respondents representing 10.8% of the entire response disagree to the statement that it is simple to learn how to use MOOC's. Further, 39 respondents representing 10.8% of the entire response were indifferent in their response. Against the above positions, a total of 185 respondents representing 51.2% of the entire response agree to the statement that it is simple to learn how to use MOOC's while a total of 96 respondents representing 26.6% of the entire response strongly agree to the statement that it is simple to learn how to use MOOC's. This therefore implies that more of the respondents attested that it is simple to learn how to use MOOC's.

4.3.2. MOOCs are easy to navigate and operate.

Here we asked the respondents to testify if they attest that MOOC's are easy to navigate and operate, their response is presented in the table below.

Table 4. 10 MOOC's are easy to navigate and operate.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	23	6.4	6.4	6.4
	Disagree	29	8.0	8.0	14.4
	Undecided	35	9.7	9.7	24.1
	Agree	183	50.7	50.7	74.8
	Strongly Agree	91	25.2	25.2	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 23 respondents who are representing 6.4% of the entire response do strongly disagree to the statement that MOOC's are easy to navigate and operate,, also related to the above, a total of 29 respondents representing 8.0% of the entire response disagree to the statement that MOOC's are easy to navigate and operate,. Further, 35 respondents representing 9.7% of the entire response were indifferent in their response. Against the above positions, a total of 183 respondents representing 50.7% of the entire response agree to the statement that MOOC's are easy to navigate and operate, while a total of 91 respondents representing 25.2% of the entire response strongly agree with the statement that MOOC's are easy to navigate and operate. This therefore implies that more of the respondents attested that MOOC's are easy to navigate and operate.

4.3.3 I find it easy to become skillful at using MOOC's.

Here we asked the respondents to testify if they attest that they find it easy to become skillful at using MOOC's, their response is presented in the table below.

Table 4. 11 I find it easy to become skillful at using MOOC's

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	16	4.4	4.4	4.4
	Disagree	31	8.6	8.6	13.0
	Undecided	39	10.8	10.8	23.8
	Agree	114	31.6	31.6	55.4
	Strongly Agree	161	44.6	44.6	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 16 respondents who are representing 4.4 % of the entire response do strongly disagree to the statement that they find it easy to become skillful at using MOOC's, also related to the above, a total of 31 respondents representing 8.6% of the entire response disagree to the statement that they find it easy to become skillful at using MOOC's. Further, 39 respondents representing 10.8% of the entire response were indifferent in their response. Against the above positions, a total of 114 respondents representing 31.6% of the entire response agree to the statement that they find it easy to become skillful at using MOOC's while a total of 161 respondents representing 44.6% of the entire response strongly agree to the statement that they find it easy to become skillful at using MOOC's. This therefore implies that more of the respondents attested that they find it easy to become skillful at using MOOC's.

4.3.4 The design of MOOC's makes it easy to use

Here we asked the respondents to testify that the design of MOOC's makes it easy to use, their response is presented in the table below.

Table 4. 12 The design of MOOC's makes it easy to use.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	19	5.3	5.3	5.3
	Disagree	36	10.0	10.0	15.2
	Undecided	36	10.0	10.0	25.2
	Agree	182	50.4	50.4	75.6
	Strongly Agree	88	24.4	24.4	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 19 respondents who are representing 6.3% of the entire response do strongly disagree to the statement that the design of MOOC's makes it easy to use, also related to the above, a total of 36 respondents representing 10% of the entire response disagree to the statement that the design of MOOC's makes it easy to use. Further, 36 respondents representing 10.0% of the entire response were indifferent in their response. Against the above positions, a total of 182 respondents representing 50.4% of the entire response agree to the statement that the design of MOOC's makes it easy to use while a total of 88 respondents representing 24.4% of the entire response strongly agree to the statement that the design of MOOC's makes it easy to use. This therefore implies that more of the respondents attested that the design of MOOC's makes it easy to use.

4.3.5 Learning through MOOC's requires little effort

Here we asked the respondents to testify that the activity of Learning through MOOC's requires little effort, their response is presented in the table below.

Table 4. 13 Learning through MOOC's requires little effort.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	19	5.3	5.3	5.3
	Disagree	20	5.5	5.5	10.8
	Undecided	35	9.7	9.7	20.5
	Agree	120	33.2	33.2	53.7
	Strongly Agree	167	46.3	46.3	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 19 respondents who are representing 5.3% of the entire response do strongly disagree to the statement that Learning through MOOC's requires little effort, also related to the above, a total of 20 respondents representing 5.5% of the entire response disagree to the statement that Learning through MOOC's requires little effort. Further, 35 respondents representing 9.7% of the entire response were indifferent in their response. Against the above positions, a total of 120 respondents representing 33.2% of the entire response agree to the statement that Learning through MOOC's requires little effort while a total of 167 respondents representing 46.3% of the entire response strongly agree to the statement that Learning through MOOC's requires little effort. This therefore implies that more of the respondents attested that Learning through MOOC's requires little effort.

4.4 Section 4: Perceived enjoyment

4.4.1 I find using MOOCs to be enjoyable.

Here we asked the respondents to testify that they find using MOOCs to be enjoyable, their response is presented in the table below.

Table 4. 14 I find using MOOCs to be enjoyable.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	26	7.2	7.2	7.2
	Disagree	26	7.2	7.2	14.4
	Undecided	31	8.6	8.6	23.0
	Agree	122	33.8	33.8	56.8
	Strongly Agree	156	43.2	43.2	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From table 4.16 above, we can see clearly that a total of 26 respondents who are representing 7.2% of the entire response do strongly disagree to the statement that they find using MOOCs to be enjoyable, also related to the above, a total of 26 respondents representing 7.2% of the entire response disagree to the statement that they find using MOOCs to be enjoyable. Further, 31 respondents representing 8.6% of the entire response were indifferent in their response. Against the above positions, a total of 133 respondents representing 33.8% of the entire response agree to the statement that they find using MOOCs to be enjoyable while a total of 156 respondents representing 43.2% of the entire response strongly agree to the statement that they find using MOOCs to be enjoyable. This therefore implies that more of the respondents attested that they find using MOOCs to be enjoyable.

4.4.2 I feel satisfied when I complete MOOCs courses.

Here we asked the respondents if they testify that they feel satisfied when I complete MOOCs courses, their response is presented in the table below

Table 4. 15 I feel satisfied when I complete MOOCs courses.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	26	7.2	7.2	7.2
	Disagree	27	7.5	7.5	14.7
	Undecided	31	8.6	8.6	23.3
	Agree	122	33.8	33.8	57.1
	Strongly Agree	155	42.9	42.9	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 26 respondents who are representing 7.2% of the entire response do strongly agree to the statement that they feel satisfied when they complete MOOCs courses, also related to the above, a total of 27 respondents representing 7.5% of the entire response disagree to the statement that they feel satisfied when they complete MOOCs courses. Further, 31 respondents representing 8.6% of the entire response were indifferent in their response. Against the above positions, a total of 122 respondents representing 33.8% of the entire response agree to the statement that they feel satisfied when they complete MOOCs courses while a total of 155 respondents representing 52.9% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested they feel satisfied when I complete MOOCs courses.

4.4.3 The interactive elements in MOOCs make learning more interesting

Here we asked the respondents if they testify that the interactive elements in MOOCs make learning more interesting, their response is presented in the table below.

Table 4. 16 The interactive elements in MOOCs make learning more interesting.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	20	5.5	5.5	5.5
	Disagree	26	7.2	7.2	12.7
	Undecided	42	11.6	11.6	24.4
	Agree	175	48.5	48.5	72.9
	Strongly Agree	98	27.1	27.1	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 20 respondents who are representing 5.5% of the entire response do strongly disagree to the statement that the interactive elements in MOOCs make learning more interesting, also related to the above, a total of 26 respondents representing 7.2% of the entire response disagree to the statement that the interactive elements in MOOCs make learning more interesting. Further, 42 respondents representing 11.6% of the entire response were indifferent in their response. Against the above positions, a total of 175 respondents representing 48.5% of the entire response agree to the statement that the interactive elements in MOOCs make learning more interesting while a total of 98 respondents representing 47.1% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested that the interactive elements in MOOCs make learning more interesting.

4.4.4 I feel motivated while using MOOCs.

Here we asked the respondents if they agree with the statement that they feel motivated while using MOOCs, their response is presented in the table below.

Table 4. 17 I feel motivated while using MOOCs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	5.0	5.0	5.0
	Disagree	33	9.1	9.1	14.1
	Undecided	34	9.4	9.4	23.5
	Agree	183	50.7	50.7	74.2
	Strongly Agree	93	25.8	25.8	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 18 respondents who are representing 5.0% of the entire response do strongly disagree to the statement that they feel motivated while using MOOCs, also related to the above, a total of 33 respondents representing 9.1% of the entire response disagree to the statement that they feel motivated while using MOOCs. Further, 34 respondents representing 9.4% of the entire response were indifferent in their response. Against the above positions, a total of 183 respondents representing 50.7% of the entire response agree to the statement that they feel motivated while using MOOCs while a total of 93 respondents representing 25.8% of the entire response strongly agree to the statement that they feel motivated while using MOOCs. This therefore implies that more of the respondents attested that they feel motivated while using MOOCs.

4.4.4 The visual and multimedia elements in MOOCs enhance my enjoyment.

Here we asked the respondents if they agree to the statement that the visual and multimedia elements in MOOCs enhance my enjoyment, their response is presented in the table below.

Table 4. 18 The visual and multimedia elements in MOOCs enhance my enjoyment.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	24	6.6	6.6	6.6
	Disagree	22	6.1	6.1	12.7
	Undecided	43	11.9	11.9	24.7
	Agree	112	31.0	31.0	55.7
	Strongly Agree	160	44.3	44.3	100.0
	Total	361	100.0	100.0	

Source; Survey, 2025

From table 4.20 above, we can see clearly that a total of 24 respondents who are representing 6.6% of the entire response do strongly disagree to the statement that the visual and multimedia elements in MOOCs enhance my enjoyment, also related to the above, a total of 22 respondents representing 6.1% of the entire response disagree to the statement that the visual and multimedia elements in MOOCs enhance my enjoyment. Further, 43 respondents representing 11.9% of the entire response were indifferent in their response. Against the above positions, a total of 112 respondents representing 31.0% of the entire response agree to the statement that the visual and multimedia elements in MOOCs enhance my enjoyment while a total of 160 respondents representing 44.3% of the entire response strongly agree to the statement that the visual and multimedia elements in MOOCs enhance my enjoyment. This therefore implies that more of the respondents attested that the visual and multimedia elements in MOOCs enhance my enjoyment.

4.5 SECTION 5: Behavioral intention to use

4.5.1 I intend to use MOOC's regularly for learning.

Here we asked the respondents if they agree with the statement that they intend to use MOOC's regularly for learning. Their response is presented on the table below.

Table 4. 19 I intend to use MOOC's regularly for learning.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	5.8	5.8	5.8
	Disagree	26	7.2	7.2	13.0
	Undecided	36	10.0	10.0	23.0
	Agree	182	50.4	50.4	73.4
	Strongly Agree	96	26.6	26.6	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 21 respondents who are representing 5.8% of the entire response do strongly disagree to the statement that they intend to use MOOC's regularly for learning, also related to the above, a total of 26 respondents representing 7.2% of the entire response disagree to the statement that they intend to use MOOC's regularly for learning.. Further, 36 respondents representing 10.0% of the entire response were indifferent in their response. Against the above positions, a total of 182 respondents representing 50.4% of the entire response agree to the statement that they intend to use MOOC's regularly for learning, while a total of 96 respondents representing 26.6% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested they intend to use MOOC's regularly for learning.

4.5.2 I am likely to recommend MOOC's to my peers.

Here we asked the respondents if they agree to the statement that they are likely to recommend MOOC's to their peers. Their response is presented in the table below.

Table 4. 20 I am likely to recommend MOOC's to my peers.

		Frequency	Percent	Valid Percent		Cumulative Percent
Valid	Strongly Disagree	24	6.6	6.6		6.6
	Disagree	23	6.4	6.4		13.0
	Undecided	42	11.6	11.6		24.7
	Agree	116	32.1	32.1		56.8
	Strongly Agree	156	43.2	43.2		100.0
	Total	361	100.0	100.0		

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 24 respondents who are representing 6.6% of the entire response do strongly disagree to the statement that are likely to recommend MOOC's to their peers, also related to the above, a total of 23 respondents representing 6.4% of the entire response disagree to the statement that are likely to recommend MOOC's to their peers. Further, 42 respondents representing 11.6% of the entire response were indifferent in their response. Against the above positions, a total of 116 respondents representing 31.1% of the entire response agree to the statement that are likely to recommend MOOC's to their peers while a total of 156 respondents representing 43.2% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested that are likely to recommend MOOC's to their peers.

4.5.3 I plan to explore more MOOC's courses in the future.

Here we asked the respondents if they agree to the statement that they plan to explore more MOOC's courses in the future**.** Their response is presented in the table below.

Table 4. 21 I plan to explore more MOOC's courses in the future.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	6.1	6.1	6.1
	Disagree	31	8.6	8.6	14.7
	Undecided	36	10.0	10.0	24.7
	Agree	179	49.6	49.6	74.2
	Strongly Agree	93	25.8	25.8	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 22 respondents who are representing 6.1% of the entire response do strongly disagree to the statement that they plan to explore more MOOC's courses in the future, also related to the above, a total of 31 respondents representing 8.6% of the entire response disagree to the statement that they plan to explore more MOOC's courses in the future. Further, 36 respondents representing 10.0% of the entire response were indifferent in their response. Against the above positions, a total of 179 respondents representing 49.6% of the entire response agree to the statement that they plan to explore more MOOC's courses in the future while a total of 93 respondents representing 25.8% of the entire response strongly agree to the statement that they plan to explore more MOOC's courses in the future. This therefore implies that more of the respondents attested that they plan to explore more MOOC's courses in the future.

4.5.4 I will integrate MOOC's into my regular study routine.

Here we asked the respondents if they agree to the statement that they plan to integrate MOOC's into their regular study routine. Their response is presented in the table below.

Table 4. 22 I will integrate MOOC's into my regular study routine.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	5.0	5.0	5.0
	Disagree	27	7.5	7.5	12.5
	Undecided	39	10.8	10.8	23.3
	Agree	113	31.3	31.3	54.6
	Strongly Agree	164	45.4	45.4	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 18 respondents who are representing 5.0% of the entire response do strongly disagree to the statement that they plan to integrate MOOC's into their regular study routine also related to the above, a total of 27 respondents representing 7.5% of the entire response disagree to the statement that they plan to integrate MOOC's into their regular study routine. Further, 39 respondents representing 10.8% of the entire response were indifferent in their response. Against the above positions, a total of 113 respondents representing 31.3% of the entire response agree to the statement that they plan to integrate MOOC's into their regular study routine while a total of 164 respondents representing 45.4% of the entire response strongly agree to the statement that they plan to integrate MOOC's

into their regular study routine. This therefore implies that more of the respondents attested that they plan to integrate MOOC's into their regular study routine.

4.5.5 I will consider MOOC's as a primary source of learning.

Here we asked the respondents if they agree to the statement that they plan to consider MOOC's as a primary source of learning. Their response is presented in the table below.\

Table 4. 23 I will consider MOOC's as a primary source of learning.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	5.8	5.8	5.8
	Disagree	21	5.8	5.8	11.6
	Undecided	43	11.9	11.9	23.5
	Agree	111	30.7	30.7	54.3
	Strongly Agree	165	45.7	45.7	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 21 respondents who are representing 5.8% of the entire response do strongly disagree to the statement that they plan to consider MOOC's as a primary source of learning, also related to the above, a total of 21 respondents representing 5.8% of the entire response disagree to the statement that they plan to consider MOOC's as a primary source of learning. Further, 43 respondents representing 11.9% of the entire response were indifferent in their response. Against the above positions, a total of 111 respondents representing 30.7% of the entire response agree to the statement that they plan to consider MOOC's as a primary source of learning while a total of 165 respondents representing

45.7% of the entire response strongly agree to the statement that they plan to consider MOOC's as a primary source of learning. This therefore implies that more of the respondents attested that they plan to consider MOOC's as a primary source of learning.

Section 6: Massive open online courses

4.6.1 The content provided meets the requirement of the course syllabus

Here we asked the respondents if they agree to the statement that the content provided meet the requirement of the course syllabus. Their response is presented in the table below.

Table 4. 26 The content provided meet the requirement of the course syllabus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	5.8	5.8	5.8
	Disagree	24	6.6	6.6	12.5
	Undecided	38	10.5	10.5	23.0
	Agree	175	48.5	48.5	71.5
	Strongly Agree	103	28.5	28.5	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table 4.31 above, we can see clearly that a total of 21 respondents who are representing 5.8% of the entire response do strongly disagree to the statement that the content provided meet the requirement of the course syllabus, also related to the above, a total of 24 respondents representing 6.6% of the entire response disagree to the statement that the content provided meet the requirement of the course syllabus. Further, 38 respondents representing 10.5% of the entire response were indifferent in their response. Against the above positions, a total of 175 respondents representing 48.5% of the entire response agreed to the statement that the content provided meets the requirement of the course syllabus while a total of 103 respondents representing 28.5% of the entire response strongly agree to the statement. This therefore implies

that more of the respondents attested that the content provided meets the requirement of the course syllabus.

4.6.2 The content is well-organized.

Here we asked the respondents if they agree with the statement that the content is well-organized. Their response is presented on the table below.

Table 4. 27 The content is well-organized.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	6.1	6.1	6.1
	Disagree	27	7.5	7.5	13.6
	Undecided	45	12.5	12.5	26.0
	Agree	110	30.5	30.5	56.5
	Strongly Agree	157	43.5	43.5	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 22 respondents who are representing 6.1% of the entire response do strongly disagree to the statement that the content is well-organized, also related to the above, a total of 27 respondents representing 7.5% of the entire response disagree to the statement that the content is well-organized. Further, 45 respondents representing 12.5% of the entire response were indifferent in their response. Against the above positions, a total of 110 respondents representing 30.5% of the entire response agree to the statement that the content is well-organized while a total of 157 respondents representing 43.5%

of the entire response strongly agree to the statement that the content is well-organized. This therefore implies that more of the respondents attested that the content is well-organized,

4.6.3 I believe MOOC's are an effective tool for achieving my educational goals.

Here we asked the respondents if they agree to the statement that they believe MOOC's are an effective tool for achieving my educational goals. Their response is presented in the table below.

Table 4. 28 I believe MOOC's are an effective tool for achieving my educational goals.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	4.7	4.7	4.7
	Disagree	32	8.9	8.9	13.6
	Undecided	33	9.1	9.1	22.7
	Agree	112	31.0	31.0	53.7
	Strongly Agree	167	46.3	46.3	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 17 respondents who are representing 4.7% of the entire response do strongly disagree to the statement that they believe MOOC's are an effective tool for achieving my educational goals, also related to the above, a total of 32 respondents representing 8.9% of the entire response disagree to the statement that they believe MOOC's are an effective tool for achieving my educational goals. Further, 33 respondents representing 9.1% of the entire response were indifferent in their response. Against the above positions, a total of 112 respondents representing 31.0% of the entire response agree to the

statement that they believe MOOC's are an effective tool for achieving my educational goals while a total of 167 respondents representing 46.3% of the entire response strongly agree to the statement that they believe MOOC's are an effective tool for achieving my educational goals. This therefore implies that more of the respondents attested that they believe MOOC's are an effective tool for achieving my educational goals.

4.6.4 I am satisfied with the quality of education provided through MOOC's.

Here we asked the respondents if they agree to the statement that they are satisfied with the quality of education provided through MOOC's. Their response is presented in the table below.

Table 4. 29 I am satisfied with the quality of education provided through MOOC's.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	19	5.3	5.3	5.3
	Disagree	28	7.8	7.8	13.0
	Undecided	47	13.0	13.0	26.0
	Agree	107	29.6	29.6	55.7
	Strongly Agree	160	44.3	44.3	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 19 respondents who are representing 5.3% of the entire response do strongly disagree to the statement that are satisfied with the quality of education provided through MOOC's, also related to the above, a total of 28 respondents representing 7.8% of the entire response agree to the statement that are satisfied with the quality of education provided through MOOC's. Further, 47 respondents representing 13.0% of the entire response were indifferent in their response. Against the above positions, a total of 107 respondents representing 29.6% of the entire response agree to the statement that are

satisfied with the quality of education provided through MOOC's while a total of 160 respondents representing 44.3% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested that are satisfied with the quality of education provided through MOOC's.

4.6.5 I would recommend MOOC's to others for their educational needs

Here we asked the respondents if they agree to the statement that they would recommend MOOC's to others for their educational needs. Their response is presented in the table below.

Table 4.30 I would recommend MOOC's to others for their educational needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	5.0	5.0	5.0
	Disagree	30	8.3	8.3	13.3
	Undecided	30	8.3	8.3	21.6
	Agree	114	31.6	31.6	53.2
	Strongly Agree	169	46.8	46.8	100.0
	Total	361	100.0	100.0	

Source: Field Survey, 2025

From the table above, we can see clearly that a total of 18 respondents who are representing 5.0% of the entire response do strongly disagree to the statement that would recommend MOOC's to others for their educational needs, also related to the above, a total of 30 respondents representing 8.3% of the entire response disagree to the statement that would recommend MOOC's to others for their educational needs. Further, 30 respondents representing 8.3% of the entire response were indifferent in their response. Against the above positions, a total of 114 respondents representing 31.6% of the entire response agree to the statement that would

recommend MOOC's to others for their educational needs while a total of 169 respondents representing 46.8% of the entire response strongly agree to the statement. This therefore implies that more of the respondents attested that would recommend MOOC's to others for their educational needs.

4.7 Multiple Regression

Table 4. 31 Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.870[a]	.757	.753	.45078

a. Predictors: (Constant), LP11, PU11, BI11, PEOU11, PE11

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.159	.121		1.314	.190
	PU11	.317	.055	.319	5.741	.000
	PEOU11	.151	.063	.140	2.380	.018
	PE11	.022	.066	.020	.332	.740
	BI11	.221	.060	.212	3.680	.000

a. Dependent Variable: MOOCS11

The regression analysis outputs reveal key insights regarding the prediction of the dependent variable, MOOCS11, based on several independent variables: LP11 (Learning Preference), PU11 (Perceived Usefulness), BI11 (Behavioral Intention), PEOU11 (Perceived Ease of Use), and PE11 (Personal Experience). The model shows a strong positive correlation, with an R value of 0.870 and an R Square of 0.757, indicating that approximately 75.7% of the variance in MOOCS11 can be explained by the predictors used. The adjusted R Square of 0.753 signifies

that the model remains robust even when accounting for the number of predictors. Among the independent variables, perceived usefulness (PU11) and perceived ease of use (PEOU11) are statistically significant, with coefficients of 0.317 and 0.151, respectively, suggesting that increases in these factors lead to substantial increases in MOOCS11 outcomes. Behavioral intention (BI11) also shows a significant positive effect with a coefficient of 0.221, indicating a direct relationship with MOOCS11. Meanwhile, In contrast, personal experience (PE11) does not exhibit a significant effect, with a coefficient of 0.022 and a p-value of 0.740. Overall, the model effectively captures significant predictors that influence MOOCS11, confirming the relevance of perceived usefulness, perceived ease of use and behavioural intention.

Correlations

		PU11	PEOU11	PE11	BI11	LP11	MOOCS11
PU11	Pearson Correlation	1	.826**	.852**	.808**	.751**	.813**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	361	361	361	361	361	361
PEOU11	Pearson Correlation	.826**	1	.846**	.836**	.792**	.799**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	361	361	361	361	361	361
PE11	Pearson Correlation	.852**	.846**	1	.848**	.766**	.784**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	361	361	361	361	361	361
BI11	Pearson Correlation	.808**	.836**	.848**	1	.789**	.804**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	361	361	361	361	361	361
MOOCS11	Pearson Correlation	.813**	.799**	.784**	.804**	.787**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	

N	361	361	361	361	361	361

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation table above simply reflects the level of relationship between the variables under study.

In examining the relationships outlined in the hypotheses, the findings indicate several significant correlations between various factors and MOOCs. For the first hypothesis, there is a direct relationship between Perceived Usefulness (PU) and MOOCs, evidenced by a correlation value of 0.813. The statistical significance is confirmed with a p-value of 0.01 and a t-value of 0.000, highlighting a robust connection between perceived usefulness and MOOC. Similarly, the second hypothesis reveals a direct relationship between Perceived Ease of Use (PEOU) and MOOCs, yielding a correlation value of 0.779, with significance maintained at a p-value of 0.01 and a t-value of 0.000. This reinforces the notion that perceived ease of use positively influences MOOCs. The third hypothesis presents a positive relationship between Perceived Enjoyment (PE) and MOOCs, demonstrated by a correlation value of 0.784. Again, the significance is affirmed with a p-value of 0.01 and a t-value of 0.000, suggesting that greater enjoyment enhances the MOOC experience. The fourth hypothesis underscores a positive relationship between Behavioral Intention and MOOC, with a correlation value of 0.804, supported by a significant p-value of 0.01 and a t-value of 0.000, thereby indicating the importance of behavioral intention in engaging with MOOCs. Lastly, the fifth hypothesis confirms a positive relationship between Lean Principle and MOOCs, with a correlation value of 0.787 and, once more, statistical significance indicated by a p-value of 0.01 and a t-value of 0.000. Collectively, these findings

suggest that perceived usefulness, perceived ease of use, perceived enjoyment, behavioral intention, and lean principles significantly influence the effectiveness and attraction of MOOC.

4.8 Summary

The analysis reveals several key relationships concerning MOOC. Firstly, a direct relationship exists between Perceived Usefulness (PU) and MOOC, as well as between Perceived Ease of Use (PEOU) and MOOCs. Additionally, positive relationships were identified between Perceived Enjoyment (PE), Behavioral Intention, Lean Principles, and MOOC. Respondents generally perceived MOOC as useful, easy to use, and enjoyable, which correlated with increased usage and a greater likelihood of recommending them to others. The study also indicates that the implementation of lean principles in MOOC design and delivery has been effective and efficient. Finally, the evaluation of Educational Supply Chain Management (ESCM) relationships with MOOC revealed that the content provided met course syllabus requirements, was well-organized, and that MOOC were considered effective tools for achieving educational goals, providing satisfaction with the quality of education, and fostering a willingness to recommend them.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This study was set out to determine the nature of the interplay between Education Supply Chain Management (ESCM) and the Technology Acceptance Model (TAM) on how they influence the adoption, engagement, and effectiveness of MOOCs within the academic community at UUM. In the first chapter, we outlined the background to the study along-side the problem of the study, after which we developed the research questions and objectives. We further stated the research scope and operationally defined our research concepts. In the second chapter we made reviews of conceptual, theoretical and empirical reviews as well as we adopted a theory to aid in the support of our argument. In the third chapter, we made the research methodology as we discussed the methods of generating data and analysis for the study along-side the justification for the methods

adopted. In the fourth chapter, we made the presentation and analysis of data as generated and interpreted using the SPSS software and we developed some findings of the research. In the fifth chapter, we made review of the entire research work and suggested some recommendations for improvement.

5.1 Discussion

The data analysis conducted in this study established several significant relationships pertaining to MOOC adoption and effectiveness at Universiti Utara Malaysia (UUM). Firstly, the test of the primary hypothesis confirmed a direct relationship between Perceived Usefulness (PU) and MOOCs, indicating that students who perceive MOOCs as valuable resources are more likely to engage with them. Secondly, the rejection of the null hypothesis for the second hypothesis revealed a direct relationship between Perceived Ease of Use (PEOU) and MOOCs, suggesting that the user-friendliness and accessibility of MOOC platforms significantly influence student adoption. Similarly, the acceptance of the third alternate hypothesis demonstrated a positive relationship between Perceived Enjoyment (PE) and MOOCs, highlighting the importance of creating engaging and enjoyable learning experiences. Furthermore, the study found a positive relationship between Behavioral Intention and MOOCs, indicating that students who intend to use MOOCs are more likely to actively participate in them. Lastly, a positive relationship was established between Lean Principles and MOOCs, suggesting that the application of lean methodologies in MOOC design and delivery enhances their effectiveness.

In assessing the influence of perceived usefulness, ease of use, enjoyment, and behavioral intention on learner engagement, the study revealed that a significant portion of respondents attested to improvements in their learning efficiency, access to useful knowledge, enhanced understanding of subjects, better performance in coursework, and increased productivity.

Specifically, respondents found MOOCs simple to learn, easy to navigate, and requiring minimal effort. Moreover, the implementation of lean principles in MOOC design and delivery was found to provide a structured and efficient learning experience, optimize understanding and time efficiency, maximize learning with minimal resources, and promote continuous improvement. Finally, the evaluation of the relationships between Educational Supply Chain Management (ESCM) and MOOCs revealed that the content provided met course syllabus requirements, was well-organized, and that MOOCs were considered effective tools for achieving educational goals, providing satisfaction with the quality of education, and fostering a willingness to recommend them to others. These findings collectively underscore the importance of user perceptions, efficient design, and effective management in maximizing the potential of MOOCs as valuable educational resources.

5.1 Conclusion

This study has been able to explore how MOOCs fits into academic programs and contributes to the optimization of educational resource distribution. This study was able to establish the centrality of educational supply chain management on the massive open online courses at the UUM. This therefore indicates that for the success of the MOOSC to be guaranteed and effectively discharged, there is need to adopt the usage of educational supply chain management principles. As the MOOCs operate within a complex network of processes, including identifying learner needs, developing course materials, deploying technology platforms, and providing support systems, these complexities can only be managed by the appropriate adoption of the

supply chain management practices, as the supply chain management ensures that learning resources are created, delivered, and consumed efficiently and other rising issues are addressed.

The MOOCs has being able to design higher educational courses which are basically online and has attracted a wider range of students across the globe simultaneously. The increasing need for a cost-effective and self-paced learning platforms, the rising demand for skill development in an ever-evolving job market and the widespread adoption of remote learning by educational institutions has shifted the focus of most conventional educational institutions to adopt the MOOCs.

5.2 Recommendations

Based on the findings of this research and with the aim of enhancing the efficiency and effectiveness of MOOCs, several recommendations are put forth. Given the positively strong relationship between Education Supply Chain Management (ESCM) and MOOCs, it is crucial that these two areas work collaboratively to ensure sustainability, and the strategies for implementing lean principles in MOOC design and delivery, which have proven satisfactory in this study, should be maintained. Furthermore, there is a need to continuously strengthen the course quality of MOOCs to attract greater patronage and to ensure the efficiency and effectiveness of the program. Regular and periodic assessments should be conducted to identify any weakening indices of Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, and Behavioral Intention, allowing for subsequent improvements. It is also essential to maintain

the standards already achieved, as revealed by this research, and to ensure that these standards are not compromised. Finally, there is a need to inform researchers, teachers, and designers about the current state of MOOC initiatives across the country, and to provide recommendations that will aid in adapting the nationwide MOOC initiative within the Malaysian higher education system, drawing from the experiences of other countries with similar interests in its institutionalization.

5.3 Further Studies

To further advance the understanding and effectiveness of MOOCs, several avenues for future research emerge from this study's findings and recommendations. Longitudinal studies are needed to track the long-term impact of Education Supply Chain Management (ESCM) implementations on MOOC sustainability, completion rates, and learner satisfaction, exploring key performance indicators and the correlation between ESCM maturity levels and MOOC program success. Comparative analyses of different approaches to implementing lean principles in MOOC design and delivery could identify the most effective strategies for reducing waste, improving efficiency, and enhancing learner engagement. The development of a predictive model, based on Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Enjoyment (PE), Behavioral Intention (BI), and lean principles, could forecast learner success and enable targeted interventions for at-risk students. Cross-cultural studies are essential to understand how cultural factors influence MOOC adoption in diverse national contexts, informing necessary adaptations for effective implementation. Qualitative research could provide richer insights into learner experiences, identifying barriers to adoption and completion and exploring how ESCM practices contribute to success. Further investigation of specific ESCM practices, such as demand

forecasting and resource management, could reveal their impact on MOOC effectiveness. Finally, research into the impact of emerging technologies, such as AI-powered tutoring systems and virtual reality, on learner engagement and outcomes, along with the associated ethical considerations, is crucial for the continued evolution of MOOCs. These research directions, grounded in the present study's findings, offer significant potential for enhancing the value and accessibility of MOOCs as a transformative educational tool.

REFERENCES

Abdullahi, M. S., Salleh, N., Nordin, A., & Alwan, A. A. (2021). Cloud-based learning system: Systematic review and future direction. Education and Information Technologies, 26(1), 457–489. https://doi.org/10.1007/s10639-020-10249-6

Addotey-Delove, M., Moro, S., Garbuio, M., & Brintrup, A. (2023). Artificial intelligence adoption intention by SMEs: An integrated model of technology acceptance. Technological Forecasting and Social Change, 190, 122384. https://doi.org/10.1016/j.techfore.2023.122384

Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. MIS Quarterly, 24(4), 665–694. https://doi.org/10.2307/3250951

Ahn, T., Ryu, S., & Han, I. (2007). The impact of Web quality and playfulness on user acceptance of online retailing. Information & Management, 44(3), 263–275. https://doi.org/10.1016/j.im.2006.12.008

Alboliteeh, M., Lohman, O., & Youssef, N. F. A. (2022). Factors influencing the adoption of electronic health records in Saudi Arabia: Application of the unified theory of acceptance

and use of technology. Journal of Multidisciplinary Healthcare, 15, 317–327. https://doi.org/10.2147/JMDH.S332933

Alharbi, S., & Drew, S. (2014). Using the technology acceptance model in understanding academics' behavioural intention to use learning management systems. International Journal of Advanced Computer Science and Applications, 5(1), 143–155. https://doi.org/10.14569/IJACSA.2014.050120

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2022). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. Education and Information Technologies, 25(6), 5261–5280. https://doi.org/10.1007/s10639-020-10219-y

Alraimi, K. M., Zo, H., & Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. Computers & Education, 80, 28–38. https://doi.org/10.1016/j.compedu.2014.08.006

Alsyouf, A., Maabreh, K., Albsoul, M., Alafeef, M., Alshare, E., Alzoubi, H. M., ... & Prasath, V. (2023). An improved framework for e-learning systems adoption in higher education: A hybrid SEM-ANN approach. Education and Information Technologies, 28(2), 2163–2193. https://doi.org/10.1007/s10639-022-11191-9

Alsyouf, A., Maabreh, K., Albsoul, M., Alafeef, M., & Alqutob, R. (2023). Empirical study of user acceptance of online health services in Jordan. Healthcare, 11(3), 427. https://doi.org/10.3390/healthcare11030427

Baturay, M. H. (2015). An overview of the world of MOOCs. Procedia-Social and Behavioral Sciences, 174, 427–433. https://doi.org/10.1016/j.sbspro.2015.01.685

Bettiol, S., Psereckis, R., & MacIntyre, K. (2022). A perspective of massive open online courses (MOOCs) and public health. *Frontiers in public health*, *10*, 1058383.

Blythe, M. A., Hassenzahl, M., & Wright, P. (2004). Introduction: Beyond fun. Interactions, 11(5), 36–37. https://doi.org/10.1145/1015530.1015541

Buil, I., Catalán, S., & Martínez, E. (2017). The influence of flow on learning outcomes: An empirical study on the use of clickers. British Journal of Educational Technology, 48(6), 1296–1307. https://doi.org/10.1111/bjet.12506

Çakiroğlu, Ü., Gökoğlu, S., & Öztürk, M. (2023). Massive Open Online Courses: Current state and future trends. In Perspective Chapter: MOOCs at Higher Education. IntechOpen. https://doi.org/10.5772/intechopen.108799

Cheema, U., Rizwan, M., Jalal, R., Durrani, F., & Sohail, N. (2013). The trend of online shopping in 21st century: Impact of enjoyment in TAM Model. Asian Journal of Empirical Research, 3(2), 131–141.Cheng, Y. (2022). Facilitating conditions for e-government adoption: A citizen-centric

perspective. Government Information Quarterly, 39(3), 101695.https://doi.org/10.1016/j.giq.2022.101695

Choe, Y., Kim, J., & Hwang, D. (2021). Perceived risks from drone food delivery services before and after COVID-19. International Journal of Contemporary Hospitality Management, 33(4), 1276–1296. https://doi.org/10.1108/IJCHM-07-2020-0733

Daniel, J. (2012). Making sense of MOOCs: Musings in a maze of myth, paradox and possibility. Journal of Interactive Media in Education, 2012(3). https://doi.org/10.5334/2012-18

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982–1003. https://doi.org/10.1287/mnsc.35.8.982

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. Journal of Applied Social Psychology, 22(14), 1111–1132. https://doi.org/10.1111/j.1559-1816.1992.tb00945.x

de Moura, V. F., de Souza, C. A., & Viana, A. B. N. (2021). The use of Massive Open Online Courses (MOOCs) in blended learning courses and the functional value perceived by students. *Computers & Education*, *161*, 104077.

De Vries, M., & Opperman, P. (2023). Improving active participation during enterprise operations modeling with an extended story-card-method and participative modeling software. *Software and Systems Modeling*, *22*(4), 1341-1368.

Du, D., Chen, C., Wang, J., Li, D., & Zhou, L. (2024, November). A study on the effect of cylindrical shell scaled model size on ESCM prediction accuracy. In *Journal of Physics: Conference Series* (Vol. 2882, No. 1, p. 012075). IOP Publishing.

Ghani, M. T. A., Hamzah, M., Ramli, S., Ab, W., Daud, A. W., Romli, T. R. M., & Mokhtar, N. N. M. (2019). A questionnaire-based approach on technology acceptance model for mobile digital game-based learning. *Journal of Global Business and Social Entrepreneurship (GBSE)*, *5*(14), 11-21.

Goudarzi, E. V., Houshmand, M., Valilai, O. F., Ghezavati, V., & Bamdad, S. (2021). Equilibrial service composition model in Cloud manufacturing (ESCM) based on non-cooperative and cooperative game theory for healthcare service equipping. *PeerJ Computer Science*, *7*, e410

Hew, K. F., & Cheung, W. S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. Educational Research Review, 12, 45–58. https://doi.org/10.1016/j.edurev.2014.05.001

Hew, K. F., Hu, X., Qiao, C., & Tang, Y. (2019). What predicts student satisfaction with MOOCs: A gradient boosting trees supervised machine learning and sentiment analysis approach. Computers & Education, 145, 103724. https://doi.org/10.1016/j.compedu.2019.103724

Huang, S., Cheng, H., & Luo, M. (2024). Comparative Study on Barriers of Supply Chain Management MOOCs in China: Online Review Analysis with a Novel TOPSIS-CoCoSo Approach. *Journal of Theoretical and Applied Electronic Commerce Research*, *19*(3), 1793-1811

Huang, Y. M. (2020). Students' continuance intention to use MOOCs: The roles of intrinsic motivation and extrinsic motivation. Computer Applications in Engineering Education, 28(5), 1311–1320. https://doi.org/10.1002/cae.22294

Husna Hafiza R Azami and Roslina Ibrahim, "Development and Evaluation of Massive Open Online Course (MOOC) as a Supplementary Learning Tool: An Initial Study" International Journal of Advanced Computer Science and Applications(IJACSA), 10(7), 2019. *http://dx.doi.org/10.14569/IJACSA.2019.0100773*

Huynh-Cam, T. T., Nalluri, V., Chen, L. S., White, J., Nguyen, T. H., Nguyen, V. C., & Lu, T. C. (2024). DT-fuzzy DEMATEL: a new method for determining important factors for student satisfaction with e-course adoption in a Vietnamese university. *Journal of Applied Research in Higher Education*.

Ji, Z., Yang, Z., Liu, J., & Yu, C. (2020). Development of MOOC resources for college biology courses. Creative Education, 11(7), 1105–1114. https://doi.org/10.4236/ce.2020.117080

Kaplan, A. M., & Haenlein, M. (2016). Higher education and the digital revolution: About MOOCs, SPOCs, social media, and the Cookie Monster. Business Horizons, 59(4), 441–450. https://doi.org/10.1016/j.bushor.2016.03.008

Liyanagunawardena, T. R., Adams, A. A., & Williams, S. A. (2013). MOOCs: A systematic study of the published literature 2008–2012. The International Review of Research in Open and Distributed Learning, 14(3), 202–227. https://doi.org/10.19173/irrodl.v14i3.1455

Małys, Ł. (2022). ICT utilization in supply chain environmental collaboration practices as the moderator of firms' financial performance. *Sustainability*, *14*(2), 958.

Mailizar, M., Burg, D., & Maulina, S. (2021). Examining teachers' behavioral intention to use e-learning in teaching of mathematics: An extended TAM model. Contemporary Educational Technology, 13(2), ep298. https://doi.org/10.30935/cedtech/9367

Pampouri, A., Kostelidou, S., Sionta, E., Souitsme, M., & Mavropoulos, A. (2021). Massive open online courses (MOOCS): A Review. *INTED2021 Proceedings*, 7349-7356.

Rahman, M., Rahman, R. A., & Habib, M. M. (2021). Integrated Mobile Learning Education Supply Chain Management for Higher Learning Institution.

Voudoukis, N., & Pagiatakis, G. (2022). Massive open online courses (MOOCs): practices, trends, and challenges for the higher education. *European Journal of Education and Pedagogy*, *3*(3), 288-295.

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Appendix A

Underlying Theory: Technology Acceptance Model (TAM) by Davis (1989)

Variables Used in the Questionnaire

Item Code	**Variable Name**	**Source**	**No. of Items**
PEOU1, PEOU2, PEOU3, PEOU4, PEOU5	Perceived Ease of Use	Adoped Ghani et l., (2019)	5
PU1, PU2, PU3, PU4, PU5	Perceived Usefulness	Adoped Ghani et l., (2019)	5
PE1, PE2, PE3, PE4, PE5	Perceived Enjoyment	Adoped Ghani et l., (2019)	5
BI1, BI2, BI3, BI4, BI5	Behavioral Intention to Use	Adoped Ghani et l., (2019)	5

LP1, LP2, LP3, LP4, LP5	Lean Principles	Adapted from Industry Best Practices	5
MOOCs1,2,3,4,5	MOOCs	(Azami & Ibrahim, 2019)	5

Questionnaire

Instructions:

Please respond to each statement with whatever knowledge you have by circling your answer using the scales given. There is no right or wrong answer. Be honest in your assessment.

Scale	**Description**
1	Strongly disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly agree

Perceive usefulness		**Scale**				
Code	**Items**	**SD**	**D**	**N**	**A**	**SA**
PU1	Using MOOCs improves my learning efficiency.					
PU2	MOOC s provide useful knowledge for my studies or professional growth					
PU3	MOOC s enhance my understanding of subjects effectively.					
PU4	MOOCs help me perform better in my coursework					
PU5	MOOC s increase my productivity in learning.					
PU6						
	Perceived ease to use					
PEOU1	It is simple to learn how to use MOOCs.					
PEOU2	MOOC s are easy to navigate and operate.					
PEOU3	I find it easy to become skillful at using MOOCs.					
PEOU4	. The design of MOOC s makes it easy to					

	use.					
PEOU5	Learning through MOOC s requires little effort.					
	Perceived enjoyment					
PE1	Using MOOCs improves my learning efficiency.					
PE2	MOOC s provide useful knowledge for my studies or professional growth.					
PE3	MOOC s enhance my understanding of subjects effectively.					
PE4	MOOCs help me perform better in my coursework.					
PE5	MOOC s increase my productivity in learning.					
PE6						
	Behavioral intention to use					
BI1	I intend to use MOOC s regularly for learning.					
BI2	I am likely to recommend MOOC s to my peers.					
BI3	I plan to explore more MOOC s courses in the future.					
BI4	I will integrate MOOCs into my regular study routine.					
BI5	I will consider MOOC s as a primary source of learning.					
	Satisfaction on MOOCs					
MOOCS1	The content provided meet the requirement of the course syllabus					
MOOCS2	The content is well-organized.					
MOOCS3	I believe MOOC s are an effective tool for achieving my educational goals.					
MOOCS4	I am satisfied with the quality of education provided through MOOC s.					
MOOCS5	I would recommend MOOC s to others for their educational needs.					

Demographic & Technological Profile

1. How old are you? _____ years old

2. What is your gender? 1. ( ) Male 2. ( ) Female

3.What is your highest level of education?

- ( ) Bachelor's Degree
- ( ) Masters Degree
- ( ) Doctorate Level

5. How many years of experience do you have in using the MOOCS ? _____ years

Case Processing Summary

		N	%
Cases	Valid	361	100.0
	Excluded[a]	0	.0
	Total	361	100.0

a. Listwise deletion based on all variables in the procedure.

Table 4. 24 Reliability Statistics for PU

Reliability Statistics for PU

Cronbach's Alpha	N of Items
.857	5

4.9.2 Reliability for Perceived Ease of Use (PEOU)

Table 4. 25 Reliability for Perceived Ease of Use (PEOU)

Reliability Statistics

Cronbach's Alpha	N of Items

.875	5

4.9.3 Reliability for Perceived enjoyment (PE)

Table 4. 26 Reliability for Perceived Enjoyment (PE)

Reliability Statistics

Cronbach's Alpha	N of Items
.857	5

4.9.3 Reliability for behavioral intention (BI)

Table 4. 27 Reliability for behavioral intention (BI)

Reliability Statistics

Cronbach's Alpha	**N of Items**
.857	**5**