Development of a 3-Tier Effective Teaching Model for Teachers towards MOOC in Higher Education in Pakistan

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KEYWORDS

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ABSTRACT

MOOC is the foundation of a distance learning platform in reshaping education by adopting information technology infrastructure that aims to enhance quality education and provide opportunities for learners to acquire knowledge and skills at their doorstep. MOOCs can be accessed and delivered by teachers who transfer their expertise to learners who can acquire the ability of technical skills, and critical thinking through digital transformation. The MOOC teachers lack digital skills and deliver inadequate instruction that leaps worthless MOOCs from learners' perspective. This research has utilized the (UTAUT) Unified Theory of Acceptance and Use of Technology model and identified the research hypotheses that influence teachers' behavior intention towards the use of MOOCs in higher education. This research has used a quantitative approach and designed a survey questionnaire for data collection to examine the effect of independent and dependent variables. The targeted survey audience had only teachers who are teaching in MOOC. SPSS and PLS-SEM 3 statistical tools were used for data analysis and interpretation. The research outline identifies the impact of a 3-tier effective teaching model for teachers towards MOOC and suggests 12 hypothesis that extends amended UTAUT with digital literacy, digital pedagogy, and attitude towards MOOC, denoted as a 3-tier effective teaching model as factors. The pretesting conclusion in the context indicates that the data collection instrument is sufficient to develop for future research since it has the coefficient alpha (α) significant values are DL(0.830), DP(0.790), ATT(0.912), PE(0.909), EE(0.891), SI(0.827), FC(0.706), BI(0.822), USE(0.824) below the specified level. This study reveals the strong status of teachers teaching towards MOOC and also contributes to the pieces of literature by adopting the UTAUT model for IT/IS acceptance and use.

1. Introduction

Background: Massive Open Online Courses (MOOC) is a virtual learning platform that aims to deliver distance education by adopting information and communication technology to promote high-quality e-learning on a large scale to become a community well-literate all over the world in the year to come (Wang et al., 2021). MOOCs and HEIs in Pakistan offer a wide range of courses in the different fields of subjects at affordable cost, this becomes a good opportunity for learners to register and acquire knowledge and skills along with a certification in the field of education without any delay, time, and space constraints (AlQaidoom & Shah 2021). MOOC is one of the prominent unified models that will be used to reform effective and quality distance education in the future all over the world. On the contrary, prominent MOOC platforms such as Coursera, edX, Open Culture, and Khan Academy have partnered with prestigious and elite universities at national and international levels (Khan et al. 2018; Kamp, 2019).

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MOOCs are accessed and delivered by professional teachers who are engaging to enhance various opportunities in learning and increase teaching scope to achieve learning outcomes (AlQaidoom & Shah 2021). Moreover, MOOC is the area of online education that requires all stakeholders especially teachers to have a good level of skills and facilities for the broad learners to acquire learning skills and achieve outcomes (Khalil & Sultana 2017; AlQaidoom & Shah 2021). Therefore, the 3-tier effective teaching model has considered the factors for teachers that are strongly influenced in teaching namely digital literacy, digital pedagogy, and attitude toward MOOC adoption in order to design a well-equipped online distance educational program (Akram et al., 2022; Khalil & Sultana 2017; Ramkissoon, 2017). MOOC teachers must be well prepared in the content knowledge of digital pedagogy which means adequate explanation and ordered presentation transformative techniques, ability to use digital technology with proper software selection, and other technological factors like resource accessibility, privacy, and compatibility are essential to meet their traditional teaching expertise into electronic teaching practices (Ramkissoon, 2017; Suriazdin et al., 2022).

In the light of the literature review, many research highlighted that MOOCs leap its quality due to the compelling of many reasons from the teacher's end. Instructors have inadequate skills in digital technology and pedagogy methods may not deliver the learner's approach (Kamp, 2019; Ramkissoon, 2017; Suriazdin et al., 2022).

For effective implementation of MOOC in higher education institutions it becomes vital to measure the level of satisfaction with the 3-tier effective teaching model for teachers towards MOOC in higher education. Additionally, this research focuses on the strong status of teachers' teaching

required for the teaching design of MOOC in higher education.

2. Scope of research

The scope of the study can be well-defined to measure the 3-tier effective teaching model for teachers towards the acceptance of MOOC in distance education. In light of reviewing the literature, many research scholars investigated the instructional quality and technology-oriented-innovation acceptance by teachers to adopt and use effective MOOCs. HEC Pakistan proposed a unified MOOC Pakistan is one of the most important educational components to make prestigious Pakistani universities under one umbrella. Therefore, it intends to examine the level of a 3-tier effective teaching model for teachers towards MOOC in higher education, especially those who are involved in ICT-based teaching and research in online educational-related topics. Data for this survey will be gathered from MOOC teachers and all stakeholders.

3. Literature Review

The literature of this study looks into two main pillars that create the structure of the research. These are "the terms that are key indicators" and "3-tier effective teaching model". This part of the research will discuss the UTAUT model and other constructs related to MOOC adoption for teachers in higher education.

3.1 The terms that are key indicators

A. Digital literacy (DL)

Digital literacy refers to the fundamental knowledge of computer skills that enable individuals to interact with computers and various forms of technology efficiently like academic MOOC (Kasemsap, 2018). According to Üstündağ 2017, stated that digital skills enable teachers to operate software programs efficiently

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to accomplish academic class activities competently.

Mohammadyari & Singh (2015) believe that digital literacy is a prerequisite for online educational platforms. Teachers are interacting and using computer software and common tools that are important for digital class settings. There is a significant integration between the digital literacy of teachers and their performance in teaching in an online educational context (Breakstone, 2018).

B. Digital pedagogy (DP)

Pedagogy is the art of good teaching practices that encompasses the techniques and principles employed by teachers to guide learners in personal and intellectual development (Abid et al., 2021). Digital pedagogy is not new, in fact, this form of teaching strategy is associated with digital technologies that rely on the effective use of digital tools in integrating with teaching techniques (Golub et al., 2022).

Harahan and Jimmi (2022) asserted that nowadays, with technology emerging in education it is mandatory for teachers to enhance their professional skills towards digital technology and adopt modern teaching principles to design and deliver well-structured course content that plays a vital role in making educational material accessible that meets learners need. Digital pedagogy often integrates effective teaching techniques for digital classrooms that determine the clear scope of teaching content as well as engage the learners with active participation (Steele, et al., 2019).

C. Attitude towards MOOC (ATT)

Attitude is the individual feeling or general evaluation based on positive or negative judgment (Kim & Hunter, 1993). Attitude can play an important role in shaping a person's behaviour about objects. Attitude is the

component of behaviour that relates to how a person's attitude influences their actions (Kisanga & Ireson, 2016).

According to Saari & Judge (2004), teachers' intention is considered one of the crucial elements that can influence behaviour and participation of teachers towards MOOCs. On the other hand (Kisanga & Ireson, 2016), highlighted that MOOC is an online educational platform that requires competency in digital technology; therefore, the behaviour and participation of MOOC teachers may vary.

D. MOOC acceptance

The implementation of a new system and its Success depends on adoption and acceptance by users. Thus, in MOOC literature, many studies have been investigated to examine the key indicators that affect teachers' behavior and acceptance towards MOOCs in order to ensure the implementation of successful MOOCs in higher education (Hamdan et al., 2018). In addition, the latest and most extensively used model of academic technology acceptance is UTAUT which is used for determining the acceptance of online educational related applications (Mulik et al., 2018).

3.2 A 3-Tier Effective Teaching Model for Teachers

The integration of an effective teaching model towards MOOC is a multi-dimensional approach. In addition, all learners acquire high-quality instructions given by effective teachers in the online class setting (Varouchas, et al., 2018). The MOOC teachers integrate pedagogy techniques and technology skills effectively to transform knowledge and expertise that fulfill the needs of quality education for millions of learners (Azhar et al., 2022). The following research model and terms that are key indicators for integrating a 3-

tier effective teaching model for teachers towards MOOC.

A. Technology Acceptance Model

In the shade of past literature reviewed (Wang et al., 2021; Kamp, 2019), the previous studies surveyed and recommended more than a few models and constructs pertaining to the acceptance and use of technology. UTAUT is one of the most cited model for explaining IT adoption by including a wide range of constructs. This model has been considered more

sophisticated and reliable for digital computers to increase technology adoption and overall satisfaction rate (Altalhi, 2021). According to Qingfei (2008), several researchers can obtain valuable insights into the factors that influence the acceptance of technology adoption, allowing them to design useful strategies to enable the successful implementation of new innovative technology see in Fig. 1. Explaining the UTAUT model along with its constructs (Venkatesh, 2003).
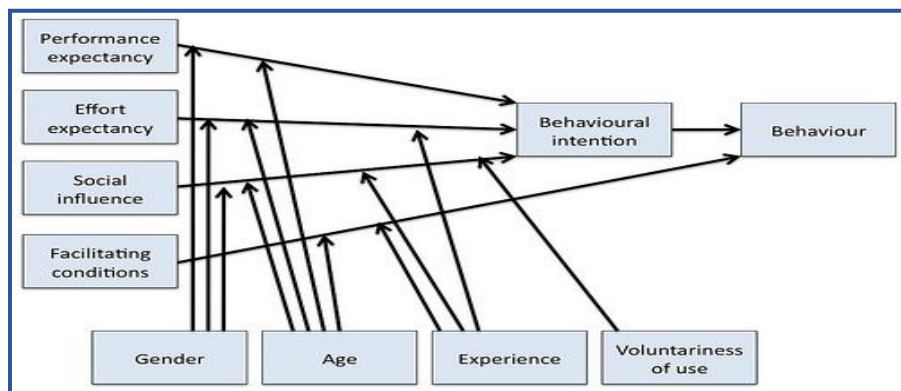

Fig. 1, UTAUT-------Source Venkatesh, (2003)

B. Proposed Research model and Research Hypotheses

The researchers use the amended UTAUT model for technology adoption. The proposed research model integrates various independent variables

that determine the academician teaching quality that can affect the behavior intention towards the acceptance and use of MOOC. See the Fig. 2. Explaining the researchers' proposed hypothetical research model.
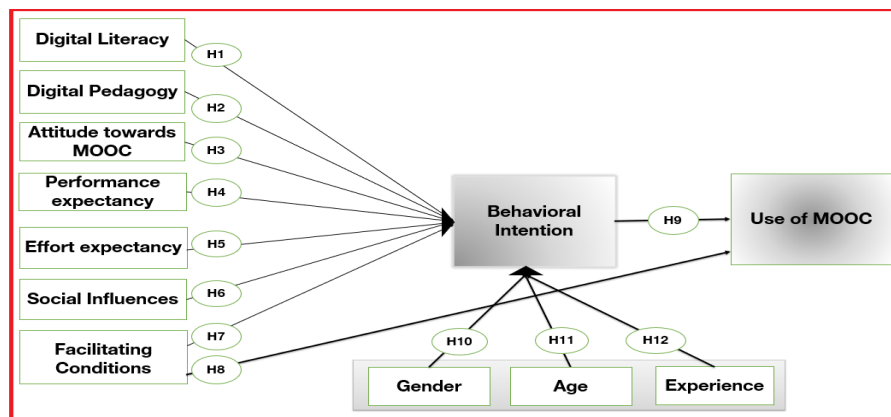

Fig. 2. Proposed hypothetical research model academician teaching quality towards MOOC

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The proposed research model includes Behavior Intention (BI) which is the dependent variable, the others newly added variables which are Digital Literacy (DL), Digital Pedagogy (DP), and Attitude towards MOOC (ATT) the external variables that are denoted and integrated 3-tier effective teaching model constructs for teachers teaching prospective and the rest of variables likewise original constructs Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Condition (FC) captured from original UTAUT model. Gender, age, and experience are considered demographic variables. The following are the set of hypotheses.

H_1. Digital literacy has positive effects on the behavior intention towards MOOCs in HEIs.

H_2: Digital pedagogy has positive effects on the behavior intention towards MOOCs in HEIs.

H_3: Attitude towards MOOC has positive effects on the behavior intention towards MOOCs in HEIs.

H_4: Performance expectancy has positive effects on the behavior intention towards MOOCs in HEIs.

H_5: Effort expectancy has positive effects on the behavior intention towards MOOC in HEIs.

H_6: Social influence has positive effects on the behavior intention towards MOOCs in HEIs.

H_7: Facilitating conditions have positive effects on the behavior intention towards MOOC in HEIs.

H_8: Facilitating conditions have positive effects on the continuous use of MOOC in HEIs.

H_9: Behavioral intention has positive effects on the acceptance and use of MOOC in HEIs.

H_{10}: Demographic Gender has positive effects on the behaviour intention towards MOOC in HEIs.

H_{11}: Demographic Age has positive effects on the behaviour intention towards MOOC in HEIs.

H_{12}: Demographic Experience has positive effects on the behaviour intention towards MOOC in HEIs.

4. Methodology

This part of the research contains systematic strategies that are used for conducting and evaluating research. It describes the procedures and methods followed to gather information about a 3-tier effective teaching model for teachers towards MOOC in higher education. This research has used a cross-sectional questionnaire survey method to find the teachers' behavioral intention toward the acceptance of MOOCs. The survey questionnaire scale included a five-point Likert scale as a discrete value, beginning with a strongly disagree-disagree and ending with a strongly agree to collect the opinion of targeted audiences. This research calculated the reliability test using SPS software for each of the independent and dependent variables that provide accurate figures of consistency and stability of the measurements collected.

4.1 PRELIMINARY DATA ANALYSIS

Preliminary data analysis is the first stage of data analysis in a research or data-driven effort. The primary objective of this process is to provide a full overview of the data, assess its credibility, and gain an early understanding of the information it contains. For this study preliminary data analysis is conducted using two phases, the first phase is pretesting of the questioner and the second phase is piolet testing. The details of these phases is provided into the subsequent sections.

A. Pretesting

Pretesting is used to perform an initial evaluation or study of research tools or questionnaires. The questionnaire for this study was evaluated by two

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Professors of same field from the International Islamic University of Malaysia. It has been ensured that respondents understand the questions correctly and that the order of the questions has no effect on how a responder answers.

B. Pilot testing (Reliability test)

Twenty-five individuals from four different locations around the country gave initial responses for the reliability analysis. In a way to assess the reliability of the questionnaire, the Cronbach's Alpha test is conducted using SPS software. A construct can be declared reliable if its Alpha (α) value is more than or equal to 0.70 (Hair, et al, 2013). According to the revealed results for this study the construct Use of MOC scale with three items (α =.824), Behavioural Intention with five Items (α =.822), Digital Literacy with twelve items (α =.830), Digital Pedagogy with seven Items (α =.790), Attitude toward MOC with four Items (α =.912), Performance Expectancy with four Items (α =.909), Efforts Expectancy with four Items (α =.891) Social Influence with four Items (α =.827) and Facilitating Conditions with four Items (α =.706). See table 1 for reliability results.

Table 1. Reliability results

Constructs	No. of Items	Alpha (α)
Use of MOC	03	.824
Behavioural Intention	05	.822
Digital Literacy	12	.830
Digital Pedagogy	07	.790
Attitude toward MOC	04	.912
Performance Expectancy	04	.909
Efforts expectancy	04	.891
Social Influence	04	.827
Facilitating Conditions	04	.706

5. Conclusion

The foundation of MOOC has been designed to be an open online educational platform that delivers quality education and well-structured course content to fulfil the needs of broad learners. MOOC teachers, often referred to an academician or facilitator who plays a crucial role by supporting and guiding the vast learner's population to make progress in critical thinking and decision making. The research outline identifies the impact of a 3-tier effective teaching model for teachers towards MOOC and suggested 12 hypothesis that extends amended UTAUT with digital literacy, digital pedagogy, and attitude towards MOOC, denoted as a 3-tier effective teaching model as factors.

The pretesting conclusion in the context indicates that the data collection instrument is sufficient to developed for future research since it has the coefficient alpha (α) significant value are DL (0.830), DP (0.790), ATT (0.912), PE (0.909), EE (0.891), SI(0.827), FC(0.706), BI(0.822), USE(0.824) below the specified level. This study reveals the strong status of teachers teaching

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References

Abid, Tayyaba, Gulnaz Zahid, Naseem Shahid, and Maham Bukhari. "Online teaching experience during the COVID-19 in Pakistan: Pedagogy–technology balance and student engagement." *Fudan Journal of the Humanities and Social Sciences* 14 (2021): 367-391.

Akram, Huma, Abbas Hussein Abdelrady, Ahmad Samed Al-Adwan, and Muhammad Ramzan. "Teachers' perceptions of technology integration in teaching-learning practices: A systematic review." *Frontiers in psychology* 13 (2022): 920317.

AlQaidoom, Hana, and Asadullah Shah. "Digital Literacy and the Attitude of Educators Towards MOOC Platform in GCC Countries." In *2019 IEEE International Conference on Innovative Research and Development (ICIRD)*, pp. 1-6. IEEE, 2019.

Altalhi, Maryam Muti. "Towards understanding the students' acceptance of MOOCs: A unified theory of acceptance and use of technology (UTAUT)". *International Journal of Emerging Technologies in Learning (iJET)* 16, no. 2 (2021): 237-253.

Azhar, Malka Fareeha, Wajiha Kanwal, and Khola Thaira. "Challenges Faced by Teachers and Students of Islamabad Postgraduate Colleges during Covid-19." *Journal of Management Practices, Humanities and Social Sciences* 6, no. 2 (2022): 31-41.

Breakstone, J., McGrew, S., Smith, M., Ortega, T., & Wineburg, S. "Why we need a new approach to teaching digital literacy". *Phi Delta Kappan, 99*(6), (2018). 27-32.

Golub, Tetiana, Olha Kovalenko, and Liudmyla Zhygzhytova. "DIGITAL PEDAGOGY IN HIGHER EDUCATION." *Collection of scientific papers «SCIENTIA»* June 10, 2022; Sydney, Australia (2022): 7-9.

Hair, J. F., Ringle, C. M., & Sarstedt, M. "Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. Long range planning", (2013). 46(1-2), 1-12.

Hamdan, F., Nordin, N., Khalid, F., Muslimin, M. S., & Norman, H. "Technology acceptance of online managerial finance training via massive open online courses for life long learning". Advanced Science Letters, 24(4), (2018). 2365–2369. https://doi.org/10.1166/asl.2018.10955.

Harahap, S. D., Jimmi, J., Pattiasina, P. J., Trinova, Z., & Damayanto, A. "Trends in technological Innovation in Education During a Time of Pandemic Disruption: Examining The Perspective of Teaching Digital Pedagogy". *Nazhruna: Jurnal Pendidikan Islam*, *5*(1), (2022). 37-50.

Kamp, Cecile van de. "Acceptance of MOOCs by Dutch university students. Extending the unified theory of acceptance and use of technology (UTAUT) model with the technology acceptance model (TAM)." (2019).

Kasemsap, K. "Encouraging digital literacy and ICT competency in the information age. *In Encyclopedia of Information Science and Technology"*, Fourth Edition (pp. 2253-2263). (2018), IGI Global.

Khalil, A., & Sultana, N. "Reshaping Teachers'e-Training through MOOCs in Pakistan". *NICE Research Journal*, 13-28 (2017).

Khan, I. U., Hameed, Z., Yu, Y., Islam, T., Sheikh, Z., & Khan, S. U. "Predicting the acceptance of MOOCs in a developing country: Application of task-technology fit model, social motivation, and self-determination theory. *Telematics and Informatics"*, *35*(4), (2018). 964-978.

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Author: Masoomi Hifazat Ali Shah, Imran Khan Keerio, and Asadullah Shah

Kim, M.-S., & Hunter, J. E. "Relationships among attitudes, behavioral intentions, and behavior". *Communication Research, 20*(3), (1993).331–364.

Kisanga, D. H., & Ireson, G. "Test of e-learning related attitudes (TeLRA) scale: Development, reliability and validity study". *International Journal of Education and Development using Information and Communication Technology, 12*(1), (2016). 20–36.

Mohammadyari, S., & Singh, H. "Understanding the effect of e-learning on individual performance: The role of digital literacy". *Computers & Education,* (2015). *82*, 11–25.

Mulik, S., Srivastava, M., & Yajnik, N. "Extending the UTAUT model to examine MOOC adoption". NMIMS Management Review, 36(2), (2018). 26–44.

Qingfei, M. I. N., Shaobo, J. I., & Gang, Q. U. "Mobile Commerce User Acceptance Study in China : A Revised UTAUT Model. *Tsinghua Science and Technology*", *13*(3), (2008). 257–264.

Ramkissoon, S. D. "A pedagogically-informed model of Massive Open Online Courses (MOOCS) for Mauritian higher education", (2017).

Saari, L. M., & Judge, T. A. "Employee attitudes and job satisfaction. *Human Resource Management: Published in Cooperation with the School of Business Administration", The University of Michigan and in alliance with the Society of Human Resources Management*, *43*(4), (2004). 395-407.

Steele, John, Rick Holbeck, and Jean Mandernach. "Defining effective online pedagogy." *Journal of Instructional Research* 8, no. 2 (2019): 5-8.

Suriazdin, Syahrul A., Achmad N. Hidayanto, Mutia Maulida, Alverio Y. Kurtinus, Hanifa Arrumaisha, Nurul Aisyah, and Rico P. Pradana. "Technology Attractiveness and Its Impact on MOOC Continuance Intention." *International Journal of Emerging Technologies in Learning* 17, no. 4 (2022).

Üstündağ, M. T., Güneş, E., & Bahçivan, E. "Turkish adaptation of digital literacy scale and in-vestigating pre-service science teachers' digital literacy". *Journal of Education and Future,* (2017). (12), 19-29.

Varouchas, E., Sicilia, M. A., & Sánchez-Alonso, S. "Towards an integrated learning analytics framework for quality perceptions in higher education: A 3-tier content, process, engagement model for key performance indicators. *Behaviour & Information Technology*", (2018). *37*(10-11), 1129-1141.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. "User acceptance of information technology: Toward a unified view. *MIS quarterly*", (2003). 425-478.

Wang, Qing, Muhammad Saqib Khan, and Muhammad Kamran Khan. "Predicting user perceived satisfaction and reuse intentions toward massive open online courses (MOOCs) in the Covid-19 pandemic: An application of the UTAUT model and quality factors." *International Journal of Research in Business and Social Science (2147-4478)* 10, no. 2 (2021): 1-11.