



MOOCs for Reskilling and Upskilling: A Perspective of Employees' Acceptance

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ABSTRACT

MOOCs have transformed professional development, yet businesses lack data on employee adoption, hindering the optimization of digital learning initiatives. This study investigated factors influencing Saudi Arabian employees' behavioural intentions and MOOC usage across sectors. Utilizing the Unified Theory of Acceptance and Use of Technology (UTAUT) model, we examined how performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioural intention affect MOOC adoption. Online surveys were distributed to 1036 participants from diverse industries using snowball sampling. This research employed the Partial-Least-Square-Structural-Equation-Modelling (P-L-S-S-E-M) approach in two phases. Results indicated that performance expectancy, effort expectancy, and facilitating conditions significantly impact employees' MOOC intentions and usage, while social influence does not. Years of experience and sector moderate these relationships. This research provided empirical evidence and actionable insights for corporations investing in MOOCs, suggesting strategies to address employee needs across sectors and experience levels, foster a supportive organizational culture, and incentivize MOOC usage for professional development and reskilling, particularly among more experienced employees.

INTRODUCTION

The current workforces face the challenge of being relevant in the job market as this market is rapidly changing. The emergence of new technology such as artificial intelligence is gradually changing the job market landscape, which adds pressure on the workforce to keep up with the new demands of the job market. World Economic Forum in 2023 Future of Jobs Report expected the elimination of 83 million jobs by 2027 and only 69 million new jobs will emerge (Di Battista et al., 2023). The report estimates the change of 44% of workers' core skills in the next five years. This will create a skill gap in the current workforce that requires counter-reskilling and upskilling efforts from governments and corporations to bridge this skill gap.

Reskilling is the process of training or teaching employees skill sets or knowledge to move to other demand areas or jobs while upskilling refers to the process of scaling up employees' abilities and performances to reach a high level of productivity and mastery (Sawant et al., 2022). Leading corporates are heavily investing in upskilling sessions through MOOCs where Amazon, for example, announced its \$700 million investment in the next six years to upskill 100,000 of its employees through its MOOCs and micro-credentialing program (Msweli et al., 2022).

During the Great Lockdown of 2020, Coursera, a leading MOOC provider, launched a workforce recovery initiative to support short-term recovery for displaced workers and provide governments with a longer-term resource to invest in a scale workforce development and digital upskilling and reskilling (Lands & Pasha, 2021). Some of this initiative's results were: (a) basic remedial upskilling and reskilling such as job readiness training, (b) personalized career learning paths in alignment with industry and economy, and (c) youth employment training programs targeting those who were out-of-school during the lockdown (Lands & Pasha, 2021). Thus, it is recommended to maintain a long-term perspective and avoid a quick-wins mindset to successfully reskill the workforce at scale.

In the oil-reliant economy of Saudi Arabia, COVID-19 and low oil prices have increased job loss among unskilled or less skilled than skilled workforces (Alharbi, 2021). According to the General Authority of Statistics, the unemployment rate exceeded 15.4 in the 2Q of 2020 and approximately 52% of them belong to the age group (25-34). More than half of the unemployed persons had a bachelor's degree or equivalent and around 29% had completed secondary education (General Authority of Statistics, 2020). Around 80% of Saudi youth aged between (18-34) are deeply worried about their future employment prospects (MiSK Foundation & Kearney Consulting, 2021).

As a result, the Saudi government launched the Human Capability Development Program (HCDP) in 2021 as one of the 2030 vision realization programs (HCDP, 2021). The program's gap analysis acknowledged the limitations in reskilling and upskilling programs, recognition framework of certifications, support for lifelong learning, incentives and guidance for professionals. The third pillar of HCDP is to provide lifelong learning opportunities for those who ended their education to improve their competitiveness. To this end, seventeen initiatives were designed under this pillar, and these initiatives were about skill acceleration programs, nano and micro degrees, and opening higher education for all (HCDP, 2021).

Several government departments have started working on the realization of HCDP through short courses or Massive Open Online Courses (MOOCs) and micro-credentialing programs where the Ministry of Education launched its Flexible Learning Pathways Initiative (FLPI). Partnering with major MOOC providers such as Coursera, Edx, Udacity, and FutureLearn, FLPI provides flexible upskilling and reskilling pathways for over 150000 job seekers and employees through professional courses provided by more than 300 international institutions (Arab News, 2021). National eLearning Center (NeLC) launched FutureX, a MOOC and micro-credentialing ecosystem, to support FLPI in managing and tracking all learning and training activities and keep a record of a skill passport for each citizen accessing these platforms (National eLearning Center, 2021). Simultaneously, nine Saudi institutions have participated in this endeavour by creating MOOCs that cater to the needs of their stakeholders. These programs include a wide range of topics, including the development of soft skills and sophisticated technological subjects like artificial intelligence and digital marketing (National eLearning Center, 2021).

With this institutional and organizational commitment to upskilling and skilling the Saudi workforce, much less intention has been given to individual factors that bring individuals to the same commitment level to their upskilling and reskilling effort. This study came to close this gap by switching the focus from organizational adoption to individual adoption of MOOCs to facilitate such a transformation in the labour market. It intends to deepen the understanding of current workforce acceptance of MOOCs in their professional development endeavours and navigate through demographic variables that greatly

influence the adoption and usage of MOOCs. It helps the Saudi decision-makers consider more individual factors that enable human capability development.

LITERATURE REVIEW

To commence, MOOCs are described by the Organisation for Economic Co-operation and Development (OECD) as open-access online distance courses with no prerequisites available to all individuals free of charge (OECD, 2016). European Commission defines MOOCs as internet-based courses that are specifically created for a wide audience and may be accessible by anybody with an internet connection, regardless of their location (Witthaus et al., 2016). On the other hand, MOOCs, in workplace contexts, refer to large-scale online courses specifically created to meet the training and development requirements of employees and working adults (Beigi et al., 2015). Egloffstein and Ifenthaler (2017) described corporate MOOCs are online courses designed and delivered internally within an organization, restricted to employees and tailored to the company's specific training needs, offering a flexible, scalable, and cost-effective means of employee development.

Although MOOCs were initiated within academia, they have expanded to the workplace due to their flexibility, ease of access and cost-effectiveness (Dodson et al., 2015). However, research on MOOCs is still more education-focused than workplace learning (Hamori, 2021; Park et al., 2018; Radford et al., 2014). This brought the discussion of the skill gap between academia and industry where employers are looking for work-ready graduates while academia is striving to keep up with the rapidly changing industry demands. However, employers are questioning universities' responsiveness in preparing graduates for employment due to the long-standing structures and systems of universities (Kinash & Crane, 2015).

Potentials of MOOCs for Corporations

The benefits of MOOCs in upskilling the workforce have been the concerns of both researchers and employers. Santandreu Calonge et al. (2019) reviewed the literature and suggested that MOOCs have significant potential in providing flexible, on-demand learning opportunities, and credentialing MOOCs towards formal qualifications. MOOCs in this sense could help in bridging the skill gap between traditional education and labour market needs. In corporate learning, cost-effectiveness plays a significant role in adopting MOOCs as well as global reach for multinational companies, time convenience, individualized learning paths, and access to world-class education (Park et al., 2018; Ong & Jambulingam, 2016). Park et al. (2021) reviewed eighteen MOOC cases in global companies and found the potential of MOOCs to be beyond training and development (T&D) where MOOCs offer benefits in other HRD areas like Organizational development (OD) and career development (CD), aiding in organizational changes, talent management, and knowledge dissemination. Moreover, MOOCs deliver trans-national learning opportunities, meaning that MOOCs developed in one region can have positive employment impacts in other regions, for instance, Castaño-Muñoz & Rodrigues (2021) reported the extended positive impact of an European MOOC on employees from Latin America and the Caribbean.

A review of MOOC applications in leading organizations by Fathi Hafshejani et al. (2023) revealed that MOOCs support organizational development in two areas: achieving sustainable organizational competition and improving the performance of corporate management. In sustainable organizational competition, corporations could utilize MOOCs to gain continuous knowledge on technology to acquire a competitive advantage, align with global strategies, and reach a global audience through corporate educational services. On the other hand, MOOCs support corporate management by developing a new recruiting approach, establishing an internal talent identification process, and facilitating organizational changes.

The COVID-19 pandemic significantly contributes to highlighting the value of MOOCs in corporate, as lockdown and social distancing necessitate a shift to online training that showcases the added value

of MOOCs to business processes and outcomes (Edelsbrunner et al., 2022). However, workplace MOOCs do not come without limitations. For example, Goglio and Bertolini (2021) found MOOCs benefit individuals with higher education levels and good technological abilities making it a form of complementary learning, primarily serving already-educated professionals.

Corporate's Perspectives

Corporate entities have embraced the adoption of MOOCs as a multifaceted strategic tool, leveraging their potential across various organizational goals. The first goal encompasses personnel development initiatives, such as onboarding training for newcomers, fostering self-directed learning and upskilling for the existing workforce, as well as extending educational opportunities to external stakeholders like partners and customers (Karachristos et al., 2021). The second goal is market branding by utilizing high-quality educational content to establish thought leadership and enhance industry visibility (Dodson et al., 2015). Notably, MOOCs have emerged as catalysts for cross-functional collaboration, innovation, and knowledge sharing, transcending geographical boundaries and facilitating the exchange of ideas and collective problem-solving endeavours. The third objective is creating a talent management plan that offers accessible and interesting educational opportunities and includes a strong talent pipeline following corporates' long-term objectives (Park et al., 2021).

Businesses' high standards for cost-effectiveness, training efficacy, and training mobility and flexibility impact their adoption of MOOCs. On the other hand, corporate adoption of MOOCs may be hampered by the difficulty of choosing suitable MOOCs from a wide variety, worries about how well MOOCs connect with business goals and culture, and legal and data protection issues (Iur & Friedl, 2021). Bijaniaram et al. (2023) revealed important elements for MOOC adoption in businesses. The technological infrastructure, which comprises strong technical support and infrastructure preparedness, is crucial among these associated criteria since it guarantees that the platform can effectively support MOOC distribution and utilization. An organizational training system is also essential, especially for training staff on how to use the MOOC system efficiently and providing them with the information they need to make use of these learning resources. The presence of human resource experts and content specialists is crucial to guide the MOOCs' implementation process and tailor the content to the organization's needs. Internet connectivity must be reliable and fast to facilitate uninterrupted access to MOOCs, complemented by user support and a helpdesk to address technical issues and queries promptly. Moreover, organizational communication is key, fostering an environment that encourages knowledge sharing and collaboration, while training for trainers ensures a sustainable model where knowledge on using MOOCs is disseminated throughout the organization. Collectively, these factors create a conducive ecosystem for MOOCs to thrive as a tool for corporate learning and development.

From employers' perspective, they support MOOCs when its relevant to job tasks and content, requested by high value-added jobs, and run out of other training resources (Hamori, 2021). However, when looking at large corporations that put large investments in workforce development, MOOCs are supported to upskill employees at scale (Park et al., 2018). Still, quality assurance especially with practical skills is another concern for employers; therefore, they do not see any significance of MOOCs in the hiring process (Garrido et al., 2016; Radford et al., 2014). Employers lack the appropriate information and standards to judge the effect of MOOCs on employment. At this point, employers might use MOOCs to judge the self-motivation of an employee who enrolls on MOOCs, which confirms Gorbato et al.'s (2020) view of the signal professional value of MOOCs.

Employees' Perspectives

Employees, on the other hand, are the primary stakeholders of MOOCs in the workplace who reported several benefits of MOOCs on their jobs. Castaño-Muñoz & Rodrigues (2021) found MOOCs positively impact employment retention, job security, and enhancement of current roles but not significantly impact wage levels. Employees showed conservative expectations when considering the monetary benefits of MOOCs compared to traditional training (Egloffstein & Ifenthaler, 2017).

With the increased reliance on MOOCs, employees are concerned about lifting the responsibility of training and development from employers to employees which adds extra costs and responsibilities on their shoulders. Due to the lack of MOOC accreditation and recognition, employees reported this might push employers to quantify MOOC credentials as tyre credentials compared to traditional credentials (Goglio & Bertolini, 2021). Required time commitment is another employee's concern where they have to balance their work, life, and training and development particularly when employers assign MOOCs training out of business hours (Radford et al., 2015). Employees are sceptical about the acceptance and value of MOOC credentials by their employers, which creates a misalignment between the perceived value of MOOC credentials by employees and their actual recognition in the professional sphere (Egloffstein & Ifenthaler, 2017). To overcome such a challenge, employees, particularly in information technology, tend to consider the brand credibility of MOOC providers before enrollment to increase the recognition of their credentials (Asokkumar et al., 2023).

Regarding competency development, MOOCs were found significant in developing some competencies such as culture, knowledge, communication, and technology while it has less significance on competencies that require more interactive and group-based approaches like leadership and strategy (Karnouskos, 2017). Employees exhibited strong preferences for using MOOCs for on-the-job learning and career development purposes, suggesting a high valuation of MOOCs for professional advancement and skill acquisition (Egloffstein & Ifenthaler, 2017).

Moving to the adoption and acceptance of MOOCs, course quality has a notable impact on employees' intention to utilize MOOCs, indicating that employees tend to evaluate the quality of MOOCs more favourably compared to conventional training methods (Pozón-López et al., 2021). Hence, the perception of course quality among employees encompasses several factors, such as accessibility and availability, accuracy, relevance, and effectiveness. These factors contribute to the overall satisfaction with MOOCs and maintain employees' motivation, thus impacting their intention to continue using MOOCs. MOOC's brand credibility and price value are the most significant factors for MOOC adoption among employees in the information technology sector (Asokkumar et al., 2023; Meet et al., 2022). This suggests MOOC providers' reputation plays a crucial role for individuals to accept MOOCs, especially in the absence of formal accreditation. In addition, cognitive tradeoffs between perceived benefits and cost are considerably important for employees particularly when lacking employer's support.

Social influence from colleagues or managers is another determinant of employees' adoption of MOOCs as they preserve their social standing while facilitating conditions such as hardware that equip them with the necessary resources to adopt MOOCs (Asokkumar et al., 2023). However, generation Z seems to be less influenced by their social circles to adopt MOOCs as they became self-aware through their self-study during the pandemic (Meet et al., 2022). Therefore, younger employees could be encouraged towards MOOCs by focusing on internal motivation and added value while older employees might be socially influenced to adopt MOOCs. The language might appear as a barrier in global MOOCs for elder employees but not for younger employees as they become a more global citizens with their intensive exposure to technology (Meet et al., 2022).

Habitual usage of MOOCs yields inconsistent findings in the literature among different age groups of employees. Generation Z shows no significance of habit in their adoption of MOOCs while Generation Y reported the importance of routinizing their behaviours to adopt MOOCs (Dhewandrie & Yuniawan, 2023; Meet et al., 2022). Generation Z's lifelong immersion in rapidly evolving technologies has likely cultivated an adaptability and receptiveness that allows them to adopt digital platforms like MOOCs without necessarily relying on habit formation, in contrast to the significance of routinized behaviours observed among the preceding Millennial generation.

Together these studies provide important insights into the variation in MOOC adoptions based on employee demographics. It is crucial to recognize the heterogeneity within and across generations and

avoid overgeneralizations. The literature underscores the need for tailored strategies and interventions to promote MOOC adoption, accounting for the unique characteristics and motivations of diverse workforce segments.

MOOCs and Human Capital Theory

According to human capital theory, increased education levels are linked to greater worker productivity and better earnings (Becker, 1994). This necessitates the workforce to possess progressively greater levels of ability to manage the occupations and processes that are becoming more intricate and interconnected (Goglio & Bertolini, 2021). The theory differentiates between general knowledge and firm-specific knowledge that is required for employees to gain a competitive advantage in the marketplace and enhance his/her mobility (Becker, 1994). General skills and knowledge that are culturally and professionally valued regardless of organization such as teamwork, and communication skills are referred to as general knowledge. On the other hand, firm-specific knowledge refers to special skills and knowledge that are required specifically in an organization (Park et al., 2018).

In practising general knowledge development, some corporates such as Google use their open MOOCs to help in developing human capital and using the try-before-you-buy approach to gain access to the high-performing talents in the market for recruitment purposes (Park et al., 2018). When corporates target firm-specific knowledge, they may use private MOOCs to upskill their current employees. The literature refers to this version of MOOCs as Small Private Online Courses (SPOCs) (Kicova et al., 2023). The necessity of firm-specific training at a global scale has led some corporates to establish their corporate universities to deliver specific needs (Wang et al., 2010). Intel Network Builders University, for example, is a MOOC-based strategic investment in human capital to globally qualify users of Intel Technologies (Intel® Network Builders University, 2022).

Drawing upon the principles of human capital theory, Castaño-Muñoz & Rodrigues (2021) observed that employees who have participated in many MOOCs are more likely to stay employed. That is attributed to their effective selection and use of MOOCs to meet their individual learning needs. Contrary to the basic assumption of human capital theory, Castaño-Muñoz & Rodrigues (2021) reported no extended impact of MOOCs on employees' incomes, which could be attributed to the lack of formal recognition and accreditation of MOOCs' credentials compared to traditional credentials. However, US employers show no difference between MOOCs and traditionally educated employees in terms of promotion, where they appreciate skills and experience over credentials (Rosendale, 2017). Thus, at least from the perspective of employees, MOOCs are favoured over alternative approaches as a flexible, cost-effective, and personalized human capital development strategy.

MOOCs in Workplace

The literature defines vocational (or corporate) MOOCs as massive online courses developed to fulfil the training and development requirements of working adults and employees (Beigi et al., 2015). In contrast to academic MOOCs, corporate MOOCs generally have the following characteristics: often limited to specific personnel, may only be accessed within the organization, may involve in-person interactions, and offer customized content to meet the organization's needs (Egloffstein & Ifenthaler, 2017).

Goglio & Bertolini (2021) found that MOOCs effectively reskilled workers to get new jobs or start their businesses by acquiring both general and job-specific knowledge and skills. MOOCs have helped corporates to achieve measurable outcomes. In Microsoft, for example, MOOCs enabled their worldwide sales forces to share knowledge and know-how as well as improve the employees' performance. In addition, Tenaris, a global manufacturing company based in Luxembourg, was able to save 80% of the training cost, upskill employees at scale, and improve performance business outcomes (Park et al., 2018).

In the workplace, the most important drivers for employees to enrol in MOOCs are gaining specific skills to better perform jobs (upskilling), finding new jobs (reskilling), preparing for additional education, acquiring professional certifications, accessing world-class education, and paving the way for promotion (Fathi Hafshejani et al., 2023; Garrido et al., 2016). Interestingly, low-income with low-education levels employees perceived the benefits of MOOCs more than their peers, and reskilling was their main driver to attend MOOCs reflecting their strive to improve their employment prospects (Garrido et al., 2016). This contradicts the idea that MOOCs primarily serve already-educated employees.

Milligan and Littlejohn (2014) noted that linking learning with workplace practice poses a significant challenge for employees taking MOOCs, and no sufficient empirical evidence, particularly from employees' viewpoints. Implementing MOOCs where employees establish their own course goals and use real-life examples derived from their actual experiences might enhance the influence of MOOCs on their performance. Nevertheless, this study occurred in the early stages of MOOCs, considering the subsequent progress and widespread use of MOOCs, as well as the impact of COVID-19 on advancing technology-based training and development.

As MOOCs are used for on-the-job training, employees should reflect on the gained knowledge and skills with their colleagues and professional community to support them in situating their learning and advancing organizational learning. The limited interactions and discussions in MOOCs were found to be a barrier to transferring knowledge and skills to the workplace (Milligan & Littlejohn, 2014). This aligns with Egloffstein's (2018) proposition of applying connectivist MOOCs (cMOOCs) in the workplace, intending to foster interactive and collaborative learning environments. This is achieved through the facilitation of discussion, social networking, and the creation and sharing of content and creativity. On the other hand, extended MOOCs (xMOOCs) are content-based and follow behavioural-cognitive learning prioritizing content delivery and knowledge assessment. Although most corporate MOOCs fall within xMOOCs, new pedagogical approaches have been adopted in MOOCs such as blended MOOCs (bMOOCs) to initiate collaboration and communication in workplace learning (Egloffstein & Schwerer, 2019; Egloffstein, 2018).

Research Aim and Scope:

Even though a lot of money has been invested in human development programs, like the Saudi Human Capability Development Program and corporate initiatives by Tenaris and Intel, there is a worrying lack of empirical data explaining why employees accept and use Massive Open Online Courses (MOOCs). Egloffstein and Ifenthaler (2017) correctly drew attention to this gap by emphasizing the dearth of thorough research evaluating MOOCs' acceptability and efficacy in business contexts.

By undertaking a thorough examination of the factors impacting employees' acceptance and uptake of MOOCs to achieve professional training and development objectives, the current study seeks to close this gap. This research aims to give executives and decision-makers in public and commercial companies useful insights by carefully examining the underlying processes. With the use of these data, they will be able to create strategic plans that optimize the return on their MOOC investments and train employees who are skilled at using these online learning environments.

Furthermore, the goal of this study is to make corporate organizations aware of the crucial role that individual aspects play in determining how well MOOC interventions perform in the workplace. Through the elucidation of the complex interactions of individual traits, incentives, and technology preparedness, this study will help firms customize MOOC programs to the particular requirements and inclinations of their heterogeneous workforce.

All things considered, this study is a relevant and priceless addition to the expanding area of digital learning in business settings. It can initiate a paradigm shift in the way businesses approach and maximize their investments in MOOCs by filling the knowledge gap with empirical evidence and

offering practical insights. This will ultimately develop a workforce that is competent adaptable and ready to flourish in a constantly changing business environment.

Research Questions

With a theoretical foundation in the Unified Theory of Acceptance and Use of Technology (UTAUT) and its extensions (Venkatesh et al., 2003), the objective of this study is to empirically examine the various factors that impact employees' behavioural intentions and actual MOOC usage in work environments. It also aims to investigate the moderating effects that demographic variables may have. The research questions were formulated as follows:

1. To what extent do performance expectancy, effort expectancy, and social influence constructs influence employees' behavioural intentions to use MOOCs?
2. To what extent do facilitating conditions influence employees' use behaviour of MOOCs?
3. To what extent does behavioural intention influence employees' use behaviour of MOOCs?
4. To what extent do employees' gender, experience, and education moderate the influence of the FOUR constructs: (performance expectancy, effort expectancy, and social influence and facilitating conditions)?
5. Are there any significant differences between employees' demographics (i.e. gender, experience, education) in performance expectancy, effort expectancy, social influence, facilitating conditions, behavioural intention, and behavioural use of MOOCs?

Research Hypotheses

H1: Performance expectancy influences employees' behavioural intention to use MOOCs.

H2: Effort expectancy influences employees' behavioural intention to use MOOCs.

H3: Social influence influences employees' behavioural intention to use MOOCs.

H4: facilitating conditions influence employees' use behaviour of MOOCs.

H5: Behavioural intention has a significant positive influence on use behaviour.

H6.1,2,3,4: Gender moderates the influence of the above four constructs: (performance expectancy, effort expectancy, and social influence and facilitating conditions).

H7.1,2,3,4: Years of experience moderate the influence of the above four constructs: (performance expectancy, effort expectancy, and social influence and facilitating conditions).

H8.1,2,3,4: Sector moderates the influence of the above four constructs: (performance expectancy, effort expectancy, and social influence and facilitating conditions).

Research Model

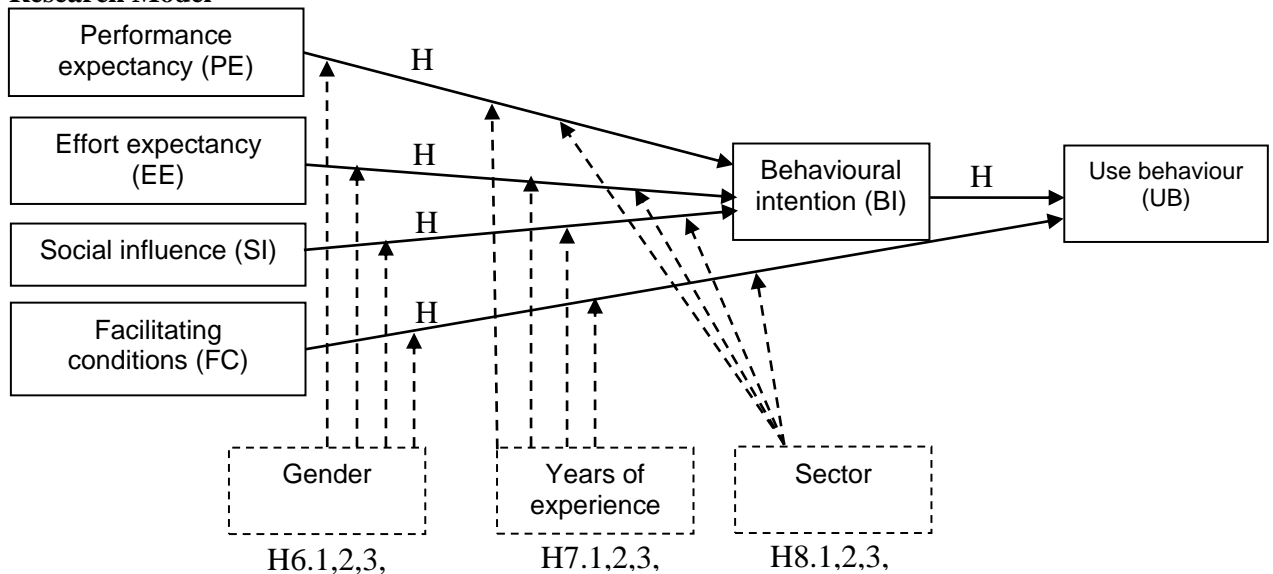


Fig. 1 Research Model (adapted UTAUT)

METHOD

This research utilized a quantitative approach to examine the UTAUT model using a questionnaire developed by Venkatesh et al, (2003) based on a review of nine established models and theories of technology acceptance. The questionnaire comprised two main sections. The first section focused on demographic variables including gender, years of experience, and sector. The second section consisted of 20 Likert scale items, designated to cover six factors that determine technology acceptance. These factors are performance expectancy (PE), effort expectancy (EE), and social influence (SI), facilitating conditions (FC) serving as latent variables while behavioural intention (BI) and use behaviour (UB) serve as observed variables. Figure 1 depicts the research proposed model.

Sample and measure

This research recruited participants from employees in different sectors in Saudi Arabia during the 4th quarter of 2023. A purposive sampling technique was utilized to ensure the inclusion of employees with diverse backgrounds, ages, experiences, and sectors. The online questionnaire was distributed to a meticulously chosen pool of employees using a snowball technique. Initially, contact was established with several employees through personal connections via email, and they were requested to forward the survey to other colleagues. A few human resources professionals were reached to distribute the questionnaire among their organizations. The total number of employees who participated was 1036.

Structural model

This research employed the Partial-Least-Square-Structural-Equation-Modelling (P-L-S-S-E-M) approach in two phases. To demonstrate how effectively an item represents the underlying construct, factor loading was first determined using Confirmatory Factor Analysis (CFA). Secondly, the conceptual model's importance was investigated using Path Coefficients. The instrument's reliability was determined using Cronbach's alpha, and each latent variable's discriminant validity was checked and confirmed using the Fornell-Larcker criteria. To determine whether there was a multicollinearity problem among the variables, multicollinearity was evaluated using inner and outer VIF.

Ethical Considerations

Informed consent was obtained from all participants, ensuring they were fully aware of the study's purpose and their rights. Participants were assured of confidentiality and the anonymization of their responses.

RESULTS AND DISCUSSION

Demographic analysis

Table 1 displays the data collected from a total of 1036 employees through the questionnaire. The sample exhibits a greater proportion of male employees (64.2%) in comparison to female employees (35.8%) in terms of gender. Concerning the duration of professional experience, a significant proportion (60.9%) had over five years of experience, whilst 39.1% had five years or fewer of experience. The data provides further insights into the distribution of respondents across various job sectors. The majority of respondents (60.4%) are working in the government sector, followed by the private sector (33.1%). The semi-governmental sector has a lesser presence, accounting for 6.5% of the respondents.

Table 1
Demographic analysis

Variable	Category	Frequency	Percent
Gender	Male	665	64.2
	Female	371	35.8
	Total	1036	100
Years of experience	Five years or less	405	39.1
	More than five years	631	60.9
	Total	1036	100
Sector	Governmental sector	626	60.4
	Semi-Governmental sector	67	6.5
	Private Sector	343	33.1
	Total	1036	100

Reliability and Validity

The researcher conducted a Cronbach's coefficient alpha test following factor analysis to refine the scale construct. The objective was to create a concise scale with meaningful items. The Cronbach alpha coefficient is widely used to examine the reliability of a multi-element measurement scale. Cronbach alpha coefficients vary from 0 to 1 based on the perceived homogeneity among the evaluated items. The measure is considered exceptionally trustworthy if the Cronbach alpha value exceeds 0.70 (Hair et al., 2010). Cronbach's alpha coefficient was used to examine the reliability of the constructs in this study, and 0.70 was chosen as the evaluation threshold. The term "validity" refers to the accuracy of a construct in measuring what it is intended to measure. According to Hair et al. (2012a), convergent validity refers to how much the variables within a construct share similarities. This study measures convergent validity using factor loading, variance extracted (AVE), and construct reliability (CR) prediction for each construct. To determine the reliability of a model, a standardized loading measure of 0.7 or higher is considered ideal, similar to Cronbach's alpha coefficient. Additionally, the Average Variance Extracted (AVE) should be above 0.5, and the reliability estimates should be over 0.7. In this study, all factors demonstrated appropriate convergent validity, and data restrictions were put in place to ensure this validity was obtained. Table 2 illustrates the establishment of the reliability and validity of the questionnaire.

Table 2
Reliability and validity

Factors	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Behavioural intention (BI)	0.98	0.98	0.98	0.96
Effort expectancy (EE)	0.98	0.98	0.98	0.93
Facilitating conditions (FC)	0.96	0.96	0.97	0.90
Performance Expectancy (PE)	0.98	0.98	0.98	0.94
Social influence (SI)	0.97	0.97	0.98	0.94
Use behaviour (UB)	0.97	0.97	0.98	0.97

Moreover, discriminant validity assesses the differentiation between one latent construct and other constructs (Hair et al., 2011). Distinct validity should be evaluated by comparing the AVE for various constructs against their respective squared inter-construct correlations (SIC). This research found a more significant AVE than SIC measures, indicating a specific construct's discriminant validity. A similar process was used by the researcher to assess the discriminant validity of the pertinent constructs. Good results of discriminant validity using the Fornell-Larcker Criterion are displayed in Table 3.

Table 3
Discriminant validity (Fornell-Larcker Criterion)

Factors	Behavioural intention (BI)	Effort expectancy (EE)	Facilitating conditions (FC)	Performance Expectancy (PE)	Social influence (SI)	Use behaviour (UB)
Behavioural intention (BI)						
Effort expectancy (EE)	0.99					
Facilitating conditions (FC)	0.97	0.99				
Performance Expectancy (PE)	0.98	0.98	0.95			
Social influence (SI)	0.93	0.94	0.95	0.95		
Use behaviour (UB)	0.96	0.96	0.96	0.96	0.95	

Confirmatory Factor Analysis (CFA)

It is commonly referred to as the measurement model when performing a confirmatory factor analysis (CFA) utilizing structural equation modelling. A statistical technique, CFA is used to assess how effectively a set of variables captures a given idea. CFA and exploratory factor analysis (EFA) are the two main kinds of factor analysis. Each variable in an EFA is connected to a latent variable, and the main objective is to explore and display information about the factors. On the other hand, CFA assists researchers in determining the quantity of components required to build a connection between the variables and the fundamental idea. One can use CFA to validate or invalidate measurement theories. Researchers can test theories on the connection between latent variables and their corresponding constructs using the CFA approach. As a method for testing hypotheses and assessing connections using statistical tools in both the theoretical and empirical literature, CFA is highly recommended by Hair et al. (2011). A two-dimensional covariance structure, or CFA, is a kind of SEM. The first dimension aims to connect observed variables to smaller sets of latent variables, while the second dimension connects latent variables through recursive and non-recursive patterns. As CFA fits the SEM measurement framework, researchers can use SEM software to analyse it.

Confirmatory Factor Analysis is suitable for this research as it assists the researcher in evaluating the model fit's adequacy (goodness-of-fit). This study's confirmatory factor analysis explains how and to what extent the observed variables are connected to their underlying latent factors. The CFA is focused on determining the extent to which the underlying latent constructs create the observed variables. This involves evaluating the strength of the regression paths from the factors to the observed variables, which are also known as factor loadings. Thus, before testing and evaluating the structural model, it is essential to examine the validity of the measurement model in a latent variable model. Table 4 shows that all factor loading is over 0.70.

Table 4
Confirmatory Factor Analysis (CFA) (outer loading)

Indicators	Outer loadings	Indicators	Outer loadings
BI_1 <- Behavioural intention (BI)	0.974	FC_4 <- Facilitating conditions (FC)	0.965
BI_2 <- Behavioural intention (BI)	0.983	PE_1 <- Performance Expectancy (PE)	0.968
BI_3 <- Behavioural intention (BI)	0.975	PE_2 <- Performance Expectancy (PE)	0.979
EE_1 <- Effort Expectancy (EE)	0.963	PE_3 <- Performance Expectancy (PE)	0.977
EE_2 <- Effort Expectancy (EE)	0.977	PE_4 <- Performance Expectancy (PE)	0.951
EE_3 <- Effort Expectancy (EE)	0.952	SI_1 <- Social influence (SI)	0.974
EE_4 <- Effort Expectancy (EE)	0.971	SI_2 <- Social influence (SI)	0.975
FC_1 <- Facilitating conditions (FC)	0.961	SI_3 <- Social influence (SI)	0.955
FC_2 <- Facilitating conditions (FC)	0.957	UB_1 <- Use behaviour (UB)	0.985
FC_3 <- Facilitating conditions (FC)	0.916	UB_2 <- Use behaviour (UB)	0.984

R square

The values of R square and Adjusted R square for the latent variables are presented in Table 5. R-square adjusted range from 0.898 to 0.939 suggesting that the independent variables in the model explain approximately 93.9% and 89.8% of the variance in 'Behavioural Intention' and 'Use Behaviour,' respectively.

Table 5
R-square and R-square adjusted.

	R-square	R-square adjusted
Behavioural intention (BI)	0.939	0.939
Use behaviour (UB)	0.898	0.898

Structural Equation Model (SEM)

SEM is a statistical tool used to analyse data that has multiple variables. This study utilized Structural Equation Modeling (SEM) through the implementation of Smart-PLS version 4.0.9.4. Structural equation modelling is one of the most used statistical techniques adopted to analyze structural theory through a confirmatory approach. Structural Equation Modelling is a process that involves two key elements. Firstly, the causal process being studied is represented through a series of structural (regression) equations. Secondly, the structural relationships can be visually modelled to illustrate the theory being investigated clearly. Consequently, the advantage of SEM is that the hypothesized model can be statistically evaluated in a simultaneous analysis of all variables.

Structural Equation Modeling (SEM), a prevalent technique in different research, represents an advanced iteration of regression analysis. SEM possesses the capability to accommodate multiple independent and dependent variables while accounting for theoretical latent constructs that can arise from clusters of observed variables (Hair et al., 2012b). Moreover, structural equation modelling (SEM) makes it easier to investigate specific associations between latent and observable variables, enabling a thorough investigation of correlations (Sarstedt et al., 2019). It can also assist in evaluating theories in situations with insufficient inquiry. As explained by Hair et al. (2012a), these techniques have widespread use in almost every social and behavioural sciences domain. There are two vital components to SEM, as stated by Hair et al. (2012a). The first is the measurement framework, which uses a multivariate regression approach to identify relationships between latent variables and combined observed dependent variables. The second component is the structural framework, which includes three types of relationships: observed variables, factors, and relationships between factors and observed variables that are not factor indicators. These relationships combine linear regression equations to create a constant observed dependent variable or a combination of censored normal,

censored-inflated normal, and censored-inflated normal regression equations for binary or ordered categorical observed dependent variables. Moreover, Structural Equation Modeling (SEM) is a compelling analysis tool that can integrate moderation analysis. It enables examining complex relationships between various variables, including latent variables. SEM software can analyse moderation effects within a structural equation modelling framework, as demonstrated by Kline (2011).

Hypotheses conclusions

The research investigated the factors influencing employees' behavioural intention to use MOOCs and their actual use behaviour. As shown in Table 6, the hypotheses were tested using a Partial Least Squares (PLS) path model analysis. The findings support Hypotheses H1 and H2, indicating that performance expectancy ($t = 4.703, p < 0.05$) and effort expectancy ($t = 8.441, p < 0.05$) have a significant positive influence on employees' behavioural intention to use MOOCs. These results suggest that employees are more likely to intend to use MOOCs if they perceive them as useful and easy to use.

Hypothesis H3, which proposed that social influence would significantly impact employees' behavioural intention to use MOOCs, was not supported ($t = 1.177, p = 0.239$). This finding implies that social influence from peers or superiors may not be a significant determinant of employees' intentions to use MOOCs.

The analysis also confirmed Hypotheses H4 and H5. Facilitating conditions, such as organizational support and resources, were found to significantly influence employees' actual use behaviour of MOOCs ($t = 4.990, p < 0.05$). Additionally, behavioural intention had a significant positive influence on use behaviour ($t = 7.621, p < 0.05$), indicating that employees with higher intentions to use MOOCs were more likely to engage in their actual use.

Table 6
PLS Path model for all latent variables and hypotheses conclusions

Path Coefficients		β	SD	t	P	Conclusion
H1	Performance expectancy (PE) -> Behavioural intention (BI)	0.357	0.076	4.703	0.000	Supported
H2	Effort expectancy (EE) -> Behavioural intention (BI)	0.563	0.067	8.441	0.000	Supported
H3	Social influence (SI) -> Behavioural intention (BI)	0.063	0.053	1.177	0.239	Not Supported
H4	Facilitating conditions (FC) -> Use behaviour (UB)	0.375	0.075	4.990	0.000	Supported
H5	Behavioural intention (BI) -> Use behaviour (UB)	0.586	0.077	7.621	0.000	Supported

Moderating variables

The research investigated whether gender, years of experience, and sector moderated the influence of performance expectancy, effort expectancy, social influence, and facilitating conditions on employees' behavioural intention to use MOOCs and their actual use behaviour. Table 7 summarizes the moderator's results.

Table 7 also depicts that the results did not support the moderating effect of gender on the relationships between the four constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) and behavioural intention (H6.1 - H6.3) or use behaviour (H6.4). This suggests that the influence of these factors on employees' intentions and use of MOOCs did not significantly differ between males and females.

Contrary, years of experience moderated the influence of effort expectancy (H7.2, $t = 2.516$, $p < 0.05$) and social influence (H7.3, $t = 3.572$, $p < 0.05$) on behavioural intention to use MOOCs. However, it did not moderate the effects of performance expectancy (H7.1) and facilitating conditions (H6.2.4) on behavioural intention and use behaviour, respectively. These findings indicate that the impact of perceived ease of use and social influence on employees' intentions to use MOOCs may vary depending on their years of experience.

The sector in which employees worked moderated the influence of effort expectancy (H8.2, $t = 3.318$, $p < 0.05$), social influence (H8.3, $t = 2.891$, $p < 0.05$), and facilitating conditions (H8.4, $t = 2.035$, $p < 0.05$) on behavioural intention and use behaviour, respectively. However, it did not moderate the effect of performance expectancy (H8.1) on behavioural intention. These results suggest that years of experience and sector played moderating roles in the relationships between the key constructs and employees' behavioural intention and use behaviour regarding MOOCs, while gender did not exhibit a significant moderating effect.

Table 7
Moderators Analysis

Path Coefficients	β	SD	t	P	Conclusion
H6.1 Gender x Performance expectancy (PE) -> Behavioural intention (BI)	0.099	0.147	0.677	0.499	Not Supported
H6.2 Gender x Effort expectancy (EE) -> Behavioural intention (BI)	-0.119	0.134	0.885	0.376	Not Supported
H6.3 Gender x Social influence (SI) -> Behavioural intention (BI)	0.042	0.106	0.400	0.689	Not Supported
H6.4 Gender x Facilitating conditions (FC) -> Use behaviour (UB)	0.003	0.022	0.157	0.875	Not Supported
H7.1 Years of experience x Performance expectancy (PE) -> Behavioural intention (BI)	0.004	0.150	0.026	0.980	Not Supported
H7.2 Years of experience x Effort expectancy (EE) -> Behavioural intention (BI)	-0.314	0.125	2.516	0.012	Supported
H7.3 Years of experience x Social influence (SI) -> Behavioural intention (BI)	0.326	0.091	3.572	0.000	Supported
H7.4 Years of experience x Facilitating conditions (FC) -> Use behaviour (UB)	0.012	0.020	0.606	0.544	Not Supported
H8.1 Sector x Performance expectancy (PE) -> Behavioural intention (BI)	0.091	0.074	1.217	0.224	Not Supported
H8.2 Sector x Effort expectancy (EE) -> Behavioural intention (BI)	-0.234	0.071	3.318	0.001	Supported
H8.3 Sector x Social influence (SI) -> Behavioural intention (BI)	0.153	0.053	2.891	0.004	Supported
H8.4 Sector x Facilitating conditions (FC) -> Use behaviour (UB)	-0.022	0.011	2.035	0.042	Supported

To deepen the understanding of the moderators' roles, further testing was conducted to find which sector and experience length have shown significant differences in their acceptance of MOOCs. When it comes to years of experience, t -test results in Table 8 show that there is a difference in employees' acceptance of MOOCs for reskilling and upskilling due to the years of experience, since t -test = 2.629 > t -Critical = 1.96, and the p -value = 0.009 < 0.05, and the difference in favour of More than five years.

Table 8
t-test for differences in acceptance of MOOCs between two experience levels

Variable	Experience length	N	Mean	sd	T-Testdf	P-Value
Acceptance of MOOCs (Total)	Five years or less	405	4.04	1.00	-2.629 1034	0.009
	More than five years	631	4.20	0.96		

For differences in acceptance of MOOCs among employees in different sectors, one-way ANOVA test results reveal that there is a difference in the employees' acceptance of MOOCs for reskilling and upskilling due to the sector, where $F\text{-test} = 31.083 > F\text{-Critical} = 3.00$, and the $p\text{-value} = 0.000 < 0.05$. A post hoc Scheffe test was computed to determine the differences between group means. Table 9 depicts that there is a difference in acceptance of MOOCs between employees of the government sector and the Semi-governmental sector in favour of governmental sector employees. It also shows that there is a difference between employees of the Semi-government sector and the private sector in favour of private Sector employees.

Table 9
Results of Scheffe test for sector-wise differences in acceptance of MOOCs

Dependent variable	Sector type	N	Mean	sd	Government al sector	Semi-Government al sector	Private Sector
Acceptance of MOOCs (Total)	Governmental sector	626	4.19	0.93			
	Semi-Governmental sector	67	3.25	1.27	0.000		
	Private Sector	343	4.22	0.91	0.909	0.000	

Discussion

Derived from UTAUT, this research proposed six main hypotheses covering different aspects of acceptance factors. Performance expectancy and effort expectancy were found as significant factors influencing employees' behavioural intentions to use MOOCs. Performance expectancy pertains to employees' belief that MOOCs help them to attain job gains suggesting that employees found MOOCs useful and helpful for their productivity and task accomplishment. However, they expressed low confidence in the role of MOOCs in getting monetary benefits in their work. This result is in line with the findings of Dhewandrie & Yuniawan (2023), Meet et al. (2022), and Asokkumar et al. (2023) where MOOC users across different generations and working sectors perceived MOOCs as enablers for their up-skilling and reskilling endeavours and thus enhancing their employability.

The results confirm that effort expectancy is another significant influencer of employees' behavioural intentions to use MOOCs. This result suggests employees' perceptions of MOOCs' easiness, flexibility, and understandability play a significant role in their intention to use MOOCs. This is in agreement with Dhewandrie & Yuniawan (2023), Meet et al. (2022), and Asokkumar et al. (2023) findings that users found MOOCs easy to access and manage, particularly among digital native generations therefore, this enhances their intentions to use MOOCs for career advancement. However, flexibility should be exercised when organizations implement MOOCs outside of working hours as it might increase the employees' commitment and effort, which may result from low acceptance of MOOCs among employees (Radford et al., 2015).

Unexpectedly, social influence was found insignificant influencer on employees' intentions to use MOOCs. This could be interpreted as the self-awareness level and self-study practice among employees during the pandemic considering that around 40% of participants are in the early stage of their career journeys, which requires them to search for reskilling and upskilling opportunities that meet their own needs. This confirmed Meet et al's. (2022) finding that Generation Z shows no significance of social circles and peers in their adoption of MOOCs. Contrary, Dhewandrie and

Yuniawan (2023) found older generation specifically millennials put a significant account for their social circles in their adoption of MOOCs as it sense of legitimacy and guideline. Therefore, this finding suggests that corporations should consider both external and internal motivations to enhance the acceptance of MOOCs among different employee age groups.

Facilitating conditions were significant determinants of employees' actual use of MOOCs as it delivered online thus, networks and smartphones or computers are essentials to taking these courses. Additionally, existing workplace infrastructure should support and facilitate MOOCs to positively influence employees' adoption of MOOCs. This includes the compatibility of MOOCs with the current technologies used in the workplace and other training resources available within the organization. This finding is supported by Dhewandrie and Yuniawan (2023) and Meet et al. (2022) findings on the role of resource availability in influencing employees' usage of MOOCs. However, it is worth noting that the facilitating conditions factor is the only factor that is proposed to directly influence employees' actual use rather than intentions towards MOOCs. Hence, this factor plays a crucial influence on the final adoption of MOOCs within corporates.

The acceptability of MOOCs was shown to be significantly influenced by factors such as years of experience and sectors in the moderating roles. Employees with experience beyond five years had a greater inclination towards embracing MOOCs in contrast to those with five years or less of experience. This finding may be ascribed to the fact that employees with greater experience possess a heightened comprehension of the advantages associated with MOOCs in terms of enhancing their professional growth, and are more inclined to be influenced by their peers or supervisors when it comes to embracing novel technology. Additionally, personnel in the governmental sector accepted MOOCs more readily than those in the semi-governmental sector. Alternatively, workers in the private sector showed more tolerance for MOOCs than did those in the semi-governmental sector. The observed discrepancies may be attributed to differing industry incentive structures, organizational cultures, and resource accessibility. Employee opinions regarding MOOC adoption's usability, social impact, and organizational support may be influenced by these variables. The moderating impacts of years of experience and gender on the workplace acceptance of MOOCs are not well supported by empirical research as of now. This is because researchers have a propensity to exclude certain aspects of acceptance models and theories, concentrating instead on the core components of acceptance variables (Dhewandrie and Yuniawan, 2023; Meet et al., 2022).

This study confirms the results of Venkatesh et al. (2003), who found that the most important factor influencing MOOC use behaviour (UB) is behavioural intention (BU) to use them. The implication is that workers who are more likely to use MOOCs are more likely to do so to learn new skills and improve their current ones. Consequently, companies can increase the possibility that Massive Open Online Courses (MOOCs) will be implemented successfully by encouraging positive attitudes regarding MOOCs among their staff. Additionally, Dhewandrie and Yuniawan (2023) discovered that a high degree of usage behaviour is correlated with a high likelihood of engaging in specific activities that MOOC offers.

CONCLUSIONS

The current study significantly advances our knowledge of the variables affecting workers' acceptance of and utilization of Massive Open Online Courses (MOOCs) for retraining and professional development. Through the utilization of the Unified Theory of Acceptance and Use of Technology (UTAUT) framework, this study offers a significant understanding of the factors and intermediaries that influence workers' attitudes and actions toward the uptake of MOOCs in many industries.

The results demonstrate that employees' choice of behaviour to use MOOCs is significantly influenced by their expectations for effort and performance. If workers believe MOOCs can help them perform better on the job and be more productive, in addition to being simple to use and comprehend, they are

much more inclined to plan to use them. On the other hand, social impact was not found to be an essential variable influencing the intents of the employees, indicating that in this particular environment, personal motives and perceptions may be more important than social pressures. The study also emphasizes how crucial supportive factors, including resource accessibility and organizational support, are in determining how employees use MOOCs. Ensuring that MOOCs for staff development and training are successfully adopted and sustained can be greatly increased by making sure the required infrastructure and interoperability with current workplace technologies are in place.

Significant mediators of the links between the major components and employees' behavioural intention and usage behaviour were found in the research, particularly years of experience and sector. Workers with over five years of experience showed a greater willingness to accept MOOCs than did less experienced workers, indicating that experience may improve an employee's capacity to understand the advantages of MOOCs for career advancement and their openness to social influence. Furthermore, the research revealed disparities in MOOC adoption among governmental, semi-governmental, and private domains. These discrepancies may be linked to variances in incentive systems, organizational cultures, and resource accessibility.

These findings have important ramifications for institutions and decision-makers who want to take advantage of MOOCs' potential to improve workforce competitiveness and skills. Targeted strategies to encourage the successful uptake and utilization of MOOCs can be devised by studying the interaction between personal, technological, and organizational aspects. Organizations should, for example, take steps to increase staff members' understanding of the benefits and simplicity of using MOOCs while simultaneously making sure the required infrastructure and support systems are available. Additionally, to address the diverse needs and perceptions of employees across various industries and experience levels, customized techniques could be needed.

Even though this research makes significant contributions, it is crucial to recognize its shortcomings and provide directions for further investigation. Future research could look into the significance of other individual traits like learning preferences or technological self-efficacy, as well as the influence of leadership and organizational culture on the effective integration of MOOCs into business training initiatives. Studies with a longitudinal design may also shed light on how MOOCs are adopted and used consistently over time in professional settings.

Overall, this study emphasizes how crucial it is to comprehend the intricate interactions that exist between technological, organizational, and individual aspects when it comes to determining how MOOCs are accepted and used for retraining and professional development. This study adds to the ongoing attempts to harness the potential of MOOCs in boosting the workforce's competitiveness and adaptability in a constantly changing professional landscape by examining the moderating roles of years of experience and sector.

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