

Advancing Skills Through Lifelong Open Education in Bangladesh: Challenges and Potentials

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Abstract

Continuing education and lifelong learning have emerged as essential tools for people to remain competitive, engaged, and adaptable in a rapidly changing world. Lifelong learning becomes more crucial in the context of rapid technological advancement, shifting labor markets, and changing social environments. This study investigates the impact of lifelong open education on skill development and assesses its effectiveness in fostering continuous professional and personal growth. This study formulates a conceptual model employing Structural Equation Modelling (SEM) to investigate the influence of lifelong learning on the intention of learners at Bangladesh Open University (BOU) towards skill development. The findings indicate a significant correlation between the skill development of BOU learners and their engagement in lifelong learning. The results indicate that lifelong learning significantly influences the skill development of BOU students. The relationship between learners' skill development and learning motivation is entirely mediated by engagement in lifelong learning. This study argued that skill development depends on flexible and easily available learning strategies, hence promoting ongoing professional growth. The research emphasizes the necessity for educational institutions and legislators to enhance the support system, student motivation, and content relevance for upskilling, enabling students to adapt to an ever-evolving world.

Keywords: Continuing education, Skills development, Lifelong learning, Professional development, Bangladesh

Introduction

The necessity for continuous skill development has intensified in today's rapidly evolving environment, characterized by globalization, swift technological advancement, and shifting labor markets (Ovesni et al., 2025). To maintain competitiveness, adaptability, and relevance in personal and professional spheres, the concept of lifelong learning—characterized by individuals engaging in continuous and voluntary education—has gained significant popularity (Volles, 2016). Modernisation, technology, globalisation, socialisation, economics, and comparative culture have all been emphasised in the university education program's transformation.

For personal, civic, social, and/or professional reasons, lifelong learning is the ongoing process of gaining new knowledge, abilities, and competencies throughout one's lifetime. Lifelong open education facilitates continuous enhancement of knowledge and skills, irrespective of age, location, or prior qualifications, in response to evolving workforce and societal demands (Ovesni et al., 2025). Beyond conventional schooling, it includes any learning activity that is done in a formal, informal, or non-formal setting. According to Zizek et al. (2014), the skills needed for work in the twenty-first century should ideally be updated quickly to keep up with both the rapid advancements in technology and broader societal changes. According to Brown et al. (2020), mapping the modern skills dynamic of occupations is crucial in order to adjust university education programs appropriately. According to studies like Wickramasinghe's (2018), universities in developed economies have modified their courses and other pertinent majors to guarantee that graduates have the skills that are needed for cutting-edge job sectors.

In the context of the fourth industrial revolution, studies by Holmes (2016), Frey and Osborne (2017), and more recently Brown (2020) and Goulart et al. (2022) highlight the revolutionary effects of digital transformation on

the workplace. The nature of employment, hiring procedures, workplace organisation, and employee management have all changed globally as a result of this transition (Baykal, 2022; Smirnova et al., 2019). Though historically successful, these conventional approaches to problem-solving are insufficient to handle the complex issues brought about by the dynamic and quickly changing nature of skill demands and requirements brought about by digitalisation (Goulart et al., 2022; Spada et al., 2022).

This paper examines the impact of continuous open education on skill development. This study specifically examines the mediating effects of lifelong learning participation on the aspirations of BOU students to improve their professional and personal skills. The study has significant implications for legislators, educators, and institutions alike.

Literature Review and Hypothesis Development

One's abilities must also be adaptable to keep up with the always changing job market with technological developments. In the employment of today, digital literacy, critical thinking, adaptability, and lifelong learning are requirements; traditional knowledge is inadequate. People need to update and broaden their skill sets as sectors change in order to stay competitive, relevant, and future-ready (Volles, 2016). Developing skills improves productivity, encourages creativity, increases employability, and aids in personal development. People are also empowered to solve issues, adjust to change, and make significant contributions to the lifelong open education in the economy and society.

Open education enables learners from diverse backgrounds to access quality learning resources at low or no cost, supporting lifelong learning, reducing educational inequalities, and driving innovation across sectors (Palvia et al., 2018). It improves their employability, encourages self-directed growth in a variety of professions, and empowers lifelong learning. Learners may constantly improve their abilities using adaptable and easily accessible online platforms, which helps close the gap between education and real-world demands (Ovesni et al., 2025). This is especially important in areas where traditional educational institutions are not readily available.

Perceived Usefulness of Lifelong Learning

When UNESCO held the first International Conference on Adult Education (at the Elsinore Conference in Denmark) in 1949, lifelong learning became a prominent topic on the global agenda (Volles, 2016). Today, the European Union defines lifelong learning as follows: 'Lifelong learning' means all general education, vocational education and training, non-formal education and informal learning undertaken throughout life, resulting in an improvement in knowledge, skills and competences within a personal, civic, social and/or employment-related perspective. It includes the provision of counselling and guidance services (EPCE, 2006). The term "perceived usefulness of lifelong learning" describes an individual's belief that pursuing lifetime learning will result in significant advantages like professional development, skill development, or personal development (Garzón Artacho et al., 2020). Learners are more likely to actively engage in and stick with educational activities when they believe that lifelong learning is worthwhile and pertinent to their objectives. This view has a significant impact on engagement, motivation, and the general efficacy of programs promoting lifelong learning. The following hypothesis was developed to examine the relationship between Perceived Usefulness of Lifelong Learning and the skill development.

H1: There is a significant positive relationship between perceived usefulness of lifelong learning and the skill development.

Access to Lifelong Open Education

The promotion of skill development can be effectively achieved through lifelong open education (Mlambo et al., 2021). Institutions can provide students from diverse backgrounds, including those from rural or marginalized communities, with opportunities for further education through Open and Distance Learning (ODL). The accessibility

of lifelong open education promotes individuals to participate in various educational initiatives and facilitates continuous reskilling and upskilling. The affordability of educational resources and their accessibility encourage students to participate in lifelong open education, thereby promoting skill development (Nykyoprets et al., 2023). The following hypothesis was developed to examine the relationship between access to lifelong open education and the skill development.

H2: There is a significant positive relationship between access to lifelong open education and the skill development.

Learning Motivation

The internal drive or outside force that pushes people to participate in and stick with learning activities is referred to as learning motivation. It determines how much effort a student puts into learning new information or abilities (Liu & Ye, 2025). Extrinsic motivation is impacted by incentives, grades, professional objectives, or social recognition, but intrinsic motivation is fuelled by one's own interests, curiosity, or contentment. An important component of effective schooling and lifelong learning, strong learning motivation improves focus, resilience, and achievement (Niu et al., 2025). In open education in the twenty-first century, learning motivation is a critical factor that boosts student engagement, perseverance, and accomplishment in flexible, self-paced settings. Students who are motivated are more likely to set objectives, use their time wisely, and overcome obstacles—all of which are critical in open and remote learning environments (Liu & Ye, 2025). It also cultivates a growth mentality, which is essential for surviving in a digital, knowledge-based society since it promotes lifetime learning and ongoing skill improvement. The following hypothesis was developed to examine the relationship between learning motivation and the skill development.

H3: There is a significant positive relationship between learning motivation and the skill development.

Technological Readiness

The fast development of technology and the fast arrival of new technologies into the market demand continuous development in the skills, knowledge, and competencies of individuals (Dosso, 2020). Technological preparedness is the capacity of people, companies, and societies to welcome and utilize new technology. Having the required technologies enables one to access modern job tools, online education, digital communication, and innovation in the current digital age (Kobos et al., 2018). The technological readiness helps to drive faster skill development, higher productivity, and improved global economy competitiveness (Dosso, 2020). Learners who want to use online learning platforms, participate in online learning, and navigate and use instructional websites and resources must be digitally literate. The following hypothesis was developed to examine the relationship between technological readiness and the skill development.

H4: There is a significant positive relationship between technological readiness and the skill development.

Lifelong Learning Engagement

Lifelong learning engagement helps to develop skills by means of motivating the acquisition of new knowledge and skills, fostering a mindset of constant improvement, and enhancing adaptability in individuals as well as businesses. This proactive engagement in learning ensues in increased motivation, personal growth, and better performance, both professionally and personally. The following hypothesis was created to examine whether the relationship between the latent variables used in this study and the skill development is mediated by lifelong learning engagement.

H5: Lifelong learning engagement mediates the relationship between perceived usefulness of lifelong learning and the skill development.

H6: Lifelong learning engagement mediates the relationship between access to lifelong open education and the skill development.

H7: Lifelong learning engagement mediates the relationship between learning motivation and the skill development.

H8: Lifelong learning engagement mediates the relationship between technological readiness and the skill development.

Conceptual Framework:

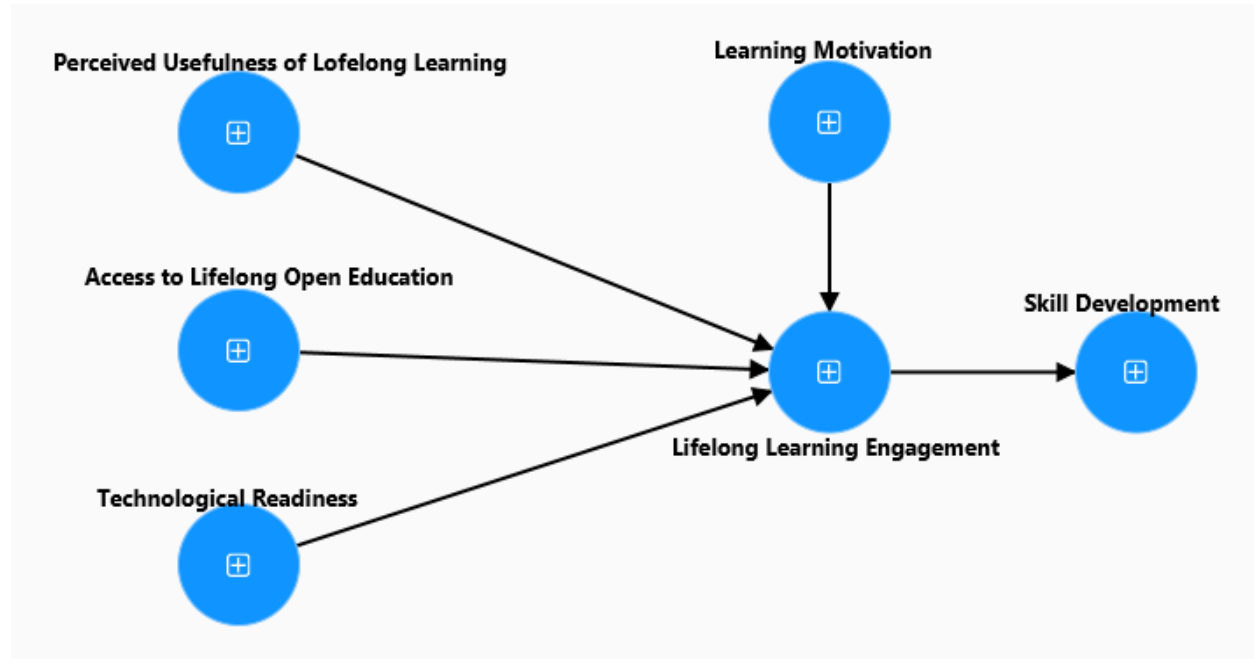


Figure1: Relationship between dependent and independent variables

Methodology

The study employs a reflective multi-indicator model to examine hidden factors and construct scales to determine how the variables foster the skills development of Bangladesh Open University learners. A survey questionnaire was distributed in November and December 2024 to 485 current MBA students and alumni. As part of this study, the questionnaire used a five-point Likert scale with the choices of strong agreement and strong disagreement. The survey was filled out by 59.38% of respondents. A total of 261 valid responses were used for the final analysis after 27 of the 288 responses were disqualified for having insufficient information.

The data was analysed using structural equation modelling (SEM), which establishes connections between latent variables and observed indicators in a theoretical model. The model parameters were calculated using the statistical tool Smart PLS 4.0. The Smart PLS analysis begins by evaluating the measurement model, which includes the reliability and accuracy of the study's measurements. Then, using route analysis, the latent variable connections' strength and direction are confirmed against the structural model. Mediation analysis also looks into how a mediator affects the development of skills.

Results and Discussion

Assessment of the model:

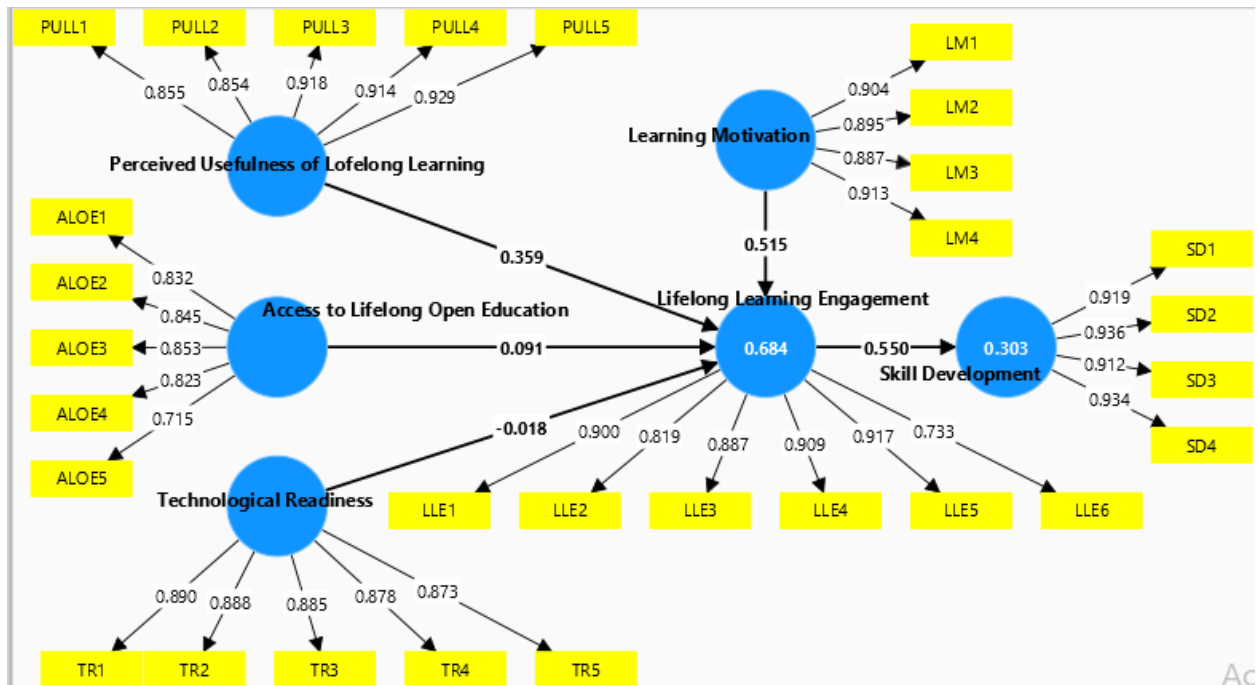


Figure2: Result of data reliability and validity

Table 1: R-square- Overview

	R-square	R-square adjusted
Lifelong Learning Engagement	0.684	0.671
Skill Development	0.303	0.295

The Table 1 presents R-square and adjusted R-square values for two variables: Lifelong Learning Engagement and Skill Development. The R-square value for Lifelong Learning Engagement is 0.684, indicating that approximately 68.4% of the variance in the dependent variable can be explained by this factor. Its adjusted R-square, which accounts for the number of predictors in the model, is slightly lower at 0.671, suggesting a strong and reliable model fit. In contrast, Skill Development has an R-square value of 0.303, meaning it explains only about 30.3% of the variance, with an adjusted R-square of 0.295. This suggests that while Skill Development still contributes to the model, its explanatory power is notably weaker compared to Lifelong Learning Engagement.

Table 2: Construct reliability and validity- Overview

Constructs	Cronbach's alpha	Composite reliability	Average variance	variance
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		(rho a)	extracted (AVE)
Access to lifelong open education	0.877	0.930	0.665
Learning Motivation	0.922	0.927	0.810
Lifelong Learning Engagement	0.930	0.930	0.745
Perceived Usefulness of Lifelong Learning	0.938	0.946	0.800
Skill Development	0.944	0.950	0.856
Technological Readiness	0.929	0.934	0.779

The Table 2 summarizes key reliability and validity measures for six constructs: Access to Lifelong Open Education (ALOE), Learning Motivation (LM), Lifelong Learning Engagement (LLE), Perceived Usefulness of Lifelong Learning (PULL), Skill Development (SD), and Technological Readiness (TR). Each construct is evaluated using Cronbach's alpha, Composite Reliability (ρ_a), and Average Variance Extracted (AVE).

All constructs show high internal consistency, as reflected by Cronbach's alpha values ranging from 0.877 to 0.944, all well above the acceptable threshold of 0.70. Similarly, composite reliability values (ρ_a) range from 0.93 to 0.95, indicating excellent reliability. The AVE values, which reflect the amount of variance captured by the construct relative to the variance due to measurement error, also exceed the standard threshold of 0.50 in all cases, with values ranging from 0.665 to 0.856. This suggests strong convergent validity across all constructs, indicating that the items used to measure each concept are both reliable and valid.

Table 3: Discriminant validity- Heterotrait-monotrait ratio (HTMT) Matrix

	ALOE	LM	LLE	PULL	SD	TR
ALOE						
LM	0.466					
LLE	0.461	0.822				
PULL	0.396	0.693	0.758			
SD	0.515	0.498	0.583	0.61		
TR	0.496	0.797	0.701	0.758	0.557	

The Table 3 presents the correlation matrix among six key constructs: Access to Lifelong Open Education, Learning Motivation, Lifelong Learning Engagement, Perceived Usefulness of Lifelong Learning, Skill Development, and Technological Readiness. Each cell shows the Pearson correlation coefficient between a pair of constructs, indicating the strength and direction of their linear relationship.

The correlations suggest moderate to strong positive relationships among the variables. Learning Motivation shows a strong correlation with Lifelong Learning Engagement (0.822) and Technological Readiness (0.797), implying that motivated learners tend to engage more and are more technologically prepared. Similarly, Perceived Usefulness of Lifelong Learning is strongly associated with both Lifelong Learning Engagement (0.758) and Technological Readiness (0.758), highlighting the interconnectedness of perception, engagement, and tech readiness.

Skill Development shows moderate correlations with other constructs, such as Access to Lifelong Open Education (0.515) and Perceived Usefulness (0.61), suggesting its dependence on both access and perceived value. Finally, Access to Lifelong Open Education shows moderate relationships with the other variables, indicating its foundational but indirect influence on learning-related outcomes. These patterns reflect a cohesive framework where motivation, access, perception, and technology readiness all contribute to skill development and engagement in lifelong learning.

Hypotheses Testing:

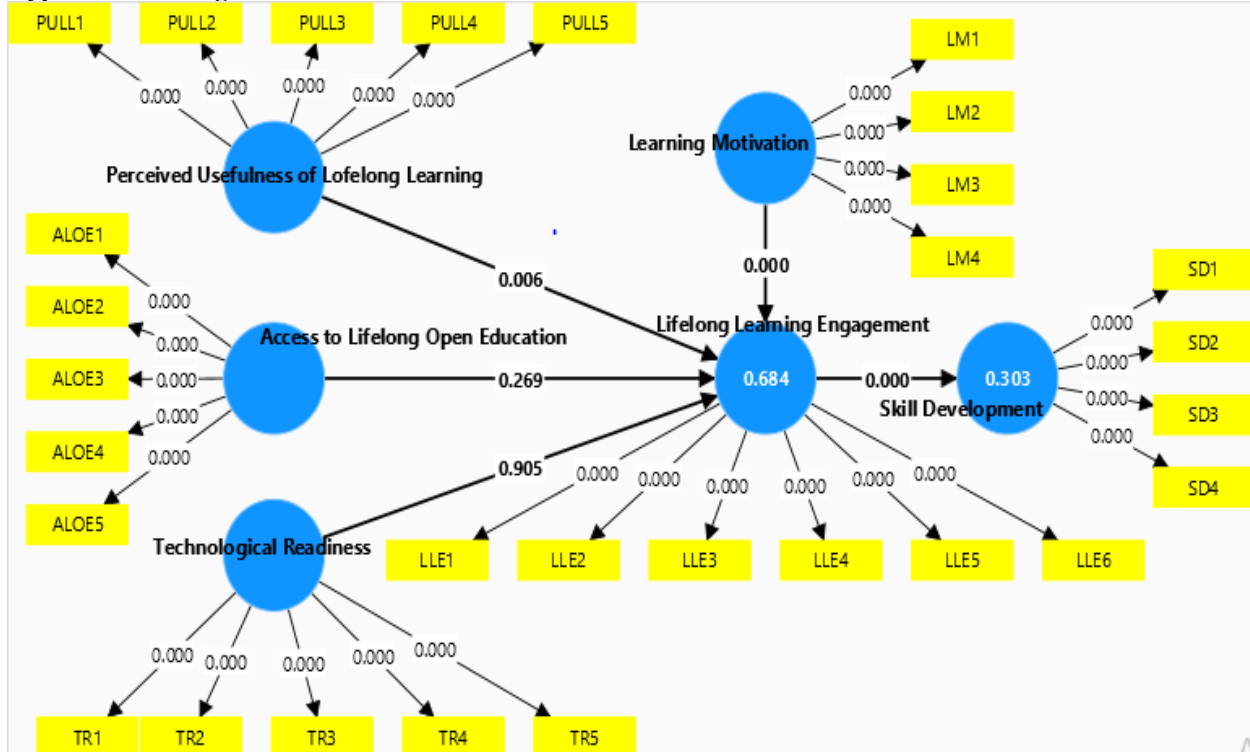


Figure3: Result of hypotheses testing

Table 4: Path coefficients- Beta (β), STDEV, T values, P values

Relationship	Beta (β)	Standard deviation	T statistics	P values	Decision
ALOE->L LE	0.091	0.082	1.105	0.269	Not Significant
LM->L LE	0.515	0.123	4.187	0.000	Significant
LLE-> SD	0.55	0.089	6.193	0.000	Significant
PULL-> LLE	0.359	0.129	2.771	0.006	Significant
TR> LLE	-0.018	0.15	0.119	0.905	Not Significant

The Table 4 presents the results of a structural equation modeling (SEM) analysis, showing the relationships between different constructs and their effect on Lifelong Learning Engagement and Skill Development. Impact of Access to Lifelong Open Education and Lifelong Learning Engagement has a small positive path coefficient (0.091), but with a high p-value (0.269), indicating no statistically significant effect. Access to lifelong open education may not directly influence engagement but might work through indirect paths, such as increasing motivation or perceived usefulness, which in turn influence engagement. Moreover, merely having access to open education does not guarantee engagement. The quality, relevance, and usability of the resources matter more.

Learning Motivation and Lifelong Learning Engagement shows a strong, positive, and statistically significant relationship (coefficient = 0.515, p = 0.000), meaning motivation plays a major role in promoting engagement. Similarly, Lifelong Learning Engagement and Skill Development is also significant (coefficient =

0.550, $p = 0.000$), suggesting that higher engagement in learning leads to greater skill development. Moreover, Perceived Usefulness of Lifelong Learning and Lifelong Learning Engagement has a moderate, significant effect (coefficient = 0.359, $p = 0.006$), indicating that learners who see lifelong learning as useful tend to be more engaged. Additionally, Technological Readiness and Lifelong Learning Engagement has a negative and non-significant effect (coefficient = -0.018, $p = 0.905$), suggesting that being technologically ready does not necessarily influence engagement in this model.

Table 5: Mediating effects- Beta (β), STDEV, T values, P values

Relationship	Beta (β)	Standard deviation	T statistics	P values	Decision
ALOE->LLE->SD	0.050	0.050	0.998	0.318	Not Significant
LM->LLE->SD	0.283	0.073	3.903	0.000	Significant
PULL ->LLE->SD	0.197	0.084	2.349	0.019	Significant
TR->LLE->SD	-0.010	0.084	0.117	0.907	Not Significant

The Table 5 displayed the mediating effect of the Learning and Leadership Environment (LLE) on the relationship between various factors and Skill Development (SD). The results indicate that LLE significantly mediates the relationship between Leadership Motivation (LM) and Skill Development, as evidenced by a beta value of 0.283, a t-statistic of 3.903, and a p-value of 0.000. This suggests that LM positively influences LLE, which in turn enhances SD. Similarly, PULL also shows a significant mediating effect through LLE, with a beta of 0.197, a t-statistic of 2.349, and a p-value of 0.019, indicating that strategies or motivations related to PULL contribute to SD via LLE. On the other hand, the mediating effects of LLE between ALOE and SD, as well as between TR and SD, are not statistically significant, as their p-values exceed the 0.05 threshold (0.318 and 0.907 respectively). This means that Active Learning or Experiential Learning (ALOE) and Training or Trust (TR) do not significantly influence Skill Development through LLE in this model.

Concluding Remarks

The findings show significant correlations among the variables, including the perceived usefulness of lifelong learning, access to open education, technological readiness, learning motivation, lifelong learning engagement, and skill development. Moreover, this study confirms that learning motivation and the perceived usefulness of lifelong learning have a significant effect on lifelong learning engagement and skill development. However, access to lifelong open education and technological readiness have no significant impact on lifelong learning engagement and skill development in this model. Lifelong learning is not always ensured by technological readiness. Due to the fact that participation in lifelong learning is dependent on numerous other elements, such as internal or external motivation. In some cases, tech-savvy individuals prefer learning through YouTube, podcasts, or browsing over formal lifelong learning programs.

Furthermore, the absence of motivation and content irrelevance prevents access to open education from ensuring lifelong learning engagement, which promotes skill development. One of the main issues with open education is that it does not improve engagement in lifelong learning if learners do not have a satisfactory support system. Therefore, this study suggested that in order to ensure lifelong learning engagement, which inevitably leads to skill development, the support system, learner motivation, and content relevance should be improved.

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