

Skills development for sustainable career planning in Bangladesh: the case of gender equality in education

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Abstract

Purpose – This study aims to investigate the importance of lifelong learning in cultivating competent human capital, fostering long-term career sustainability and promoting gender equality in Bangladesh.

Design/methodology/approach – This study has used a qualitative research methodology with inductive reasoning. The researchers used purposive sampling to conduct semi-structured interviews with 34 male and female students at the graduate and undergraduate levels, in addition to six stakeholders. This

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research is grounded in the theoretical frameworks of human capital development theory and gender and development theory.

Findings – The results suggest that there exists a positive correlation between lifelong learning, sustainable career development and gender equality in the context of Bangladesh. Successfully executing strategies might also play a significant role in attaining Bangladesh's sustainable development goals (SDGs).

Practical implications – Educational curriculum reform within institutions is urgently needed, necessitating the active involvement and influential contributions of actors and stakeholders. Implementing lifelong learning must also align with gender equality and SDGs.

Originality/value – This study addresses a significant gap in the existing literature by offering insights into the relationship between lifelong learning, career sustainability and gender equality within the specific context of Bangladesh. This study provides valuable contributions to scholars, stakeholders and policymakers while establishing a foundation for future research endeavors.

Keywords Lifelong learning, Skills development, Sustainable career, Gender equality, Bangladesh

Paper type Research paper

Introduction

In this period of demographic transition, education, knowledge and skills primarily become the basic requirements for maintaining a quality lifestyle. As life expectancy and living standards grow, keeping up with the latest developments and trends has become crucial (Milic, 2013). Therefore, primary education and people's desire to learn new things are becoming more critical. And that is where the concept of lifelong learning originates. Continual or lifelong learning refers to the capacity to acquire novel knowledge consistently while integrating previously accumulated expertise (Parisi *et al.*, 2019). For the foundations supporting skill development and national innovation structures to stand firm, the human capital foundation must be strengthened via lifelong education. The progress of education necessitates the adoption of a comprehensive methodology. Lifelong learning education programs that cater to the needs of dynamic economies are inclusive and include a wide range of educational levels, including early childhood development, primary, secondary, university and adult continuing education (Steffens, 2015). These programs are designed to align with the overall development framework of each nation. This encompasses the domains included by the Education for All project and the interconnections with endeavours aimed at attaining the Millennium Development Goals (McCormick, 2014).

Individuals employed in various occupations must possess the ability to engage in lifelong learning, consistently adjusting to evolving possibilities and labor market requirements within the knowledge-based economy. Consequently, lifelong learning is necessary for any nation rather than a mere indulgence (McCormick, 2014). The evolution of education systems in all nations will be necessary. The World Bank aims to promote a program focused on lifelong learning and post-basic education (Elfert, 2019). This program encompasses efforts to enhance the quality and reach of secondary and tertiary education.

In addition, it seeks to enhance the policy framework to facilitate a wide range of educational institutions, programs and procedures that enable individuals to access education. This access may be sought for skill enhancement for employment or personal fulfillment through learning. Even with the ambiguity, almost every conceivable community planning process, educational reform framework and strategic plan includes lifelong learning (Vieira, 2019).

Skills development became essential for graduate career pathways in the era of globalization and the digitalization process. As an emerging economic power in the South Asian region, Bangladesh has had considerable economic growth, and the development scale has been remarkable since the post-2009 period (Alam, 2022). However, despite the

flourishing economy and sustainable development stream, Bangladesh still faces various challenges in attaining human capital development. The skills development sector has seen a substantial transition due to enacting the National Skills Development Authority Act of 2018 and the subsequent implementation of the National Skills Development Authority Rules of 2020. Expanding the professional improvement sector in this country relies on many crucial elements, namely, practical cooperation, implementing competency-driven skills training mechanisms and establishing unified standards, curricula and credential systems (NSDP, 2020). As per the Ministry of Finance's report in 2018, it is apparent that a substantial percentage, exceeding 60%, of professionals exhibit a broad spectrum of expertise spanning various domains such as e-commerce, e-governance, business process outsourcing (BPO), data input, Web development, visual design, multimedia, enterprise resource planning and Internet of Things (IoT). However, it was found that over 40% of organizations have identified a deficiency in capabilities among their senior-level employees. The technology industry is now experiencing a significant skills gap, particularly in the areas of IoT experts and Software Testers, because there is a visible lack of professionals with expertise in these fields within the present labor market. Given the prevailing global context marked by the Fourth Industrial Revolution (4IR), a notable transition occurred in industries toward complete digitalization and the incorporation of intelligent manufacturing processes. This shift is primarily driven by implementing smart factories using cyber-physical systems to achieve maximum efficiency. In these contexts, the developing labor force with effective lifelong learning mechanisms must accelerate the labor force with soft, challenging and technical skills to advance them in automation, digitalization and information technology to adjust to the changing conditions successfully.

In addition, lifelong learning will be an excellent process for decreasing gender discrimination in the academic and professional sectors. The degree of skill development and women's empowerment are inextricably linked; as a result, the higher the institution's degree, the more significant women's empowerment (Panchani and Bassa, 2022). Bangladesh, despite its 71st position in the Global Gender Gap Index among 146 countries in the South Asian region, continues to exhibit a substantial disparity in gender equality within the realm of education, as it ranks 123rd globally (World Economic Forum, 2022). To improve the lives of women and lessen gender inequality, Bangladesh has constantly created laws and initiatives since the 1970s (Ferdous, 2019). The administration of Bangladesh introduced the Gender Budget in the fiscal year 2009–2010, and since then, it has grown by 3.5 times (Haque, 2019). The National Education Policy prioritized the implementation of an inclusive educational framework aimed at eradicating gender disparities, fostering skill development and promoting women's participation in the workforce. Enhancing females' participation in lifelong learning opportunities will advance them in sustainable career opportunities and gender equality.

In contemporary times, the enhancement of talents has emerged as a widely used terminology. Due to a lack of alignment between Bangladesh's existing educational curriculum and the demands of the job market and an emphasis on conventional theory-based academic frameworks, the nation has challenges in generating a sufficient supply of competent human capital. In the present setting, the adoption of the lifelong learning strategy has the potential to serve as a viable policy mechanism for restructuring the education system and establishing a connection between skills acquisition and the labor market, therefore facilitating the development of the nation's human capital. This strategy also helps recent graduates embrace a sustainable approach to career planning. Furthermore, this research also examines the influence of lifelong learning on gender equality by focusing on skills development. Hence, this research aims to examine the

influence of lifelong learning on sustainable career planning and gender equality in Bangladesh, with the ultimate goal of attaining sustainable development goals (SDGs). This study will provide valuable insights for academics doing future studies and stakeholders, politicians and government officials involved in enhancing the educational framework in Bangladesh. The research questions formulated to guide the research were:

RQ1. What is the role of lifelong learning in sustainable career planning and gender equality in Bangladesh?

RQ2. How can Bangladesh achieve the SDGs through lifelong learning?

Mitigation of supply and demand side skills mismatch through lifelong learning

Over the past decade, Bangladesh's economy saw a constant and protracted phase of economic progress, culminating in a gross domestic product (GDP) growth rate above 6% yearly (Ministry of Finance, 2018). Throughout this time frame, a persistent upward trend has been seen in the relative representation of the service and industrial industries compared to the agriculture industry. The Bangladesh Bureau of Statistics reported that Bangladesh's GDP expansion surpassed 8% for the fiscal year 2018–2019. The rapid progression of the economy will enhance the realization of its goal to obtain the rank of a developed country by the year 2041. To accomplish this objective, Bangladesh must sustain its economic momentum for the next two decades. In light of the limitations of sector-led growth, the country must prioritize implementing initiatives focused on augmenting productivity.

Nevertheless, a study by the Ministry of Finance has revealed a significant disparity between the employability of individuals and the limited accessibility of skill enhancement programs. In addition, it has been observed that employees possess a low level of skills, resulting in diminished productivity and decreased incomes for both formal and informal sector workers. The educational authorities in the ASEAN area have seen significant changes in the approach to education due to the acknowledged negative repercussions of the 4IR. The provision of skills, talents and information necessary for students to navigate the problems resulting from the ongoing technological advancements of the 4IR is growing in significance within educational institutions (Oke and Fernandes, 2020). According to Oke and Fernandes (2020), the 4IR has necessitated that colleges cultivate students who can adeptly navigate the requirements of a worldwide, automated, digitally interconnected and adaptable society. Education 4.0 emphasizes fundamental elements such as personalized learning, cognitive transformation, the use of digital technologies in educational practices, conducive learning environments, continuous lifetime learning, experiential learning and multidisciplinary education (Himmetoglu *et al.*, 2020). The increase in worker skills is relevant to the nation's sustainable growth.

According to the Ministry of Finance (2018) findings, there is a notable shortage of qualified professionals in many developing domains within the information technology sector, including robotics, artificial intelligence (AI) and the IoT. Based on the statistical data provided by the Ministry of Finance in 2018, it is apparent that a significant proportion of the labor force, comprising individuals lacking specialized skills or possessing limited expertise, exhibited a notable concentration in various domains such as AI, robotics, IoT, geographic information systems, BPO and multimedia. A discrepancy persists over the anticipated academic education level and software engineering proficiency. While many professions often have little difficulty recruiting individuals for entry and intermediate-level roles, they encounter significant hurdles in identifying qualified applicants for senior-level positions. Therefore, enterprises must employ individuals from other countries to run

advanced technological software and machinery. This phenomenon is relevant in various sectors; for instance, in vocations such as professionals, technical professionals and managers, 69%, 62% and 61% of applicants lack the capabilities and experiences, respectively ([The World Bank, 2018](#)).

The notion of lifelong learning was conceived initially as lifelong education. The term “lifelong learning” refers to continuously acquiring information and skills via structured and unstructured educational methods, continually improving one’s quality of life ([Owusu-Agyeman, 2017](#)). In contemporary times, this concept has gained recognition as a fundamental element within the education system, playing an essential part in establishing an environment that values and prioritizes the acquisition of information ([Avis *et al.*, 2018](#)). The learning process entails individuals of every stage of life, beginning from birth and persisting throughout their entire lifespan. It includes various levels of academic achievement, including early childhood education, elementary and secondary education, higher education and technical and vocational training.

Furthermore, learning occurs through different approaches, such as formal, nonformal and informal. It occurs in diverse learning spaces, extending beyond traditional educational institutions to include families, communities, work environments, libraries and online platforms. Learning also serves multiple purposes and caters to different learners’ specific needs and requirements. The concept of lifelong learning encompasses many factors, such as the many paths taken throughout time, the diverse subjects studied and the different approaches to learning. It also involves ongoing opportunities for learning, active involvement in society as a whole, the distribution of resources and responsibilities and the expansion of funding and methods of delivering education ([Avis *et al.*, 2018](#)).

Numerous scholars concur that enhancing competitiveness relies on education and skills, with excellent lifelong education as a vital prerequisite for attaining this objective. According to [Tanjung \(2020\)](#), many factors, including government efficacy, public wellness, literacy ratio and population expansion, considerably influence education quality and a learner’s competencies. According to [Fojtiková *et al.* \(2016\)](#), economic entities must enhance their competencies and augment education investments, research and technology to acquire vastly trained human capital. The labor market in Bangladesh is now experiencing notable changes due to several factors, such as economic growth, technological advancements and globalization. This suggests that the workforce must constantly augment their skill sets to maintain a competitive edge. The opportunity for individuals to engage in lifelong learning enables the development and improvement of workers’ capabilities by acquiring new skills, knowledge and competencies. Employers are more inclined to recruit people who exhibit a combination of hard skills, which include technical competence, and soft skills, including proficiencies such as effective communication, problem-solving and teamwork. This concept can effectively promote the acquisition and augmentation of skills in high demand by employers.

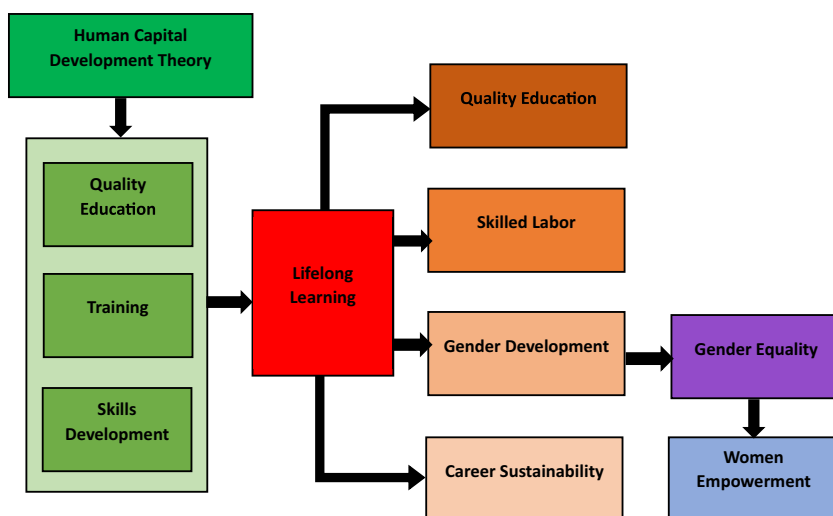
In Bangladesh, there are many techniques aimed at promoting lifelong learning. One critical approach is to enhance both the accessibility and affordability of lifelong learning opportunities. One possible strategy for mitigating this problem is increasing the allocation of financial resources toward adult education and training programs while boosting the accessibility of flexible and online learning options. With the introduction of the lifelong learning approach in academic institutions, individuals can acquire employable skills. Higher educational institutions should also embrace lifelong learning through reforming the academic curriculum to improve graduates’ skills ([Alam *et al.*, 2023](#)). Another essential approach for promoting lifelong learning is to alter the cultural environment around this educational endeavor. In Bangladesh, an enduring societal stigma exists around

engagement in lifelong learning. This stigma is characterized by a prevailing notion that such pursuits are only meant for the younger population or those unemployed. To foster more engagement in lifelong learning, it is crucial to eliminate the existing societal stigma attached to this pursuit. In conclusion, as mentioned earlier, the consequence will lead to a workforce that exhibits higher levels of productivity and competitiveness, generating advantages for the whole economy as it endeavors to address the difficulties presented by Industry 4.0.

Acquisition of lifelong learning for career sustainability and gender equality

Lifelong learning has been recognized as critical in attaining sustainable development and ensuring high-quality education, as outlined in the Sustainable Development Agenda 2030 (Tsalis *et al.*, 2020). Policymakers have acknowledged the need to extend education beyond formal institutional structures such as primary, secondary and postsecondary education to foster lifelong learning opportunities for everyone, as outlined in Sustainable Development Goal 4 (SDG-4). All individuals must gather relevant skills, both technical and vocational, to achieve sustainable careers (SDG-4) through lifelong learning. With the acquired skills, individuals can achieve decent jobs and contribute to Bangladesh's high productivity and economic expansion.

Currently, the phenomenon of population aging is evident in almost all nations. Based on projections provided by the United Nations (UN), it is projected that the worldwide population of individuals aged 60 years and beyond would see a significant growth of 56% over the next 15 years. This increase will result in a rise from 901 million individuals in 2015 to a projected Figure 1 of 1.4 billion by 2030 (Artyukhov *et al.*, 2021). If these projections materialize, it is anticipated that by 2030, there will be a notable shift in demographics, with the old population surpassing the count of children under nine. Furthermore, by 2050, those in the age group of 10–24, namely teens and young adults, are expected to see a similar trend (Petrushenko *et al.*, 2021). There is a scarcity of skilled labor force in every sector worldwide.



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Figure 1.
Theoretical
framework

Thus, with lifelong learning mechanisms, older populations can be turned into a skilled labor force by properly integrating advanced technologies.

Consequently, lifelong learning will help university graduates in career sustainability and decrease gender discrimination in every sphere. Even though Bangladesh's female education and literacy rate is increasing rapidly, the female population does not seek any higher education after completing higher secondary education. Most primary-level teachers are female; however, the number slowly decreases at the secondary, higher secondary and tertiary levels (Salahuddin *et al.*, 2014). As females face various societal obstacles in pursuing their education, most do not seek careers after graduation. Programs for skills development are highly hindered for female students to participate (Amadi, 2012). There is a severe gap in gender equality in the technology-based industry, as technology is thought to be a challenging concept for women to grasp (Alam *et al.*, 2023). The concept discourages females from holding jobs in those ICT-led firms. Therefore, females must pursue lifelong learning to enhance their capabilities and build confidence to boost their technology-based careers. The lifelong learning policy will support female individuals in achieving quality education, career sustainability, and economic expansion. In addition, the policy will contribute to females coping with the 4IR and decrease the rate of gender inequality in Bangladesh.

Theoretical framework

The notion of human capital development, which encompasses the idea that education and training can increase productivity, was notably shaped by the contributions of economists Gary Becker and Theodore Schultz (1961). The human capital development model is a conceptual framework that Schultz developed to enhance the competencies and expertise of a nation's labor force. The fundamental tenet revolves around the notion that human capital is a pivotal asset for a nation and that directing resources toward developing human capital is imperative in fostering economic growth and advancement. The notion seems beneficial within Bangladesh, as the successful execution of lifelong learning has shown notable achievements in using the country's demographic strengths and transforming individuals into skilled labor. The notion of lifelong learning encompasses various aspects, such as the acquisition of high-quality education, the development of practical skills, the enhancement of intellectual capabilities and the promotion of overall well-being. The concept places significant importance on advancing high-caliber education and fostering lifelong learning habits among the young population in Bangladesh. The primary goal is to cultivate skills that enhance employability, addressing the disparity between the available skill set and the nation's demands. The research conducted by Dejaeghere *et al.* (2016) argues that effective strategies for implementing lifelong learning can enhance the long-term sustainability of young individuals' career paths.

This study is based on the theoretical frameworks of Sigmund Freud and Sandra Harding's gender and development theory (Harding, 2006). It aims to examine issues related to gender inequality and explore potential pathways for achieving gender equity and women's liberation. The theory of gender and development is a conceptual framework that examines the interplay of gender, political, economic and social issues, leading to uneven outcomes for individuals of different genders. This theoretical framework places significant emphasis on promoting gender equality and women's empowerment via many means, including improvements in health, employment, education, politics and administrative practices. This research elucidates the theoretical framework that underlies the association between excellent higher education, lifelong learning and gender equality in Bangladesh. The authors want to elucidate the need to modify policy implications and practice due to

their insufficient appeal and inadequate dissemination of information about gender equality within society. Therefore, it can be argued that promoting high-quality higher education and lifelong learning opportunities for women can further gender equality.

Research method

This research used a qualitative methodology to fulfill its objective. [Philipsen and Vernooy-Dassen \(2004\)](#) define qualitative methodology as the study of the features of phenomena, including their quality, diverse indicators, the surrounding context and the several viewpoints through which they might be comprehended. However, it does not include the examination of their scale, frequency range or placement in a cause-and-effect connection that can be empirically ascertained. In another study, an alternative definition of the qualitative method was provided by [Sofaer \(1999\)](#); it is a research approach that attempts to diminish uncertainty regarding significant phenomena or inquiries. This approach posits that acquiring knowledge entails a progressive decrease in uncertainty. At the outset, a sense of ambiguity exists regarding the correct responses, question formulation, question content and address. As comprehension deepens, some pertinent inquiries arise, although there still needs to be precision about the complete identification of all the appropriate inquiries. Credibility increases when the most crucial issues are recognized and defined precisely, but there is still ambiguity about the many potential solutions. Ultimately, almost all conceivable solutions attain a profound degree of assurance.

Using a qualitative research approach, the present study examined the topic, its contextual elements and various viewpoints impacted by the subjectivity inherent in individuals' perceptions, interpretations and experiences. The study published by [Rahman et al. \(2021\)](#), "Gender equality and English in TVET: An investigation into women's participation and employability," uses a qualitative research methodology, explicitly using focus group discussion (FGD) techniques. The study yields noteworthy findings that are relevant to the current research. In addition, separate research by [Alam et al. \(2023\)](#) using a comparable methodology also generated notable findings and both of the studies mentioned above have parallels with the current investigation. Hence, using this methodology attains a thorough and significant understanding that is exclusively unattainable using only quantitative methods. Moreover, the present study has employed secondary data to provide substantial and minor insights into the existing condition of higher-quality education, lifelong learning, the challenges posed by the 4IR in Bangladesh, career sustainability and the significance of lifelong learning in promoting gender equality in the country while examines individuals' motivations, beliefs, values and emotions to enhance readers' understanding of the broader phenomenon. Also, strong protocols were used in this qualitative study to enhance the findings' dependability and credibility.

The data were collected by purposive sampling, a method in which respondents were deliberately selected to understand the significance of acquiring lifelong learning in developing skills, career sustainability and gender development in Bangladesh ([Campbell et al., 2020](#)). A thematic analysis was used to analyze the collected data. In addition, the research team interviewed government officials and professionals to enhance the data's validity and better understand the state of lifelong learning in Bangladesh. The study was conducted by thoroughly examining ethical concerns. The findings section of this study incorporates *verbatim* excerpts from many interviews to enhance transparency and promote enhanced understanding.

Sampling
This research uses the qualitative technique, using inductive reasoning to generate new hypotheses by analyzing current material. The use of purposive sampling, which is designed to align with the aims of the research, entails the selection of a qualitative sample of 40 individuals. This sample is composed of 34 participants and six experts. To comprehend the phenomenon, the researchers collected data from urban and rural units, including the whole sample size. There is an anticipation that the mindset of individuals residing in urban and rural areas varies across multiple dimensions.

Consequently, interviewees from both settings have been carefully selected to ensure a balanced representation of perspectives on the current state of lifelong learning through skill development programs. In addition, the interviews aim to explore how lifelong learning can contribute to career sustainability and address gender disparity within Bangladeshi society. To ensure gender parity in the research, a purposive sampling method was used to pick seventeen male and 17 female participants, both graduate and undergraduate, who were chosen from various socioeconomic backgrounds.

Furthermore, the study included the participation of six experts, including government officials, education specialists and gender professionals aged 26–52. These experts were selected from both urban and rural locations. All individuals in the sample had successfully attained higher education qualifications and were professionally affiliated, as shown in [Table 1](#).

Sample size analysis
Participants from diverse urban and rural areas were purposefully recruited to provide a balanced and varied representation of opinions. The inclusion of both men and women in appropriate proportions has been taken into account to promote gender equality. [Table 2](#) analyzes the sample size chosen to participate in the interview.

Tools, source of data and methods of data collections
The researchers conducted interviews and used semi-structured questions to gather primary qualitative data. The data triangulation process was conducted using many sources following the suggested guidelines. To conduct the public stakeholder study, the researchers engaged with government officials, while for the private stakeholder analysis,

Participants' group	Sample size	Sample selection criteria	Tools/Instruments
Purposively selected participants	34	Eighteen men and 17 women from urban and rural units were selected, using a purposive method to ensure data balance	Semi-structured questions for interview
Government stakeholders	3	Three government officials were interviewed via FGD, and one gender specialist was interviewed via KII	Semi-structured questions for FGD and KII
Education specialists	2		
Gender specialist	1		
<i>Total</i>	40		

Source: Created by the authors

Table 1.
Detailed sampling of
the research

they interviewed personnel from commercial institutions. In addition to using data from government stakeholders and experts, secondary data was gathered using national portals such as the Bangladesh Bureau of Educational Information and Statistics and the University of Dhaka. The study used several data collection techniques, including interviews, FGDs, key informant interviews (KIIs), descriptive analysis and thematic analysis. The study used Microsoft Excel, Google Forms and NVivo to gather participants' information and analyze the data. The study used secondary data sources to examine the impact of quality lifelong learning on assuring career sustainability and reducing gender discrimination in Bangladeshi society. The present research included semi-structured questions specifically developed to gather qualitative data from participants.

Methods of data analysis and presentation

The investigation used the recorded replies and transcripts as primary data sources to derive conclusions. This study included field interviews, observations and evaluations as integral components of its research methodology. The data was systematically categorized into themes and subthemes using logical methodologies and then subjected to comparative analysis to draw conclusive findings. The researchers thoroughly examined the ideology, subjects, participant characteristics and coding methodology throughout the analysis of the acquired data for this study.

Findings

The findings reveal three major themes: lifelong learning for achieving sustainable career planning, gender equality through skills acquisition and attainment of SDGs through lifelong learning. The results generated subordinate themes for in-depth analysis of the interview data.

Lifelong learning for achieving sustainable career planning

Lifelong learning for breaking the traditional career pathways To lay a foundation, participants were asked, "Why do you prefer traditional career paths such as Bangladesh Civil Service (BCS) to a tech-based career?" Many interviewees argued that government services provide more dignity and financial stability than private-sector work (Table 3). One of the participants stated:

Undergraduate students are still interested in government jobs for financial security and stability in their career. Hence they spend their valuable time preparing for government job exams instead of skills acquisition (Interviewee 30, 2023).

One of the government officials stated,

Participants	Frequency	%	Area	
			Urban	Rural
Male	20	50.0	11	9
Female	20	50.0	10	10
Total	40	100	21	19

Source: Created by the authors

Table 2.
Sampling size
analysis

Table 3.
Thematic analysis of
“lifelong learning for
breaking the
traditional career
pathways”

Subthemes	Key reflections	Quotes
Acquisition of soft and hard skills	Individuals have to acquire cognitive abilities and hard skills	“Individuals lack cognitive abilities and hard skills to achieve competencies in the 21st century for which they lack the confidence to apply for jobs in private sectors or Multinational companies (MNCs)” (Interviewee 12, 2023)
Acquisition of technological competencies	Individuals have to acquire technological competencies	“Tertiary education and TVET severely failed to produce adequate competent and technologically skilled human capital in Bangladesh” (Interviewee 39, 2023)
Motivation for skills advancement	Adults need to be motivated to take the necessary steps for skills acquisition	“Adults have to motivated to take necessary steps for skills acquisition which will create no limits their work opportunities and contribute to a shift in employment” (Interviewee 24, 2023)
Source: Created by the authors		

A significant number of undergraduate students do not develop any skills; instead, they prepare themselves for the competitive exams such as Bangladesh Civil Service (BCS) with highbrow knowledge. Thus, many recruited government employees face challenges coping with the technological utilization in the offices and severely lack expertise in higher level management (Interviewee 38, 2023).

Scopes to availing skills development through lifelong learning Participants were asked, “Why do graduates fail to acquire adequate employable skills for career sustainability?” Participants acknowledged that the root cause of lacking adequate employable skills is that there are few possibilities for graduate students to participate in skills development programs through lifelong learning. According to the participants, students enrolled in undergraduate courses are eligible for government- or university-sponsored skills development programs. Graduate students and alumni lack the capacity and resources to engage in these skill development programs (Table 4). One university graduate said, “Institutions should take the initiative of lifelong learning so that even after graduation, students can acquire employable skills” (Interviewee 6, 2023). Another participant stated that:

University-industry linkage is crucial for students to develop knowledge about relevant expertise for employable skills. Arranging internships in industries will be advantageous for the undergraduate students because it will give real-life experience and inspire them to develop new skills besides academic studies (Interviewee 7, 2023).

Market demand and curriculum For in-depth insight regarding the supply and demand of employable skills mismatch, the participants were asked, “Why do you think there is a mismatch between the supply and demand of employable skills?” One of the participants stated, “In the 4th Industrial Revolution, the labor market has become highly competitive and innovative; however, institutions failed to produce adequate skilled labor to mitigate the mismatch of employable skills.” One undergraduate student answered, “How can lifelong learning contribute to mitigating the mismatch between the supply and demand of employable skills?” (Table 5)

			Skills development for sustainable career
Subthemes	Key reflections	Quotes	
Industry linkage	The linkage of universities with industries can help acquire knowledge about employable skills	“It is crucial to link universities with industries for better knowledge about employable skills and practical education” (Interviewee 7, 2023)	71
Skills development courses	Distribution of skills development courses can improve an individual’s skills	“Skills development courses can guarantee an individual’s lifelong learning, which can provide them with adequate flexibilities to enhance their skills” (Interviewee 9, 2023)	
Skills development seminars	Skills development seminars can boost knowledge about employable skills	“Universities should frequently organize skills development seminars and conferences with the collaboration with prominent national experts for the disbursement of knowledge about employable skills” (Interviewee 9, 2023)	
Association with alumni	Association with alums can contribute to a positive mentality and professional development	“Universities should introduce students to the alumni for boosting confidence and professional development” (Interviewee 8, 2023)	
Source: Created by the authors			Table 4. Thematic analysis of “scopes to availing skills development through lifelong learning”

Subthemes	Key reflections	Quotes	
Academic curriculum	Tertiary education and TVET need effective curriculum reform	“Academic curriculum of the Tertiary education and TVET should be reformed that can cope with the upcoming 4th Industrial Revolution” (Interviewee 13, 2023)	Table 5. Thematic analysis of “market demand and curriculum”
Practical implications	Tertiary education should focus on practical implications over traditional theory-based approaches	“There is an indeed lack of practical implications in STEM education. Universities still emphasize on traditional theory-based approach” (Interviewee 15, 2023)	
Adequate technologies	Science and technology education has to equip adequate technologies to improve STEM education	“Science and Technology Universities lack adequate advanced technologies for the high-price of technological equipment. Thus, universities fail to develop STEM education” (Interviewee 20, 2023)	
Brain drain	A skilled labor force should be provided with better work opportunities	“Skilled labor force moves to abroad for better work opportunities causing skilled labor shortage in Bangladesh. Thus, have to be provided with green working opportunities” (Interviewee 39, 2023)	
Source: Created by the authors			

First, there must be a curriculum reform; since the recent curriculum failed to deliver adequate knowledge about soft, hard, and technical skills, it has to be changed. Second, the institution should create scope for practical implications of technological skills. Third, the skilled workforce should be provided with a green working environment and continuous learning process to develop their skills continuously (Interviewee 31, 2023).

Gender equality through skills acquisition

The role of lifelong learning for gender equality Empowering women through lifelong learning is necessary for the nation’s economic expansion (Titmus, 2014). To prevail in gender equality in society through lifelong learning, participants were asked, “How can lifelong learning contribute to improving gender equality?” The participants argued that women still lag in STEM education as it is thought that females cannot adopt critical skills, hindering their rights to equal opportunities (Table 6). So, the participants emphasized the equal opportunities of lifelong learning to prevail in gender equality in Bangladesh.

Knowledge and motivation for skills development. In the interviews, participants stated that female students lack adequate knowledge about the industry market and are less motivated to acquire knowledge. Thus, they emphasized that institutions should motivate them to acquire industry-related employable skills. One of the undergraduate students stated, “Undergraduate students primarily emphasize academic performance instead of acquiring employable skills. They lack the motivation to acquire new knowledge that can enhance their career sustainability” (Interviewee 10, 2023). The gender specialists stated,

Women tend to be restricted by their families and society to choose careers in STEM subjects. People think women cannot flourish in STEM careers since they must maintain their families, which should be their major priority. But I think the government should promote females on choosing STEM as careers, and they should be advanced in those careers through lifelong learning (Interviewee 40, 2023).

Attainment of the sustainable development goals through lifelong learning

Understanding of sustainable development goals To shed light on the alignment between lifelong learning and SDGs, participants were asked, “How can lifelong learning contribute to achieving SDGs in Bangladesh?” Participants responded that lifelong learning could

Subthemes	Key reflections	Quotes
Skills development opportunities	All institutions should prioritize females for skills development opportunities	“Women should be provided with an emphasis on skills development opportunities from all the educational institutions” (Interviewee 17, 2023)
Technological education	The government should emphasize females in STEM education	“There is an indeed gap between STEM education and career of women. The government should implement policy initiatives to promote STEM education to females” (Interviewee 17, 2023)
Equal opportunities for professional development	The industries must provide equal opportunities for females in training programs, seminars and skill development courses	“Females tend to be the last choice of any organizations to provide training for skills development. Thus, companies should provide equal opportunities to females for their professional development” (Interviewee 19, 2023)
Literacy for women’s rights	Institutions should provide adequate knowledge about women’s legal rights	“Women should be provided with adequate knowledge about women’s legal rights” (Interviewee 40, 2023)

Table 6. Thematic analysis of “the role of lifelong learning for gender equality”

Source: Created by the authors

contribute to developing quality education, gender equality and decent career planning aligned with SDGs 4, 5 and 8. However, many participants acknowledged their limited knowledge regarding SDGs (Table 7). One of the education specialists responded that,

Students lack knowledge regarding sustainable development. The institutions should provide them with adequate knowledge about SDGs. They have to know how lifelong learning is aligned with sustainable development goals so that they can take necessary steps for implicating lifelong learning to achieve SDGs in Bangladesh (Interviewee 38, 2023).

Digital divide as a challenge According to experts in education, a significant obstacle to the acquisition of skills is the digital gap, which refers to the unequal access to new technology and the subsequent disparity in skill development between privileged and disadvantaged groups (Table 8). This division perpetuates discrimination against those from lower socioeconomic backgrounds. One of the education experts stated,

Unfortunately, underprivileged individuals cannot access advanced technologies that can hamper their skills acquisition. In this digital divide, underprivileged individuals lack competencies compared to privileged ones. They lag in educational, economic, and technological sectors. The Bangladesh government should ensure access to digital devices to all individuals of the nation (Interviewee 39, 2023).

Discussion

During the previous 10 years, Bangladesh's economy has grown at a constant rate of more than 6% annually. Compared to agriculture, the proportion of industry and service industries has steadily expanded over time. According to the [Bangladesh Bureau of Statistics \(2020\)](#), Bangladesh's GDP increased by more than 8% in the 2018–2019 fiscal year. The rapid economic transition will allow the country to develop by 2041. However, Bangladesh must continue to expand at this rate for a couple of decades to achieve this. Because sector-led growth has reached its limit, the country must boost productivity and human capital. It has been documented that a strong link exists between a lack of skills

Subthemes	Key reflections	Quotes
Knowledge of SDGs	Educational institutions should provide knowledge regarding SDGs	"Educational institutions should provide knowledge regarding the scope and challenges of Bangladesh in the attainment of SDGs" (Interviewee 14, 2023)
Alignment of lifelong learning with SDGs	Educational institutions should align lifelong learning with SDGs	"Educational institutions should bridge the gap between lifelong learning and attainment of SDGs to increase the skilled labor force" (Interviewee 11, 2023)
Continuous education	Individuals should be given enough scope for continuous learning	"Individuals should be given enough scope for continuous learning with an emphasis on female education in training and skill development programs" (Interviewee 22, 2023)
Sustainable economy	With the alignment of lifelong learning with SDGs, the nation should advance for sustainable economic expansion	"By bridging the gap between lifelong learning and attainment of SDGs, Bangladesh can increase skilled labor force that can contribute to sustainable economic expansion" (Interviewee 11, 2023)

Table 7.
Thematic analysis of
"understanding of
sustainable
development goals
(SDGs)"

Source: Created by the authors

Table 8.
Thematic analysis of
“digital divide as a
challenge”

Subthemes	Key reflections	Quotes
Digital divide	There is a significant digital divide in Bangladesh between privileged and underprivileged individuals	“There is a significant digital divide in Bangladesh between privileged and underprivileged individuals for the socio-economic conditions” (Interviewee 12, 2023)
Access to quality lifelong learning	Socioeconomic disparity among individuals creates barriers to accessing quality lifelong learning	“Budgetary constraints among individuals create barriers to access quality lifelong learning that can hamper their skills development initiatives” (Interviewee 26, 2023)
Internet connectivity	The socioeconomic situation creates barriers to access to internet connectivity	“Individuals face limitations to internet access for budgetary constraints as the Internet Service Providers (ISP) usually charge a lot for high-speed connectivity of internet” (Interviewee 33, 2023)

Source: Created by the authors

development opportunities and inadequate employee skills status. Employees in both the verbal and nonverbal sectors also have low productivity and earnings (Sackett and Gano-Overway, 2017). As a result, students will be crucial to the country’s future development, irrespective of gender, skills development and human capital production (Ahmed and Hyndman-Rizk, 2020).

In the 21st century, all the nations that are significant globally and known as economic powers are considering skills development programs for human capital development. Most of these economic powers do not possess many natural resources; however, they can buy natural resources with their financial ability (Islam and Alam, 2023). The central paradox behind their success is achieving technology and transforming citizens as human capital instead of making them a burden for the nation (Trottier and Robitaille, 2014). Physical capital, such as land, labor and materials, has been replaced by information or knowledge as the newest capital input. In recent years, significant global transformations and trends have significantly impacted the alignment between supply and demand for skills, which had previously converged in Bangladesh. To reach that level and become a developed country while fulfilling the SDGs, Bangladesh must adopt technology-based advancement and prioritize skills development for sustainability and human capital development (Dunbar, 2013). However, Bangladesh does not have adequate advanced agendas with skills development programs (Alam *et al.*, 2023). Therefore, Bangladesh should make policy reforms to include the concept of lifelong learning so that government institutions and various other institutions can arrange and invest in the skills development sector in Bangladesh.

With the National Skills Development Authority Act, 2018, and the effect of National Skills Development Authority Rules (2020), a critical component of the country’s skills ecosystem, paradigm changes in skills development occurred. As a result, the nation’s skills development industry needs effective collaboration, delivery mechanisms for competency-driven instruction in skills and the establishment of a shared standard, course of study and certification procedure. Moreover, graduates are not encouraged or motivated to take skills development courses due to the lack of and understanding of the employment market and the necessary skills (Alam *et al.*, 2024a, 2024b). This creates a shortage of skilled participants to get vacant employment. Hence, on the one hand, industries are short on qualified employees, while on the other hand, many graduates stay unemployed. However,

those sector vacancies are filled with skilled foreign workers, burdening our economic growth (Zuma, 2021). With the introduction of continuous education, professionals and students will stop looking for proper places to develop their skills and search online platforms for their desired content for skills development (Alam and Sharmin, 2023).

Human resources means both male and female, and achieving SDGs requires the full participation of every individual irrespective of gender; these institutions are taking female participation as a significant concern (Parvin and Alam, 2016). Skills development programs focusing significantly on females should be arranged for continuous education (Seddiky and Ara, 2015). Policymakers should ensure that women learn the lifelong learning process to acquire new skills for developing themselves even after stopping their formal education. All the stakeholders and institutions should prioritize female graduates for skills development programs to address gender equality because the rate of females in various skilled workforces is still low (World Economic Forum, 2022). The scenario was not the same in the past decade in Bangladesh, as male students were prioritized for skills development (Alam et al., 2024a, 2024b). However, lifelong learning will help fulfill the SDGs and use the proper knowledge about gender equality in the skills development sector to change everyone's mind. Thus, this research argued that all the stakeholders should organize skills development programs related to lifelong learning for graduates' sustainable career planning.

Recommendations

Effective and adequate strategies must be implemented for skills development through lifelong learning that can contribute to career sustainability and ensure gender equality within society. Based on the findings of this study, the following policy recommendations can be considered.

Actors and stakeholders

The skills development sector requires the involvement of various actors and stakeholders for implementing the lifelong learning approach. Unfortunately, there is a massive lack of stakeholders in this sector, which is one of the prominent reasons behind the difficulties of skills development programs in Bangladesh. Therefore, the government should necessitate the involvement of more actors and stakeholders in this sector.

Reform in the curriculum. Bangladesh's current educational curriculum is entirely focused on academic knowledge. This curriculum ignores the skills development portion and the importance of informal education after academic degrees. The educational curriculum should include practical training for skills development as a significant part of education.

Alignment of sustainable development goals with lifelong learning

People in Bangladesh are not very aware of the SDG goals and their benefits. However, it is necessary to make citizens, especially students, aware of the SDGs' goals and how to attain them. The government should include the concept of SDGs in the national curriculum and align lifelong learning with SDGs. Also, the government and various stakeholders in society should take the initiative to motivate students to become human capital for their career sustainability and achieve the SDGs to become a developed country.

Gender equality

Gender equality is widely missing in the skills development sector in Bangladesh. People consider that technology-based skills are only meant for males, not females. However, it is not entirely true, as women play significant roles in developed countries. To achieve the SDGs, every citizen should become human capital. For that, the government should focus on establishing gender equality in the skills development programs and educate women through continuous learning so that all females can become human capital.

Conclusion

In recent decades, a notable rise in perceived importance has been attributed to an individual's soft talents. Despite a significant number of undertrained and under-skilled human resources, Bangladesh is now poised to transition toward developing a knowledge-based economy. Hence, the present moment presents a suitable occasion to provide graduate students with the requisite employability competencies for their professional advancement. The incorporation of lifelong learning will have a significant impact on the execution of the strategy aimed at cultivating human capital. The primary contention made in this scholarly article is that a robust correlation should exist between lifelong learning and the development of sustainable career planning. The findings of this study also suggest that educational institutions in Bangladesh lack adequate support for skills development and are failing to provide graduate students chances to participate in activities that enhance their employability. Therefore, the underlying cause of the disparity between demand and supply within the labour market is the issue of sustainable employment.

Consequently, it is recommended that the Government of Bangladesh undertake a comprehensive review of the higher education framework and integrate a lifelong learning strategy to cultivate skills that align with employment demands and are pertinent to the instructional curriculum. Furthermore, the establishment of gender equality is a crucial element in the advancement of skills development. Hence, governmental entities and nonprofit organizations must establish a collaborative framework to facilitate girls' acquisition of lifelong learning skills, enabling them to achieve parity with boys and progress in their professional trajectories.

The study has certain limitations regarding adequate addressing of the situation of Bangladesh in achieving SDGs through lifelong learning, mitigation of gender inequality in macro and microeconomic sectors, the challenges of Bangladesh to cope with the 4IR, the quality lifelong learning assurance for developing human capital through STEM and so on. Therefore, this study creates a scope for further research, such as comparing the achievement of Bangladesh in SDGs through lifelong learning, quality education or lifelong learning mechanisms for mitigating gender inequality, the future opportunities and challenges for the 4IR and the implications of lifelong learning. This research will contribute to the stakeholders', policymakers' and government experts' knowledge of the significance of lifelong learning and the implications of mechanisms through curriculum development.

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